AN INNOVATIVE MODEL FOR INTEGRATING BIODIVERSITY AND HERITAGE INTO DESIGNING VISUAL IDENTITY OF NATIONAL PARKS: A CASE STUDY OF ALSOUDAH PARK, KSA

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ABSTRACT:

The integration of biodiversity and heritage features into the visual design process of a national park is proposed to be an essential need to improve the park's image, which will positively affect the attraction and comfort of tourists and the local community. There is a lack of energetic approach that assists the designer to integrate the biodiversity features in parallel into the design process. There is also a clear demand to know how to select them and integrate them into the design process. Therefore, the main challenge of this research is to propose an innovative model – visual identity design of national park (VIDNP) – that integrates biodiversity features into the design of the national park's identity. The VIDNP is based on the design thinking process of the brand as well as biodiversity and heritage features. Generally, our studies build knowledge and apply it relatively to Alsoudah Park through selecting the main elements and biodiversity features that can be implemented in the future.

KEYWORDS: Park Identity Model and Process, Biodiversity and Heritage Features, Visual Identity, Park Attributes, Alsoudah Park.

نموذج مبتكر لدمج التنوع الحيوي والتراثي في تصميم الهوية المرئية للمنتزهات الوطنية : دراسة حالة منتزه السوده بالمملكة العربية السعودية

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الملخص:

مقترح دمج التنوع البيولوجي وميزات التراث في عملية التصميم المرئي للمتنزه الوطني ليكونا مكونين أساسيين لتحسين صورة المنتزه ، مما سيؤثر بشكل إيجابي على جذب وراحة السياح والمجتمع المحلي. حيث هناك نقص في النهج النشط الذي يساعد المصمم على دمج ميزات التنوع البيولوجي بالتوازي في عملية التصميم. هناك أيضًا طلب واضح لمعرفة آلية وكيفية الاختيار والدمج في عملية التصميم. لذلك ، يتمثل التحدي الرئيسي لهذا البحث في اقتراح نموذج مبتكر لتصميم الهوية المرئية للمتنزه الوطني الذي يدمج ميزات التنوع البيولوجي في تصميم هوية المنتزه الوطني. يعتمد النموذج والنهج على نهج عملية التفكير في تصميم العلامة التجارية بالإضافة إلى تضمين ميزات التنوع البيولوجي والتراث. بشكل عام ، تقوم دراساتنا ببناء المعرفة وتطبيقها نسبيًا على حديقة السودة من خلال اختيار العناصر الرئيسية وميزات التنوع البيولوجي التي يمكن تنفيذها في المستقبل.

الكلمات المفتاحية: نموذج وعملية هوية المنتزهات، ميزات التنوع البيولوجي والتراث ، الهوية المرئية ، سمات المتنزهات، منتزه السودة.

1. INTRODUCTION

The national parks in the Kingdom of Saudi Arabia are diverse and distinctive. Their numbers have been increased to over 200 (The Ministry of Environment, Water and Agriculture - National Park Department, 2019). In addition to that, The Ministry of Environment, Water and Agriculture (2016) listed the most famous national parks, which are Asir National Park, Alsoudah National Park, Alahsa National Park, Onizah National Park, Taif National Park, Mushar National Park and Hail and Sead National Park. In addition to that, the importance of developing and qualifying national parks was mentioned by The Ministry of Environment, Water and Agriculture (2018). The national parks were classified as one of the main pillars that have to be considered in future, for two reasons: to improve the quality of life for humans, as well as to achieve economic return on investment to ensure their future operation. This will include constructing its infrastructure and facilities. The park facilities, such as visitor centers, bathrooms, gates and paths, require designs in line with nature of national importance. These elements can add value to the parks as attractive points as one way to take into account the image of the park elements. This means visual identity during the design process. Some of the national park elements have been denied at different stages of time. Furthermore, there was not a clear code or legislation related to park identity. Moreover, all previous attempts to establish a visual identity were aimed at activating the heritage form of the components, hence the need to find new dimensions to develop the visual identity of the parks in a unique and distinguished style. The research problem is to develop a new concept to achieve a unique identity for the national parks. The aim of the research is to design a new conceptual model and design process for the identity of the national parks through integration with the surrounding biodiversity.

2. THE RESEARCH OBJECTIVES AND QUESTIONS

The objectives of the research are:

- To define the identity of the national parks
- To study the difference between the national parks and their identity
- To determine the main elements which define identity of the national parks
- To study the challenges of applying the visual identity of the national parks
- To develop a conceptual model to have a unique visual identity for the national parks
- To develop a design process based on the new conceptual model through integration of biodiversity as part and parcel of the design consideration
- To establish the integration of biodiversity within visual awareness though a case study.

