

PAPER • OPEN ACCESS

Technological Development of Bamboo for “*Batik*” Stamp in Malaysian Textile Industries

To cite this article: Hamdan Lias *et al* 2020 *IOP Conf. Ser.: Earth Environ. Sci.* **616** 012037

View the [article online](#) for updates and enhancements.

Technological Development of Bamboo for “*Batik*” Stamp in Malaysian Textile Industries

Hamdan Lias¹, Ahmad Rasdan Ismail^{2,3}, Norfadzilah Jusoh³ and Haslinda Abd. Hamid⁴

¹ Faculty of Art and Design, Universiti Teknologi Mara Cawangan Kelantan, 18500 Machang, Kelantan, Malaysia

² Centre for Management of Environment, Occupational Safety and Health (CMeOSH), Universiti Malaysia Kelantan, 16300 Bachok, Kelantan, Malaysia

³ Faculty of Creative Technology & Heritage, Universiti Malaysia Kelantan, 16300 Bachok, Kelantan, Malaysia

⁴ Faculty of Information Management, Universiti Teknologi Mara Kelantan, 18500 Machang, Kelantan, Malaysia

Email: hamdan867@uitm.edu.my

Abstract. Bamboo is a nature plant found in Malaysia and is being used largely in a craft and furniture industry. It is a plant with a trunk, twigs and cross-sections that can naturally create the contemporary and unique design for block *batik*. The main objective of the research stands to study about the application of bamboo as a main component in producing the unique design for block *batik*. History has been revealed that block for *batik* motives are originated from the creation from wood by Haji Che Su in 1914. Then, the wood block has been replaced with copper, steel and zink which are more practical and easily shaped. The transformation of the block takes a long time based on the current demand. Various efforts have been done both by the designer and researcher to produce the block for the *batik* with lower costs, eco-friendly and with unique design. More than that, the research is also to identify and evaluate the proper manufacturing process for bamboo to become as a block batik design as well as the copper and steel. As a result, the use of bamboo as a block for batik has a potential to replace the copper and steel. The product produced using bamboo as a block for *batik* creates unique and contemporary *batik* design and it fulfil the customer demand along with the eco-friendly value.

1. Introduction

Batik industry in Malaysia has been operating since the early 19th century and nowadays, it is significantly contributing to the economy development. *Batik* is one of the unique products of handicraft which is highly appreciated among Malaysians. The evolution or innovation in block production technique based on flora or plants started since the prehistoric time; - ‘*Batik*’ blocks during the prehistoric times were made of bamboos, stones, and then woods. The stone block is not representing the life of stone ages, instead there were *batik* motifs engraved on the stone’s surface, the



blocks were heat up first to certain degrees, dipped into colours, and then were placed on a white piece of fabric. The hot temperature of the stone makes the colours dry faster, not dissolving into other parts of the fabric' [1]. Based on this statement, it is clear that the *Batik* practitioners at that time, innovatively and creatively understand the materials and techniques to produce textile patterns compatible with the current technology at that time. Nature is the closest source in their life as new inspirations required in that period of time. Norlelawaty et al. through her interview with Mr. Kamaruzaman in 2013 stated that, 'In earlier time, Malay community used the young stem of banana plant as the stamp but now the *batik* fabrics are produced through modern equipment's, such as the technological appliance that use computer as a sketching tool to be applied onto the white fabrics' [2]. The evolution of *batik* blocks in Malaysia especially the manufacturing and producing process is progressing along with the current development and contemporary. Malaysia's *batik* industry has been developing and its materials and techniques are also experiencing advancement, encouraging a good competitive environment within industries to produce some uniqueness and originality.

