

## A Study and Design Necktie Collection Applied Vietnamese Bronze-Drum Pattern by Using Digital Printing Technology

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**Abstract:** Necktie products today is not also a symbol of fashion to make male more gently but also shows the cultural identify by using the traditional patterns that makes easily to introduce the image of Vietnam to other nations all over the world. Therefore, the purpose of this research is to classify Vietnamese traditional patterns according to the era and dynasties. Vietnamese traditional patterns through the dynasties of Vietnamese history are done in the Prehistoric times, the Bronze and Iron age, the Chinese domination, the *Ngo-Dinh-TienLe-Ly-Tran-Ho* dynasty, and the *LeSo-Mac-LeTrinh-TaySon-Nguyen* dynasty. There are some special kinds of Vietnamese traditional patterns like buffalo, lotus, bronze-drum, *Phuc Loc Tho* character, and so on. However, the chosen traditional pattern applied on necktie collection is Vietnamese bronze drum which the fashion trend is used on creating works. The concept, target, image map, lifestyle map, motif, colours, expression and arrangement of patterns on necktie were set up. The necktie collection is designed and developed by the Adobe Illustrator program with three colour ways for each necktie. Upon completion of the research, digital printing technology is chosen for using on necktie collection which Vietnamese bronze-drum pattern was researched deeply and widely with the purpose of establishment the basic background for Vietnamese culture.

**Keywords:** Design, Necktie Collection, Vietnamese Bronze-Drum Pattern, Printing Methods, Fabric

### Introduction:

Ethnic look has been presented every season as one of the major fashion themes to present the cultural and traditional elements in the design fields [1]. Vietnamese traditional patterns can be exposed by relating to the lifestyle of the Vietnamese people and the way they love to dress which has an exhaustive research in Hue imperial palace [2]. Therefore, development of traditional patterns on fashion items is necessary to do. It is known that necktie is one of the most widely used accessories for male which determines personal images because man often wear simple shirt with one colour or simple patterns [3], [4]. Accordingly, necktie design applied Vietnamese traditional patterns, especially Vietnamese bronze-drum pattern, is the main contribution in this study. It is true that technique also influences on the fashion design so digital printing technology is the best choice for completing the necktie collection. However, it is difficult to improve products which combine the traditional aspect and modern aspect as well as satisfy the contemporary consumers. Therefore, the approach of human sensibility makes this task possible. The sensual test of the developed necktie collection applied Vietnamese traditional bronze-drum pattern can be the best way of visual presentation to create customer-centred design. The purpose of this paper is to make the database of Vietnamese traditional patterns which the traditional bronze-drum is mainly discussed. This paper also suggested the development of necktie design with the aims of remaining traditional cultures through the image of traditional patterns.

### Materials and Methods:

#### 1. Methods:

In this paper, there are two research methods was done. Firstly, literature research is conducted to help build up the understanding of Vietnamese traditional pattern, especially Vietnamese bronze drum. The development process of Vietnamese traditional patterns as well as the origin, features, symbolism and classifications of Vietnamese bronze drum were conducted in order to know about patterns more thoroughly. Secondly, the development of necktie design applied Vietnamese traditional bronze-drum pattern by using digital printing technology was done. Then, the sensual test on developed necktie collection had made with three factors including personality factors, functional factors and aesthetical factors. This secondary method allows the respondents describe their feelings of the necktie design. Moreover, this method ensures that the research topics are covered deeply and widely with the purpose of establishment the basic background of Vietnamese culture.

#### 2. Materials

Necktie design was done and developed by the Adobe Illustrator program with the three colour ways of each necktie including green tone, pink tone and orange tone.

Textile fabrics were done by digital printing technology, and then post-treatment was performed on the printed fabric. The printed fabrics are used for making necktie with various purposes by using only silk satin fabric printed by digital printing.

