Applications of 3D printing technology in the design of women's clothing accessories

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Abstract:
There is no doubt that our era is the era of modern and advanced technology, due to entry of technology and its multiple uses in all life fields. Day after day, we see many new technologies, including 3D printing, which is a form of manufacturing technology that was invented in 1993 and its development continues to this day, it allows the ability to print overlapping parts of a complex installation where we can make a concrete three-dimensional product by designing on a computer and printing it, the printing process is done by stacking the layers of material on top of each other until the desired design shape is completed, the phenomenon of adornment is one of the human phenomena that man has been kept on since old times to appear in an elegant, attractive and unique appearance, clothing accessories are considered as the magic details of fashion, which can change the overall feeling of the outer appearance of the individual, as it can give the outfit an aesthetic value and attractive luster and make it with a special character. Therefore, this study concerns with studying origami art and its usage as a tool for generation of creative patterns for women's clothing accessories based on the applications of 3D printing to enrich these accessories and increase their aesthetic value, 4 suggested designed groups have been made for women's clothing accessories, and each group consists of 4 different designs, where a group of different materials were combined with 3D printing plastics in each group to identify the best materials that enrich these plastics and increase their aesthetic value, A questionnaire was conducted for specialists to measure the validity of the proposed designs and another one for the target group. After presentation and analysis, the statistical results showed the success of the third group, in which the printing plastics were directly integrated on different fabric materials.

Research problem:
- What is the potential benefit of printing technology to enrich women's clothing accessories?
- Can the origami art be used as a tool for generating creative patterns for women's clothing accessories based on 3D printing applications?

Research aims:
- Take advantage of 3D printing technology to enrich women's clothing accessories.
- Using the origami art as a tool for generating creative patterns for women's clothing accessories based on 3D printing applications.

Research importance:
- Opening the door to creativity for designers to take advantage of the applications of 3D printing in women's clothing accessories.
- Supplying Arab libraries with a study on the technology of 3D printing in the design of women's clothing accessories in order to enable them to catch up with the tremendous scientific and technological progress that the world is witnessing in this field.

Research Methodology:
This research follows the analytical and experimental method.

Research sample:
4 suggested designed groups have been made for women's clothing accessories, and each group is represented by 4 different designs, and a group of different materials have been combined with 3D printing plastics with each group.

Research results:
- 3D printing technology allows designers to create unique and distinctive pieces based on consumer needs.
- Achieving modernity and innovation in the 3D printing design units used in the clothing accessories.
- Achieving the proportionality between the lines and colors of the 3D printing units in the designed clothes and accessories as a whole with contemporary fashion.
- The integration of different materials with 3D printing plastics highlights the aesthetics of the accessory's design and enriches its aesthetic value.
- The design of the 3D printing units contributed to give an added value to the design of the complement, both aesthetically and functionally.
- Raising the aesthetic value of women's clothing accessories depending on the different creative patterns of origami art and its application in the proposed designs using 3D printing technology.
• Incorporating 3D printing plastics on different fabric materials directly into clothing accessories that enriches their aesthetic value

**Keywords:**
3D printing, clothing accessories, origami art

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