1.1. Batik block

Copper or steel *batik* block as show in figure 1 has been a familiar tool for *batik* processings, printing, or pattern design on white fabric's surface which is common to the *batik* entrepreneurs especially in Malaysia. Prior 20th century, *batik* block was made of woods and then undergo transformation process into copper or steel-based batik block in early 20th century [3]. The problem statement of this study is focusing on the lack of expertise in *batik* block production and making, where *batik* block production requires someone with high skill of craftsmanship in creating *batik* block from selected copper or steel pieces. Some of other aspects that influence this study come from previous research by Mohd Azhar Samin [4], regarding alternative *Batik* in viewing potentials and results in method of *batik* patterns production. He emphasized on the significance of researching new techniques or new exploration in Malaysia *batik* industry for the contemporary batik to provide new and authentic method of pattern design in current *batik* industry [4]. Thus, the main objective of this study is to find other resolutions to design *batik* block pattern based on natural sources. One of the sources is bamboo, which also known as common natural sources that can be harvested from our environment.



(a)



(b)

Figure 1. *Batik* copper block, which is Malaysian Tradition method of making *batik* sarong [5].

1.2. Bamboo

Bamboo is one of the natural sources that can be exploited from our environment and also is widely used in the manufacturing of craft products to interior design products. Based on the Forestry department in peninsular Malaysia [6], bamboo is a type of plant that is easily accessible in Malaysia and can also be found near our own residents. Bamboo is categorized as *monocotyledon* group of

Gramineae family, from grass type. Bamboo also grow and thrive in a moderate weather, semi-tropical climate. It grow better in an open area with good drainage system. Bamboo can be observed in 2 forms of growth forms which are monopodial (single apical meristem) and sympodial (succession of apical meristems). The whole bamboo in Malaysia typically grow in form of sympodial as illustrated in figure 2. It is estimated that there are 59 species of bamboo in peninsular Malaysia with 7 genera which are *Bambusa*, *Dendrocalamus*, *Dinochioa*, *Recemobamboos*, *Schizostachyum*, *Thyrsostachys* and *Gigantochloa* [6].



Figure 2. *Sympodial* bamboo.

Overall, these bamboos have been the source of side and main incomes for some local community. Bamboo handicrafts offer an excellent marketing opportunity [7]. The bamboo structure usually can be recognized by the hollow space in its vertical centre and its vascular cross sections that scattered around its trunk. Its surface gives out marks or motifs that are cylinder or circle in shape, which also become the inspiration for this study in producing contemporary and geometry-based designs. Hence, the main objective of this research is to investigate physically the application of bamboo as main component in designing patterns of *batik* block, as well as experimentation with cutted bamboo trunks for *batik* block to see if the resulted patterns and designs are suitable enough. The pattern design produced from the available selected bamboo structures need to be tested through batik processing method in current industry. As a result, the application of bamboo structure as *batik* block can be new alternative to substitute the usage of copper or steel. Moreover, the outcome of this research could meet the consumer demand in term of modern and contemporary batik pattern design in *batik* craft and textile industry in Malaysia.

2. Problem Statement

Batik industry is one of the valuable Malay craft and art heritages. This legacy has been established for quite a long time with not only possessing high art value but also contributing significantly in economy growth. However, there are still many impediments in its way but manage to keep standing until today. The question regarding *batik* issues is surrounding the progress status and development of the industry in Malaysia especially the east coast area such as Kelantan and Terengganu, where its market sale, processing technique, and materials usage in term of *batik* pattern design are still stagnant. If we look into the supports provided by the government, we can witness such advocacies through agency such as *Perbadanan Kemajuan Kraftangan Malaysia*, which exist to provide many initiatives to increase the production in a formal way by establishing National Craft Institute (Institut Kraf Negara) that offers certificate and diploma exclusively in *Batik* textile and craft, as well as managing a series of workshops for local *batik* entrepreneurs to increase their skills and creativity in *batik* manufacturing industry [8].