These objectives are to answer the main questions of this research: How to merge heritage style and biodiversity in an integrated model development for national park identity? Will this merging allocate a new scope for the visual identity of the national park for designers?

3. THE RESEARCH METHODOLOGY

The methodology of this research is based on a literature review of identity, national park, brand design process and archetype modeling. The literature shows that there is no coherent model that integrates biodiversity and heritage with the visual identity of national parks. Thus, the literature was categorized according to the design thinking process for developing a logical process for integration of both biodiversity and heritage into the visual identity of national parks. The researchers have identified the main pillars of biodiversity with heritage style to be the main core of developing the visual identity. In addition to that, the determinants of appropriate features for the design of the identity of national parks are biodiversity scientists and designers, on the one hand, and the targeted community and tourists on the other. The validation of this model will be testing it in a real-world design project.

4. LITERATURE REVIEW

4.1. What is identity?

As stated in the introduction, identity depends on the local heritage style. Radstrom (2011) said that identity is reliant on the other place attributes such as traditions and culture, whether these attributes are tangible or intangible. It is said that a determinant of some paths of our existence is cultural identity (Brockmeier, 2001), as cited by Smagorinsky et al. (2005). Some people depend for their identity on their connection to natural items such as trees, mountains, pets, and location (Clayton and Opotow, 2003). In terms of space, identity is a group of symbols that include functional and cultural expressions (Torabi and Brahman, 2013). In addition to that, it is indicated that identity can incorporate some physical elements such as decoration or facade, or activities such as practices. Moreover, identity can be a sign of historical features, the past, nature, and social aspects. Gieseking et al. (2014) stated that "Place identity is a core concept in the field of environmental psychology which proposes that identities form in relation to environments", and psychology is one of the main pillars that has to be considered during the design process. For this reason, the park design has different types of elements which can be affected positively or negatively and lead to visual confusion for many reasons, for example the lack of complete visualization of the park. Furthermore, construction and maintenance are planned and undertaken randomly. For these reasons, there is a deficiency in the concept of visual identity. Therefore, it has become urgent to establish a specialized concept of visual identity in national parks.

4.2. The challenges of applying identity

Visual identity can play a clear role during the design process. In addition to that, considering material selection and future maintenance during the design process can lead to achieving a unique brand for national parks. However, there are some challenges, as shown by Gauli (2014):

- Lack of practice and understanding visual identity
- The complexity of the concept of identity
- The lack of funds to keep, apply, control and develop it
- Dealing with accelerated development
- Facing society, politics, time and media
- Matching the reality of the site
- Integration of the local environment to the design process
- Understanding the difference between the concepts of garden and national park
- Preparing society for the design philosophy
- Interaction of authority worker maintenance, such as labor
- Lack of social engagement can make a clear difference to the philosophy of decision-makers

Addressing the challenges has to be part and parcel of the design process, as well as one of the engines to develop the visual identity of the national parks. Some designers and individuals do not clearly distinguish between parks and gardens. For this reason, part of this research is to review and clarify the difference between them in terms of their definitions and attributes, as will be introduced in the following section.

4.3. An analytical view of parks

There are several differences between gardens and parks, though they can be confused as some people do not distinguish between them well. For this reason, there is a clear need to investigate the similarities and differences between them, which will help to frame the concept of the visual identity for the national parks. In terms of the definition, "A garden is an outdoor planned space that is set aside for cultivation of plants and flowers". Furthermore, garden features can comprise natural or artificial materials, fountains, ponds, waterfalls or creeks. A park is defined as "a natural, artificial or semi-natural public area set aside for ornamental or recreational purposes". There are similarities between gardens and parks in terms of planting and flowers, used for ornamentation and requiring proper planning to meet their purpose (Kungu, 2018). There are several features of gardens, which include being a piece of land that includes flowers and plants, generally of small size. Furthermore, the

garden is a public area with decoration which includes open-air eating and drinking places (entertainment places) (Merriam-Webster, 2020). Parks are defined (Collins, 2020) by features such as large area, protected by government, and natural beauty. They can include animals, and can be visited by tourists and local people. Some definitions indicated that parks can be ski resorts (Collins, 2020), while some mention that parks can include scientific and historical educational opportunities for visitors (IUCN, 2015). They are a source of inspiration, as extracted from the definitions of parks as shown in Table 1. These symbols show to what extent parks touch society's needs, as well as having different features.

