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### **ABSTRACT**

This research paper highlights the Gem and Jewellery market and its new digital dimension to a designer jewellery studio from old craftsman goldsmith. Creative and advanced technologies will be the game changer for global as well as domestic high end jewellery industry. Jewellery market has gone through a phenomenal transformation after pandemic situation. It includes augmented reality, consumer experience, Omni channel marketing, virtual reality, artificial intelligence, E-commerce and social media as an important tool for product designing and selling. The present paper is enhancing the different modelling principles and basic concepts introduced by the previous researchers. Jewellery manufacturing and retailing process is continuously progressing to ensure the sustainability of Gem and kundan jewellery into the fashion market.

**Keywords:** *3D modelling, Kundan Jewellery, CAD Designing, Sustainability, Customization.*

### **INTRODUCTION**

Ethnic Indian jewellery has been described as elaborate, hypnotic, extravagant, and intricate around the world. To the knowledge of jewels, traditional & ancient jewellery styles have always been fascinating for the sheer amount of craftsmanship it entails. When we consider about the most ancient Jewell, Kundan form of ornaments come first in mind. The unique magnificent creation of this beautiful ornaments make its special place in Bollywood industry as well as bridal embellishment all over the Globe. Kundan is famous for its highly purified 24K Gold.

The overall process of making this jewellery is fitting the uncut raw diamond in 24 k Gold foils to create the antique master piece of jadau kundan set. In Kundan jewellery, Polki is unprocessed raw item without polishing and cut which is very costly and unparalleled beautiful. The Royal, imperial kings considered this kundan jewel as of their pride and used this gems in their precious costumes as well palace décor which is well known as 'Kundan Kesharii'. Minakari art enhances its additional beauty which makes it more expressive and can use reversibly.

Jewellery is also becoming a perfect online product and a pioneer in adopting new technological solutions for e-commerce. Certain features can be highlighted due to online buying of Jewells. A small ornament like an earring, finger ring or even necklace are rarely bigger than the centre of a mobile screen and availability of extra support functions as well as search options make it more appealing and captivating to any buyer. Jewell market is considered as fashion accessory and as the fashion industry has reached an almost shocking renewal rate, these rapidly changing trends force brands to continually offer new innovative product if they wish to maintain the customers' interest for long period of time.

### **OBJECTIVE OF THE PAPER**

1. To study the impact of Indian real Gem on society
2. To understand the various recent tools and techniques in jewellery designing.
3. To explore the innovative marketing trends and strategies that influence jewellery industry

### **METHODS OF DATA COLLECTION**

1. Primary data: Primary data gathered from Designer jewellery studio, V.M Ornaments.
2. Secondary data: Different sources such as journals, magazines, periodicals, articles, websites etc.

### **Technology reshaping the Jewellery retail:**

Modern Jewell retailers observe the great aspirations and desires by customers to buy the unique piece of their collection. Millennial buyers consider jewellery as an integral part of their style and

fashion and continuously buying to flaunt it. As per our Indian culture gold jewellery has been integral and as a symbol of wealth, financial security and celebration. Some of the main ways in which manufacturing process and overall innovation take place with respect to new buyer demand.

#### Designing:

Some specific software has been used in designing like integration of AI have taken design to new level in this industry. Now a days in this Artificial Intelligence era, this form of jewellery maintains its natural beauty. By using AI technology, its different special tools and techniques make possible to generate minute shapes of craftsmanship. AI tools generate high appealing ornaments with different variations which is challenging to craftsmen to create it manually. Due to digital designing the customisation of designs with its arrangement of diamonds, pearls or stones sequence in unique manner. This digital feature creates more publicity as well as acceptance of product with great level of satisfaction.

#### Manufacturing:

The quality and finishing is definitely uplifted by this innovative methodology. It's a very special activity where all different metallic layers processed over one another to generate finely crafted master piece in just one day duration time. The great advantage of this 3d printing technology is time saving with highest level accuracy and speed.

At the same time, the traditional mould-based manufacturing process required over a week for the same. Online jewellers that cater to a large segment of buyers are increasingly adopting the additive manufacturing process to boost their production. With ever changing trends for almost every few months, new designs are being generated with the same frequency as fashion designers on the runway. Additive manufacturing also helps in consuming time and production process duration.

#### Ethics and sustainability:

Transparency is one of the major concerns about jewellery retailer related to the sourcing of gold and diamonds. This concern is related to the actual quality of real certified diamond and its authenticity especially by cost-conscious market. Digital payment and information sharing is crucial in overcoming these concerns. Recent ornament makers are also widely adopting sustainable production by opting for recycled raw materials.