Yayasan Budi Penyayang Malaysia have been organising a high prestigious competition known as *Piala Seri Endon* that highlights *batik* design as their centrepiece, now in their 15th edition and has become an aspiration for *batik* makers and fashion designers. Besides introducing some new talents and great *batik* designers towards the development of *batik* industry, Nori Abdullah hoping that *Piala Seri Endon 2017* could discover more genius minds that bring out the innovation and creativity in design production as well as new techniques in fabric design. Importantly, we can see some different approaches being applied. Instead of designing motifs inspired mainly by flora and fauna, the new participants exhibit different patterns that never been seen before. This uniqueness could attract young generations or youths to bring back *Batik* as heritage identity to be used as daily or casual wear. *Yayasan Budi Penyayang Malaysia* keeps on providing the supports in effort to encourage good competitive environment in Malaysia *batik* textile [9].

2.1. Lack of expertise in steel batik block

Block *batik* requires a very high skilled craftsmanship in a block making process (Figure 3) due to its reliance on metal materials such as copper, zinc and iron. In 1950's, candles as a printing tool was introduced by *batik* practitioners in East Coast region especially in Kelantan. Based on Norlelawaty et al. [2], the makers of *batik* block started to use metal pieces such as iron and copper to create the block. The pattern design made by metal is more neat and fine in features. However, the industry of Block *batik* in Malaysia has been regressing because of the lacking in expertise that specialize in the techniques of block production especially metal-based block. For example, there are only three practitioners left in Kelantan who are skillful in *batik* block making [3]. The problem statement of this study is also further supported by previous research done by S. Mahfuz [10], based on his interview with Mr. Mohd Rashid Jusof, a Block *Batik* practitioner who actively involves in Block *Batik* manufacturing since year 1995 until today said;- Block *batik* production requires someone with high skilled craftsmanship who can make *batik* block by shaping the copper or iron pieces that were selected carefully. Furthermore, 62 years old Mr. Zakaria or commonly known as Pok Ya, is the only individual left who has a very high skill in making the *batik* block in Terengganu [10].



Figure 3. Block making process [11].

2.2. Lack of nature-based materials applied in pattern design of block batik in Malaysia

Batik blocks during the prehistoric times were made of bamboos, stones, and then woods. The stone block is not representing the life of stone ages, instead there were *batik* motifs engraved on the stone's surface, the blocks were heat up first to certain degrees, dipped into colors, and then were placed on a white piece of fabric. The hot temperature of the stone makes the color dry faster, not dissolving into other part of the fabric' [1]. Norlelawaty et al. [12] through her interview with Mr. Kamaruzaman in 2013 stated that, 'In previous time, Malay community used the young stem of banana plant as the stamp but now the *batik* fabrics are produced through modern equipment's, such as the technological appliance that use computer as a sketching tool to be applied onto the white fabrics'. However, due to lack of understanding in term of creativity and innovation among *batik* practitioners in Malaysia, nature-based materials from environment are not being applied as a significant tool of nature-inspired *batik* blocks, with the potential to contribute to the design of *batik* block and indirectly position itself as the same level as metal-based *batik* block. Some other aspects that influence this study are based on previous research done by Mohd Azhar Samin [4] regarding the alternative *Batik* in viewing potentials and outcomes in technique of pattern design. He emphasized on the significance of researching new techniques or new exploration in Malaysia *batik* industry for the contemporary *batik* to provide new and authentic method of pattern design in current *batik* industry [4]. Thus, the main objective of this study is to find other resolutions to design *batik* block pattern based on nature sources.

2.3. Batik textile craft industry needs to discover new innovation

Factor that contribute to the problem of *batik* textile issue in Malaysia craft industry is majorly related to the lack of research focusing on the new ideas and innovations in the context of techniques, materials and *batik* production method. This mentioned problems are agreed by Prof. Datuk Dr. Ibrahim Che Omar (2016), stating that nowadays many issues related to *batik* industry are affected by marketing strategy, competition with the modern clothing industries, as well as less in creativity and innovation in producing attractive and exclusive designs. Innovation in equipment's and tools, making process techniques, and pattern design in *batik* can be an inspiration in motivating, building and developing the *batik* industry [13]. 'Research and documentations related to *batik* literatures as well as relevant innovations need to be encouraged and incited so the significant founding's and information can be expanded in effort to establish Malaysia's *batik* at world level' (Tan Sri Dato' Sri Hamad Kam Piah Che Othman, 2017) [14].