Some information about digital printing machine are described in *Table 1* as the following

Table 1: Information about Digital Printing Machine

Information	Details
Place of origin	South Korea
Type of machine	Digital printer
Color & Page	Multicolor
Dimensions (L*W*H)	900 mm x 3069 mm x 1290 mm
Output size	1641 mm x 50000 mm
Brand name	Yuhan-Kimberly
Automatic grade	Automatic
Gross power	3KW/hr (220V-240V +,-10V)
Model number	UJET MC2
Usage	Widely used in fabric
Condition	New

3. Questionnaire and Participants

The questionnaire was designed into three steps as the following:

- Extraction of adjectives or nouns related to the factor analysis of sensual test
- Classification of these adjectives or nouns into three groups including sensual test of personality factors, sensual test of functional factors and sensual test of aesthetical factors.
- *Likert scale* is a very popular rating scale used to determine a respondents' agreement level. *Likert scale* was presented in five semantic differential scales (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree) to measure the visual response.

The participants are the potential users as the targets of the survey. The potential users were rather broad. The most common participants described from 30 to 35 years old who were interested in necktie design applied Vietnamese traditional patterns with high-tech application like digital printing technology. The proportion of respondents is shown in *Table 2*.

Table 2: Group of Participants

No. of people Group	Majors	Total
Group 1	Fashion major	70
Group 2	Other majors	50
Total		120

Results and Discussion:

*Development Process of Vietnamese Traditional Patterns*

The understanding of Vietnamese traditional patterns was done by literature review, case studies of places including pagodas, communal houses, museums, temples, places, towers, tombs, and so on with the purpose of finding more special and plentiful traditional patterns in Vietnam. There are five periods in the development process of Vietnamese traditional patterns such as the Prehistoric times, the Bronze and Iron age, the Chinese domination, the *Ngo-Dinh-*

*TienLe-Ly-Tran-Ho* dynasty, and the *LeSo-Mac-LeTrinh-TaySon-Nguyen* dynasty. Each period has the impressive information related to Vietnamese traditional patterns as the following:

1. *The Prehistoric times (before 2879 B.C.)*

It is difficult to be precise about the people and history of Annam, now known as Vietnam. The history of Vietnam is one of the longest continuous histories in the world, with the oldest archaeological findings showing that people have been living there as far back as over a half million years ago. Between 3,000 and 2,000 B.C., the Red River Delta was settled. The Red River valley forms a natural geographic and economic unit, bounded to the north and west by mountains and jungles, to the east by the sea and to the south by the Red River Delta [5].

The prehistoric times in Vietnam had fewer documents to know exactly about the traditional patterns in this time. However, the patterns seen in the objects of ancient Viet people were almost geometric patterns including line pattern, saw-tooth pattern, lighting pattern, etc.

2. *The Bronze and Iron age (2879 B.C.-179 B.C.)*

The second millennium B.C. was the Bronze age in Vietnam. At this time, the first Vietnamese kingdoms of *Van Lang* and *Au Lac* appeared. Therefore, the first truly influential part of history in Vietnam occurred during the Bronze Age, when the *Dong Son* culture was in Vietnam, dramatically advancing their level of civilization. In Iron Age *Dong Son* culture, most famous of these artifacts are large bronze drums, probably made for ceremonial purposes, with sophisticated engravings on the surface, depicting life scenes with warriors, boats, houses, birds and animals in concentric circles around a radiating sun at the centre. Overall, the early Vietnamese were not much different from other Southeast Asian peoples of the time, and it wasn't until later that a distinct national culture emerged [6].

3. *The Chinese domination (179 B.C-938 A.D., 1407 A.D.-1428 A.D.)*

Han troops invaded *Nam Viet*, established new territories and divided Vietnam into *Giao Chi*, *Cuu Chan* and *Nhat Nam*. While governors and top officials were Chinese, the original Vietnamese nobles still managed some highlands. During the 1,000 years of Chinese occupation, Vietnam had been influenced by Chinese culture deeply, especially in the *Tang* dynasty of China.