#### Pandemic protocols:

Due to the COVID-19 pandemic, techno-oriented jewellery market has further expedited. Digital online orders also increasing gradually. All levels of demographics including rural area people also get used to do online mode of payment system. 3-D printing enables every manufacturers touchless generation with marinating hygiene protocol.

#### Sales and distribution:

Instagram, Facebook the main social media platform has for long been playing a key role in promotional strategy. Jewellery makers now further integrating tech in sales. Virtual catalogues are in vogue among online platforms now a days. This enables an immense business opportunity for sellers along with reduction of inventory expenditure. Augmented Realty can make possible to produce he items every single week and cn come on soial media platform so frequently easily and 24 hours available. Customers can try on jewellers virtually and once a design is finalised; they can virtually shop through diverse channels.

#### **Latest trends in jewellery branding arena**

Latest technology and innovative methodology inspires the manufacturer and buyer to focus on this exclusive high ended Jewell product in this competitive environment. Moreover, have to follow the trend-setters of the society, that is, the celebrities and other influential people.

Fashion orientation: No one knows what will be coming next, therefore giving the unlimited chance of presenting something fresh to the audience. Creativity is one of the main features of jewellery marketing. Making a slideshow of the latest designs that have invented or devised or post pictures of the jewellery regularly on the social media platforms. Making a good number of followers and then redirect them to their jewellery website.

Story telling: Anyone likes a short but interesting story behind everything. Telling people how they came up with this jewellery design while they were travelling. They can also tell, how people of that area wore it and how it is relevant with some trending outfits.

The in-house sales: In Jewellery positioning the in-house sales also essential to promote and branding the new fashion and trend.

Omni-selling: CE Customer Experience is an essential aspect of branding while we think about any platform of selling. It should be customer friendly to any medium and if they reach out the website through mobile and wish to buy a piece of jewellery, there should be no problem at all in doing so.

How to Brand Jewellery: With regards to jewellery branding, one should approach a large amount of population. In that case, it is likely that one may get lost in the crowd if the brand is vague. Making a transparent website and focus on its customization because an attractive looking brand is bound to intimidate people.

### **New methodology for computer-based design system in jewellery**

The Jewell designers collaboratively worked for the proposed system development on Interactive Shape Grammar and Evolutionary Design algorithm due to which the productivity and creativity of design activity accelerated. Designers can utilize the generated designs to initialize their conceptual design process more easily and rapidly. The source of form diversity is derived from genetic operators. Subjective user preference is used for design evaluation. The system can be integrated with computer-controlled model-making machines to automatically build physical artefacts. As a result, designers can easily start process through obtaining the desired designs and the resulting physical artefacts in line. The human- computer synergy is illustrated for the design of jewellery but it is applicable to other industrial product design problems.

There is various computer- aided design (CAD) packages available in the market. Nevertheless, the available computer-aided design packages are mostly used in detailed design stage rather than in conceptual design, because most of CAD technology is not able to suitably help to manufacturers or craftsmen conceptual pattern of creation activities.

1. Generative Design (GD): This system is a computer- based design system that can engage designers in divergent thinking throughout design exploration and design generation. There are five GD techniques used in architecture like cellular automata, shape grammars, L-systems, genetic algorithms, and swarm intelligence. There are very few researches done on GD system for jewellery. The GD system developed by Kumar is a geometrical modelling method to generate 3D patterns for traditional Indian Kundan jewellery. Another system was developed by Sharma where the relevant CAD system for ornament design industry in India was studied and a GD system named Estempa was implemented. The system can generate ornamental patterns by transforming primitive motifs. The first iteration of this system was based on evolutionary algorithm. Later on, shape grammar methods were used to create a shape generations mechanism to generate jewellery design without consideration of Gemstone setting.

2. Shape Grammar for Jewellery Design (SG): The basic components of an SG are

- An Initial shape
- Set of shapes

- Set of shape rules
- Set of symbols

The major issue for developing shape grammar systems for ornament application is the variety of shapes of jewellery items. SG rules consists of initial rules, shape transformation rules, and termination rules. The initial rules are used in the starting step of the generating design process to generate a main gemstone, a minor gemstone or decorative item and a connector and it also establish their positions. Shape transformation rules were used for adaption and transition of design elements. Termination is used to create and to position gemstone, decorative items and connectors when all tasks are finished. After the application of these rules the SG process will stop.