2.4. Lack of confidence among the batik practitioners on the potential of bamboo as material in producing batik block

'Society's perception on bamboo as a soft and cheap plant is not relevant anymore because bamboo can be exploited in a productive way' [15]. Bamboo also known to be as some craft product materials by Malaysians and typically belong to rural and small manufacturing industry with low technological equipment's but requires such high skilled workers and craftsmen [15]. Minister of Main Industry, Teresa Kok (2019) plans to explore huge potential of profit in world bamboo market which now reaching to AS\$ 68.8 billion. This effort can be realized by outlining strategic framework to develop upstream and downstream industry of bamboo plantation in Malaysia [16]. Nowadays, there has been an establishment of Malaysian Bamboo Society (MBS) since 5th September 2016 that celebrates government policy, Minister of Main Industry (*Kementerian Industri Utama*) that has vision to strengthened the development of bamboo industry by empowering the innovation and technology through research, development and commercialization as well as leading the bamboo entrepreneurs in any fields to produce competitive and progressive bamboo industry towards TN50 [17].

This study aims to make bamboo from the natural resources around us to be a *batik* block. These bamboo-based batik blocks are used to produce block *batik* patterns in the production of textile *batik*

crafts in Malaysia. Therefore, the main objective of this research is to physically investigate the application of bamboo as a key component in the production of *batik* block product design. Experiment using bamboo poles to cut into *batik* blocks to see and determine the appropriate manufacturing technology process.

The findings of this study point to the issue of lack of manpower in producing *batik* blocks, the production of *batik* blocks requires a skilled craftsman to make *batik* nests made from selected copper or steel sheets and high, heavy and time consuming costs of preparing materials for manufacture steel *batik* block pattern.

3. Results and Discussion

This bamboo *batik* block is a new innovation for *batik* entrepreneurs in Malaysia. It saves you money because bamboo is easy to find, lightweight and easy to use during the printing process. It is able to maintain the balance of the *batik* industry in Malaysia by using materials from natural sources to create a more contemporary and unique *batik* design. The uniqueness of the motifs and patterns created by the process of using this bamboo-based *batik* block depends on the creativity and techniques of coloring and coloring produced by the designers. The resulting series of points, circles, lines and threads are treated using design elements and design principles. This bamboo block is able to produce a simpler, versatile, unique and contemporary design to suit the demands of the international *batik* textile industry. The study also offers cost-effective *batik* companies as well as providing opportunities for local community income earners as the technology of *batik*-based *batik* technology is environmentally friendly.