In the Chinese domination, the patterns with grape vines or arabesque and auspicious animals had strongly used in Vietnam. Arabesque with different basic shapes were introduced in this period as well as dragons and phoenix. The patterns of auspicious animals and arabesque like *Figure 1* are popular themes in the motifs of the flourishing period of the *Tang* dynasty [7].



Figure 1: Vietnamese Traditional Patterns in the Chinese Domination [8]

#### 4. The Ngo-Dinh-TienLe-Ly-Tran-Ho dynasty (938 A.D.-1407 A.D.)

In the *Ngo-Dinh-TienLe-Ly-Tran-Ho* dynasty, there are not only stone, bronze and iron objects but also many new developments in the manufacture of gold and silver adornments including rings, bracelets, earrings and brooches. Adornments such as bracelets and rings were made from precious stones, amber and glass.

During the *Ly* dynasty (1009-1225), the nation had enterprises to raise silk-worms and weave silks. The common people in *Ly* dynasty were only allowed to tattoo designs of snake patterns and floral patterns, such as shown on the kettledrum [8].

In *Tran* dynasty (1225-1400), people were able to produce cotton and hemp fabrics, silks, gauze, fluffed and floss silks, chiffon, brocade and satin. The embroidery industry was also well developed. The judicial officials wore floral patterns with golden circles on each side. During this period, the King wore the designs of cloud design and gold dragon [9].

#### 5. The LeSo-Mac-LeTrinh-TaySon-Nguyen dynasty (1428 A.D.-1945 A.D.)

In terms of the King's costumes under *LeSo* (1428-1527) and *Mac* dynasty (1527-1533), there is not much information found in the old documents. In *LeTrinh* dynasty (1533-1788), a robe with unicorn design embroidered with golden threads, a waistband made of precious stones and gold. In *Tay Son* dynasty (1788-1802), there are also few documented papers on the *Tay Son* costumes so it is difficult to find the sources of traditional patterns.

In *Nguyen* dynasty (1802-1945), the last dynasty, was increasingly dependent on the French colonial power. The King's head covered by black silk outside and lined with red silk inside, with attached calligraphy in gold reading "Long-live" or "Heaven and Earth". The border of the robe was woven with patterns of the sun, moon, stars, clouds, mountains, and dragons. The panel was woven with dragons, clouds and waves. The outer coat was embroidered with a flame design and rice dots [10]. Figure 2 shows the patterns of *LeSo-Mac-LeTrinh-TaySon-Nguyen* dynasty.



Figure 2: Vietnamese Traditional Patterns in the LeSo-Mac-LeTrinh-TaySon-Nguyen dynasty (Source: National Museum of Vietnamese History)

### Origin, Features, Symbolism and Classifications of Vietnamese Bronze Drum

**1. Origin and Features of Vietnamese Bronze Drum**  
Bronze drums are one of the most important archaeological artifacts to be found in northern Vietnam from pre-historic times to the present used by many ethnic groups in the regions of that area. The total number of bronze drums discovered in Vietnam reached about 360 in the 1980s, among which about 140 were *Dong Son* drums [11]. There are many legends about bronze drums mentioned in many works such as the *Dai Viet Su Ky Toan Thu*, a historical work written in the 15<sup>th</sup> century, and the *Dai Nam Nhat Thong Chi*, a book about the historical geography of Vietnam compiled in the late 19<sup>th</sup> century [12].

**2. The Symbolism of Vietnamese Bronze Drum**  
The bronze-drum patterns decorated with geometric patterns are scenes of daily life and war, animals and birds, boats, and so on. The scenes depict daily life of ancient *Viet* and reflect the artistic talent and mind. The drums were used as musical instruments in festivals, such as prayers for rain, for good harvest and rituals, such as weddings and funerals, as well as command in army. Bronze drums were also used as funerary objects and symbol of power of tribe leaders. Therefore, the symbolisms of bronze drum pattern are the powerful, happiness and well-being.