3. Evolutionary Strategy (ES): ES was initially applied for parameter optimization. With the integration of ES algorithm, the proposed design system can increase the number of generated ornament designs. Hence it can be operated as external working memory for human designers. The system can generate emergent shapes that play a part in solving idea saturation during conceptual designs. As a result, the proposed system can support designers in a creative and productive manner. The system can be integrated with rapid prototyping and computer numerical controlled machines to automatically build physical ornaments in line.

#### **Parametric Modelling and CAD programming environment in jewellery**

The old basic authentic ornaments identity is their craftsmen who designed it manually. Hence the manufacturer reluctant to adopt the new technology. Considering this fact and fear the fusion of old and new concept of Jewell making together to sustain its the originality with modern touch of CAD/CAM designing. The craft people are CAD illiterate persons. Therefore, an interactive and user-friendly Graphical User Interface (GUI) is needed to develop in a CAD programming environment that accepts craftsmen's data input and interacts with CAD software.

Every single day the leading innovation and development responsible for modern Parametric modelling which enhances to solve the complexity of designing the different shapes of ornaments. By variable controlling methodology the designer has full control over variety of shapes by using single motif. In traditional jewellery designing, using parametric design methods, new jewellery designs can be prepared with new textures and forms, increasing modernization. Customised jewellery items are more demanded and is fulfilled by this parametric modelling.

#### **Discussion on Designer Jewellery Studio – V.M. ORNAMENTS:**





Studio concept in Jewellery market is emerging into next level of advancement and adapting to digital transformation continuously. V.M Ornaments is a leading illustration of such studio, engaged in business of self- designing, manufacturing and marketing of KUNDAN JEWELLERY studded with un-cut Polki diamond & real colour stones. This exclusive designer jewellery, manufactured under great supervision with strict quality control, highest level of accuracy & transparency in providing the details of each and every piece or artefact. It very old more than 20 years of experience and latest infrastructure with R&D, company keeps in mind pulse and preference of customers, consequently, it has made V.M. ORNAMAENTS globally popular for its unique fusion of cut and uncut diamond Jewells and original kundan set. Customer friendly price with high quality maintenance is its identity all over the demographics.

VM ORNAMENTS establishment is based on 20 years of hard-core research of many aspects like history, royal ethnic costume, traditional taste of buyers and its fusion etc. This sort of comprehensive feature of this VM ORNAMENTS make it signature Jewell. Distinct ambience of studio with personalize attention & conceptual collection is truly a treat to eyes tempting customers to visit often & often. This company has created new benchmark with an in-house product in the minds of their customers as a result, it is growing fast acquiring space in the heart of their customers.

Few marketing platforms of V.M Ornaments for their Kundan un-cut Polki diamond jewellery are mentioned here.

- Social media: Facebook as well as Instagram interaction with respect to defining their brand with customers pics. Refreshing pages regularly along with videos and 3D designed pieces of its unique Jewells.
- E-commerce: Company's dynamism shows its entry into online jewellery market.
- Exhibition: Exhibiting unparalleled collection of uncut polka diamond at IIJS SIGNATURE at Mumbai. They have been admired and awarded THE BEST PRODUCT INVENTORY at THE ARTISAN JEWELLERY DESIGN AWARD 2019 by the GEM & Jewellery Export Promotion Council of India. They have participated in many such various exhibitions like Swayam Var, Saptapadi in Ahmadabad as well as all over India.
- Indian Jewellery show (IJS) & celebrity endorsement: One of the most successful shows at YMCA CLUB, Ahmadabad where it experienced the gracious walk of Mr. Shaivya Gautam winner of Mrs. INDIA.
- BNI networking
- XRF Analyser's: X-Ray Fluorescence spectrometer jewellery lab is aimed on high- accuracy analysis of V.M Ornaments. It is non- destructive method for quick material analysis and coating thickness measurement on jewellery
- Theme based strategy
- In-house PR handling
- Cross marketing etc

#### SCOPE OF THE STUDY

The scope of the study will be at jewellery industry where sales, marketing and production has new dimension to make itself more dynamic.

#### CONCLUSION

As per the present study of this research paper, there is still more potential and space of growth for Jewellery industry. All minor and major details of its marketing strategy as well as future ready

designing technology has to keep an eye constantly. Application of right tools, strategies and most importantly by selecting innovative ideas or build a Brand to promote jewellery innovation.

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