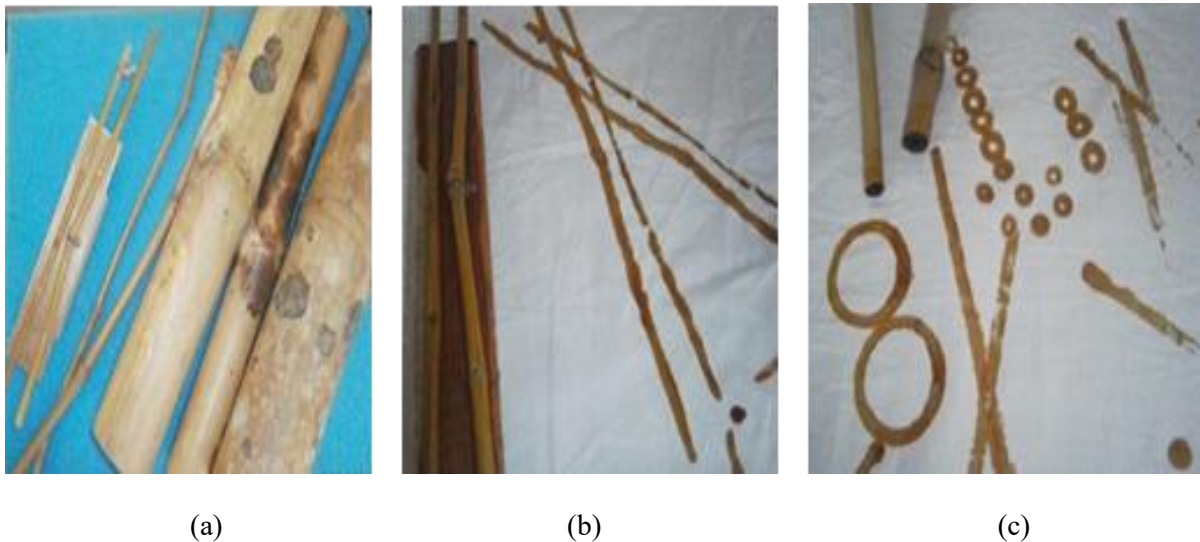


Figure 4. Part of bamboo structures that were selected to be made as *Batik* block in designing patterns through stamping technique.



(a)



(b)

Figure 5. (a) Bamboo, (b) bamboo-based *batik* block.

These bamboo-based *batik* blocks utilize unique bamboo structures such as stems and branches of various sizes are applied into *batik* blocks according to the desired pattern design. The appropriate selection of bamboo is determined by the resistance of the heat and the rate of absorption of heat during the brewing process. Examine the wax application process using *batik* blocks from bamboo on the surface of the fabric and see the effect of the candle after the wax application process and the wax resistance during the dyeing process on some fabric samples as illustrated in figure 6.