**3. Classifications of Vietnamese Bronze Drum**  
Bronze-drum patterns are along with purely geometric patterns; cover the vessels in overall design. There are five basic shapes, such as the geometric bronze-drum pattern, the bird bronze-drum pattern, the animal bronze-drum pattern, the boat bronze-drum pattern, the human bronze-drum pattern like Figure 3.

**A. The geometric bronze-drum pattern** is the shining entity located in the centre of the surface of bronze drums. Some scholar have interpreted this as a star, while others have viewed it as the sun [13]. The two most common geometric motifs for bronze-drum patterns are believed to represent clouds and thunder.

**B. The bird bronze-drum pattern** is the most important motifs on the early bronze drums known *Dong Son* drum in Vietnam include various species of birds. The Vietnamese historians believed that it

was the legendary “*lac bird*”, the symbol of the ancient Viet people [14].

C. The animals bronze-drum pattern are also the other animals of ancient Viet such as crocodile, fish, deer, weasel, etc. on the bronze drum’s surface or bronze drum’s body.

D. The boat bronze-drum pattern is another kind of bronze-drum pattern is the motif of a long boat which is very popular decoration on the surface of the *Dong Son* drums.

E. The human bronze-drum pattern is believed that the various motifs on the bronze drum describe the various aspects of the life of the ancient Viet culture of the *Dong Son* age.

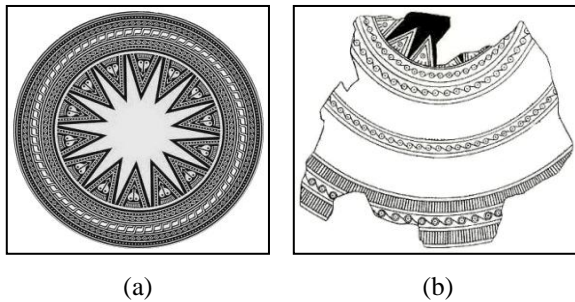


Figure 3: Vietnamese Bronze Drum Pattern  
(Source: (a) National Museum of Vietnamese History  
(b) Vietnam’s Women Museum)

**Development and Design of Necktie Collection**

Bronze-drum patterns are along with purely geometric patterns; cover the vessels in overall design. It is believed to reflect the social and spiritual life of the people who invented and used the drum and thus, can help determine its ethnic and geographical affiliations. The patterns on drums bear a realistic style of geometric patterns and show stilted houses, dancing people, people pounding rice, beating drums and sailing, together with animal and birds. Therefore, it is necessary to develop on necktie design in order to understand clearly about Vietnam.

For development and design of necktie collection, concept, target, colors, color ways, expression, and arrangement of necktie collection were done as the following.

**1. Concept & Target**

Concept and title of this work were set up as “*Spirituality*” with three design intentions are “good color”, “exotic”, and “texture” based on Paris men’s fashion trend. Target of the developed work was created for the man who looks like a typical and rational of cave-dwellers with the age of 30-35. Besides, this person had a decent employment in conditions of freedom, equity, and human security. Based on the concept and target of necktie collection, image map and lifestyle map in Figure 4 were done to express the symbolic meaning of Vietnamese bronze drum.



Figure 4: Image Map (a) and Lifestyle Map (b) of Necktie Collection

**2. Colors & Color Ways**

There are three colours like in Figure 5 chosen to design necktie collection applied Vietnamese bronze drum including orange tone, green tone and pink tone. Green tone is chosen for the major colour for the first design of necktie, and the other tones are created for the colour ways.

**3. Expression & Arrangement**

The theme of necktie collection expresses the historical and contemporary mix, so it is necessary to apply bronze-drum pattern which was modernized by setting up in the all-over arrangement in order to emphasize on the shapes of bronze-drum patterns. Moreover, the attitude of modern gentlemen with the spirituality in his mind is artfully set for a typical and rational style. Therefore, it is suitable for choosing geometric expression for designing necktie collection.



Figure 5: Development and Design of Necktie Collection

**Digital Printing Technology for Necktie Collection**

Digital printing is the method of printing from a digital-based image directly to a variety of media. It usually refers to professional printing where small-run jobs from desktop publishing and other digital sources are printed using large-format. Digital printing technology designed on necktie design applied Vietnamese bronze-drum pattern like in

Figure 6 is the process of applying colour to fabric. Digital printing technique are used for the latest dyeing in order to promote merchantability, productivity and environmentally friendly. Digital textile printing is revolutionizing the textile industry worldwide and offers the opportunity of responding swiftly to customers' changing requirements and achieving diversification.



Figure 6: Necktie Design applied Vietnamese Bronze Drum printed by Digital Printing Technology

**Sensual Test on the Developed Necktie Collection applied Vietnamese Bronze Drum**

Sensual test had done on the developed necktie collection applied Vietnamese bronze drum in order to understand the feelings of the users as well as the consumers' tastes. There are 3 factors for analysing including sensual test on personality factors (STPF), sensual test on aesthetical factors (STAF), and sensual test on functional factors (STFF).

**1. Sensual Test on Personality Factors (STPF)**

The concept of spirituality had the strongly agree from the response data (65/120, 54.2%) in the 5-point of Likert scale. The questionnaires related to STPF reveal that the participants agree with the designer in necktie collection applied Vietnamese traditional patterns with the age (72/120, 60.0%), the target of typical (55/120, 45.8%), typical (49/120, 40.8%), and rational (41/120, 34.2%). The detailed data of STPF are shown in Table 3 and Figure 7 as the following.

Table 3: Factor Analysis of STPF

STPF \ Scale		Likert scale					Total
		1	2	3	4	5	
Age	30-35	3	6	21	72	18	120
Concept	Spirituality	1	3	17	34	65	120
Target (1~3)	Descent	0	5	31	49	35	120
	Typical	3	2	28	55	32	120
	Rational	1	1	37	41	40	120

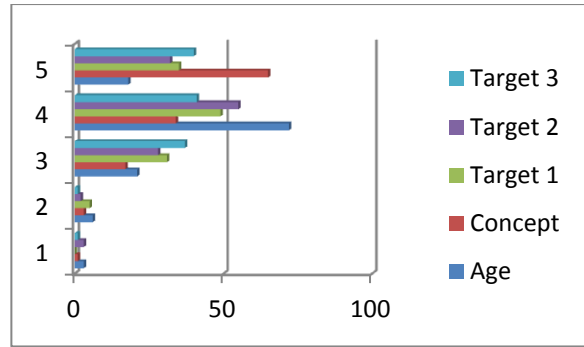


Figure 7: STPF of Necktie Collection

**2. Sensual Test on Functional Factors (STFF)**

The concept of applying Vietnamese bronze-drum pattern on necktie design had the strongly agree from the response data (97/120, 80.8%) in the 5-point of Likert scale, followed by the expression of geometric (82/120, 68.3%) and the all-over arrangement (77/120, 64.2%). The questionnaires related to STFF reveal that the participants agree with the designer in the main colour and colour ways of necktie collection with green tone (41/120, 34.2%), pink tone (49/120, 40.8%), and orange tone (36/120, 30.0%). The detailed data of STFF are shown in Table 4 and Figure 8 as the following.