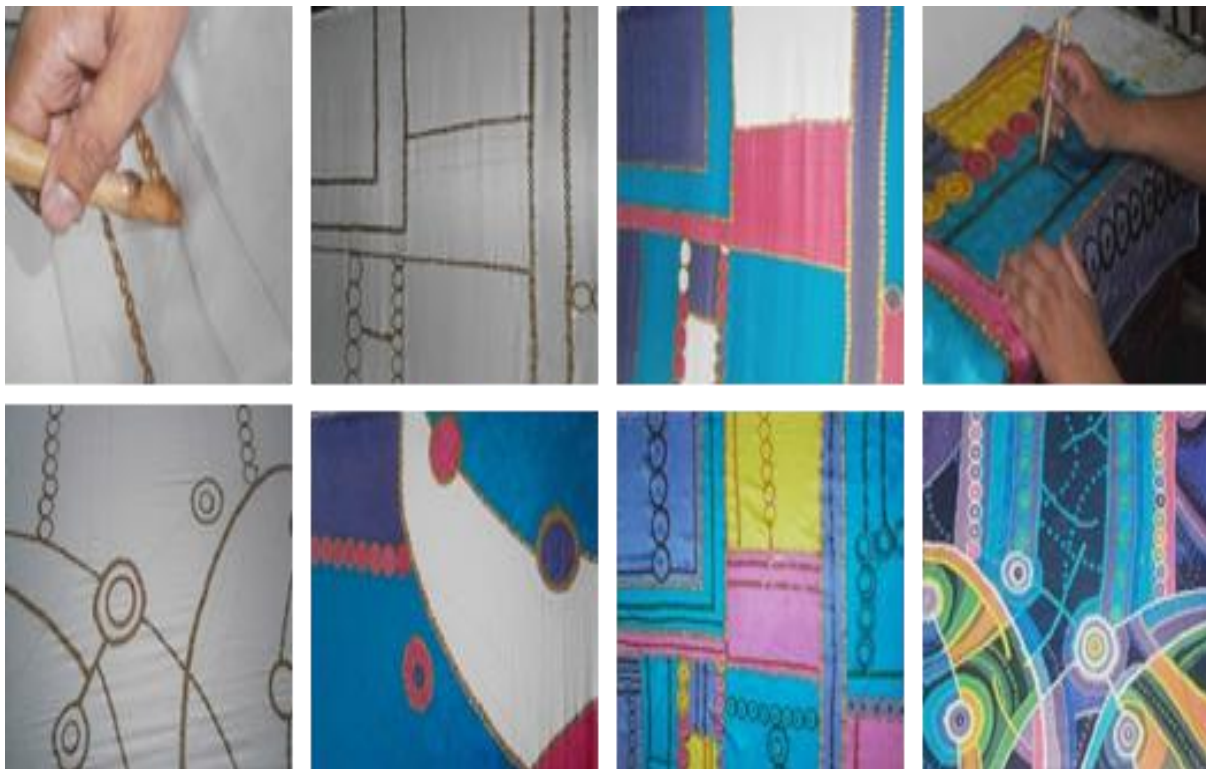


Figure 6. Process of designing pattern of *batik* blocks through stamping technique and colouring.

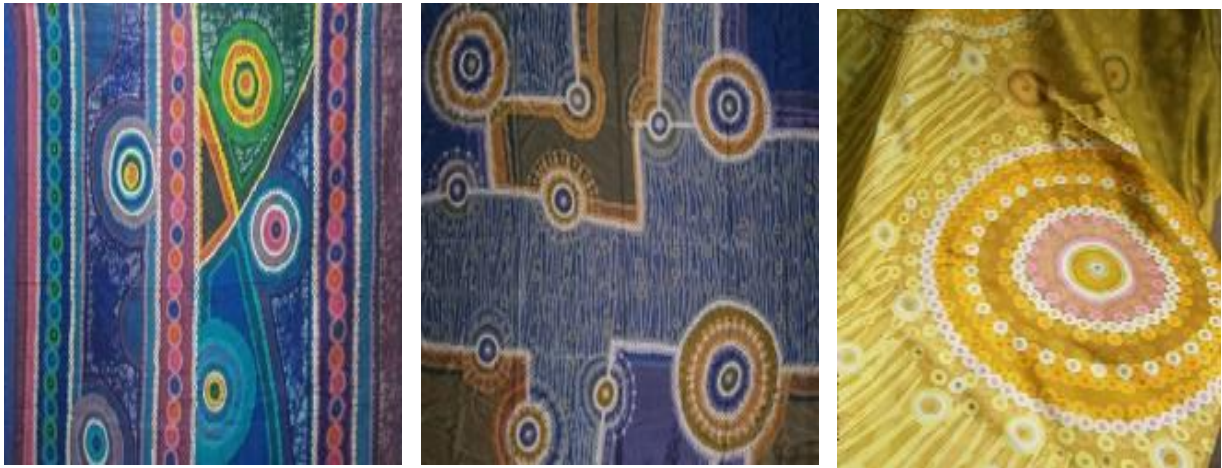


Figure 7. The results of pattern designs of *batik* block through *batik* making process by stamp or impression technique with bamboo as materials.

3.1. Impacts and personal commerce

This *batik* block based *batik* design is the latest study and has never been produced by any *batik* designer in Malaysia or internationally. This design is best represented in the production of craft products, interior decoration and so on in line with the idea of ideas that do not recognize the limits in today's globalized fashion. The artwork should be presented to the nation's creative arts community especially in lifting the *batik* Malaysia to the world stage.

4. Conclusion

As a conclusion, the objectives of the study were achieved. The results show that the bamboo in producing contemporary *batik* design block can provide new insights and knowledge related to the aspects such as history of the *batik*, materials, equipment, manufacturing processes and scientific data. The findings of this research have been very helpful and valuable to the study of textile art, *batik* art practitioners, *batik* block makers, craft industries sourced with natural materials, university students locally and abroad.