Table 4: Factor Analysis of STFF

STFF \ Scale		Likert scale					Total
		1	2	3	4	5	
Pattern	Bronze-drum	0	1	7	15	97	120
Main colour	Green	2	3	27	41	47	120
Colour ways	Pink	0	5	31	49	35	120
	Orange	3	7	45	36	29	120
Expression	Geometric	1	2	15	20	82	120
Arrangement	All-over	1	1	18	23	77	120

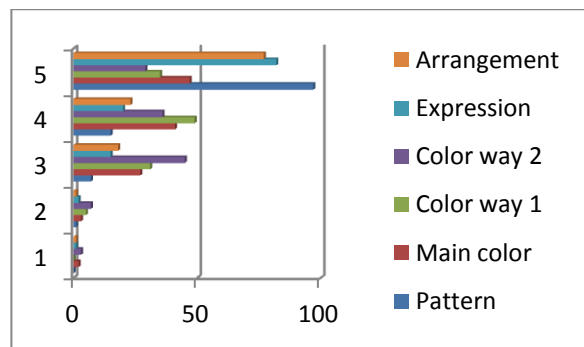


Figure 8: STPF of Necktie Collection

**3. Sensual Test on Aesthetical Factors (STAF)**

The concept of harmony factor (63/120, 52.5%), creative factor (58/120, 48.3%), and attractive factor (47/120, 39.2%) of necktie collection applied Vietnamese traditional patterns had the strongly agree from the response data in the 5-point of Likert

scale. The questionnaires related to STAF reveal that the participants agree with the designer in design with fashionable factor (46/120, 38.3%), then practical factor (45/120, 37.5%) is the neutral response from the participants. The detailed data of STPF are shown in Table 5 and Figure 9 as the following.

Table 5: Factor Analysis of STAF

STPF \ Scale	Likert scale					Total
	1	2	3	4	5	
Harmony	1	3	18	35	63	120
Attractive	2	2	29	40	47	120
Creative	0	2	21	39	58	120
Fashionable	1	1	33	46	39	120
Practical	2	5	45	31	37	120

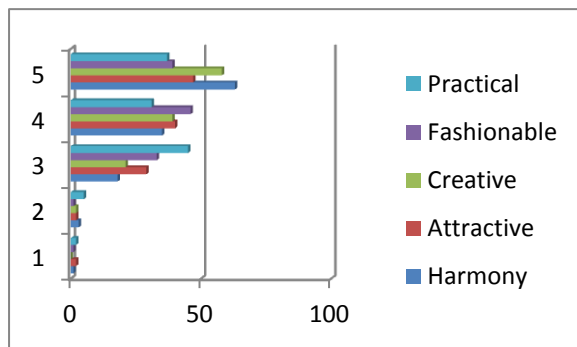


Figure 9: STPF of Necktie Collection

**Conclusion:**

Vietnamese traditional patterns through the dynasties of Vietnamese history are analyzed in five periods of development process. In the Prehistoric times, the geometric patterns were used. In the Bronze and Iron age, the *Dong Son* culture was appeared with the most famous artifacts of bronze drums, probably made for ceremonial purposes, with sophisticated engravings on the surface. Therefore, the traditional bronze-drum pattern is chosen for developing necktie design based on origin, features, symbolism and classifications of them. For modernizing necktie design applied Vietnamese traditional bronze-drum pattern, concept, target, colour, colour ways, expression and arrangement were chosen for developing with the support of digital printing technology.

The sensual test with three factors for analysing including sensual test on personality factors (STPF), sensual test on aesthetical factors (STAF), and sensual test on functional factors (STFF) had done. The results reveal that the participants more interested in preservation of culture heritages by choosing the concept of spirituality with the strongly agree (54.2%). Besides, the functional factor as well as the aesthetical factor was also noticed through the data analysis. The findings showed that the chosen pattern of traditional bronze drum (80.8%) and the

expression of necktie design (68.3%) had the strongly agree from the response data. Last but not least, the highlights of aesthetical factors were proved for harmony factor (52.5%), creative factor (48.3%) and attractive factor (39.2%). Thus, the need of designing traditional patterns on fashion items in order to show the cultural identify of Vietnamese people are necessary and noticed in order to introduce the image of Vietnam to other nations all over the world.

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