5. References

- [1] Aziz A 2006 *Rupa dan Gaya: Busana Melayu* Bangi: Penerbitan Universiti Kebangsaan Malaysia ISBN 967-942-786-2
- [2] Haron N, Ramli Z and Rahman A N S H N 2015 *Evolusi perkembangan blok batik di negeri Kelantan* Prosiding Seminar Antarabangsa Ke-4 Arkeologi, Sejarah dan Budaya di Alam Melayu. 19, p 203
- [3] Haron N, Ramli Z, Rahman A N S H N and Hassan H 2014 *Kajian terhadap penggunaan bahan, teknik pembuatan dan motif pada blok batik* Conference: Arkeologi, Sejarah & Budaya : Prosiding Seminar Antarabangsa Ke-3 Arkeologi, Sejarah & Budaya di Alam Melayu, At Universiti Kebangsaan Malaysia. **30** 358
- [4] Samin A M, Legino R and Kari R 2018 *Alternative Batik - The Potential of Its Outcome and Designing Methods* International Journal of INTI **22**

- [5] *Malaysian Batik Block Print Sarong* 2010 <http://mybatik.org.my/malaysian-batik-block-print-sarong/>
- [6] Jabatan Perhutanan Semenanjung Malaysia 2016 Diakses daripada <https://www.forestry.gov.my/my/perkhidmatan/info-perhutanan/buluh-rotan>
- [7] Soewardikoen W D and Tohir M 2019 Brand Identity of Selaawi Bamboo Handicrafts, *International Journal of Creative Future and Heritage (TENIAT)* **7**(1) 1-10
- [8] Perbadanan Kemajuan Kraftangan Malaysia. Diakses daripada <https://www.kraftangan.gov.my/>
- [9] Batik Guild Magazine 2017 *Interview with Tun Abdullah Ahmad Badawi, Patron of Malaysia Batik: Crafted for the World Movement* (Yayasan Budi Penyayang Malaysia)
- [10] Mahfuz S 2019 *Pengusaha Batik Blok Buatan Terengganu Hampir Pupus* <https://www.benarnews.org/malay/galeri-foto/my-batik-190103-01032019150722.html>
- [11] Berbaloi di Terengganu Kita 2010 <http://berbaloiditerengganukita.blogspot.com/2010/09/melawat-ke-noor-arfa-craft-complex.htm>
- [12] Haron N, Ramli Z, Rahman A N S H N and Hassan H 2014 *Evolusi Penggunaan Blok dan Teknik Pembuatan Batik di Malaysia: Satu Pengenalan* In book: *Isu-isu Sains & Teknologi Di Alam Melayu*, Chapter: 20, p 254-270
- [13] Minggu Fiesta Batik Malaysia 2016 Universiti Malaysia Kelantan <http://www.astroawani.com/gaya-hidup/universiti-malaysia-kelantan-anjur-minggu-fiesta-batik-malaysia-114015>
- [14] Minggu Fiesta Batik 2017 Berlangsung Meriah anjuran Universiti Malaysia Kelantan <https://www.umk.edu.my/index.php/ms/penerbitan/berita-terkini/4-latest-news/43-minggu-fiesta-batik-2017-umk-berlangsung-meriah>
- [15] Syah A S A F 2013 *Aplikasi buluh dalam reka bentuk aksesori dalaman kereta* Article Bamboo 24
- [16] Wan C A 2019 *Malaysia serius teroka potensi buluh untuk eksport* <https://www.bharian.com.my/bisnes/lain-lain/2019/04/556321/malaysia-serius-teroka-potensi-buluh-untuk-eksport>. Berita Harian.
- [17] Malaysian Bamboo Society. Diakses daripada <https://www.malaysianbamboosociety.org/>