Table 1. Definitions

No	Garden Definitions	Reference
1	"A plot of ground where herbs, fruits, flowers, or vegetables are cultivated"	(Merriam-Webster, 2020)
2	"A rich well-cultivated region"	(Merriam-Webster, 2020)
3	"A container (such as a window box) planted with usually a variety of small plants"	(Merriam-Webster, 2020)
4	"A public recreation area or park usually ornamented with plants and trees botanical garden"	(Merriam-Webster, 2020)
5	"An open-air eating or drinking place"	(Merriam-Webster, 2020)
6	"A large hall for public entertainment"	(Merriam-Webster, 2020)
No	Park Definitions	Reference
1	"A national park is a large area of land which is protected by the government because of its natural beauty, plants, or animals, and which the public can usually visit."	(Collins, 2020)
2	"A ski resort in New Zealand"	(Collins, 2020)
3	"An area of scenic beauty, historical and scientific interest, etc. maintained and preserved by the federal government for the public to visit"	(Collins, 2020)
4	"Large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities."	(IUCN, 2015)

Based on the literature review, which gives us a clear understanding about national parks and identity, a national park can be defined as an ecological park which is predominantly spontaneously natural and is rich in biodiversity. Humans only interfere with its development in a simplified and limited way. Its area can range between a couple of square miles and several thousand square miles. In terms of identity, one of the definitions mentioned that its identity can be linked to the surrounding environment. However, making features of biodiversity to be a principle for designing the visual identity was not obvious. Therefore, Table 2 summarizes the main attributes of both garden and park. However, some of the attributes of the park, such as material, type and constituent, have to be considered when the designer is thinking about the visual identity of the national park. This gives us an essential need to develop a special conceptual model to design a visual identity of a national park. In addition to that, a clear approach will be a guide process for the designer. This leads to the development of a conceptual model and design, which is called visual identity design of national park model, which will be explained in the following sections.

Table 2. Comparison of Garden and Park Attributes

Attributes	Garden	Park	Reference
Outdoor	Planned	Planned	(Kungu, 2018)
Planting	Plants and flowers, plant size small	Plants and flowers	(Kungu, 2018)
Material	Fountains, ponds, waterfalls and creeks	Walking and biking paths. Picnics and barbecues, accommodation, hiking	(Kungu, 2018)
Type	Private	Public	(Merriam-Webster, 2020)
Use	Food consumption ornamental	Recreation, beauty conservation	(Kungu, 2018)
Control	Private owners	Federal Agencies, State Agency or Local Agency	(Kungu, 2018)
Constituent	Plants and flowers	Additional recreational facilities	(Kungu, 2018)
Size	Small to medium in size	Medium to large in size: a couple of square miles to several thousand square miles	(Kungu, 2018)
Beauty	Artificial	Natural	(Merriam-Webster, 2020)
Public visit	Always visit	Usually visit	(Merriam-Webster, 2020)
Interest	Social	Historical and scientist, social	(Merriam-Webster, 2020)

5. VISUAL IDENTITY DESIGN OF NATIONAL PARK MODEL (VIDNP)

The suggested VIDNP is illustrated in Figure 1. The model is defined as "a tactic that clusters biodiversity features and heritage style, to form the identity of national park elements at the main core of the design process, as well as to develop the harmony and an attractive identity which attracts local residents, scientists and tourists". As illustrated in Figure 1, the conceptual model comprises three combined process. This will be described in the following sections.

5.1. The main core of the VIDNP model

There is a clear demand to rethink the philosophy of identity in national parks; the diversity of visible elements of a brand, such as its color, shape, size, etc. which captures and conveys the symbolic meaning of the brand. It expresses the values and ambitions of a brand and its characteristics (Business Concepts Team of Mbaskool, 2020). Visual identity expresses the characteristics of the design parts. For this reason, visual identity can be an interface of a brand, machine, building, design or city. National park identity is one of the main factors that has to be considered during the master plan design and design elements.

The designer looks to the visual identity design of national parks in terms of the architectural styles or local traditional buildings, which is the local heritage style (LHS), which is the main pillar of the identity design as apparent in the VIDNP model. The second pillar is the biodiversity features, highlighting the most prominent birds (Bio-F-1), animals (Bio-F-2) and plants (Bio-F-3). The latest pillar is the dimension that can give us a different way of thinking about national parks' identity and image. This leads us to the need to identify stakeholders and decision-makers, as will be seen in the next section.
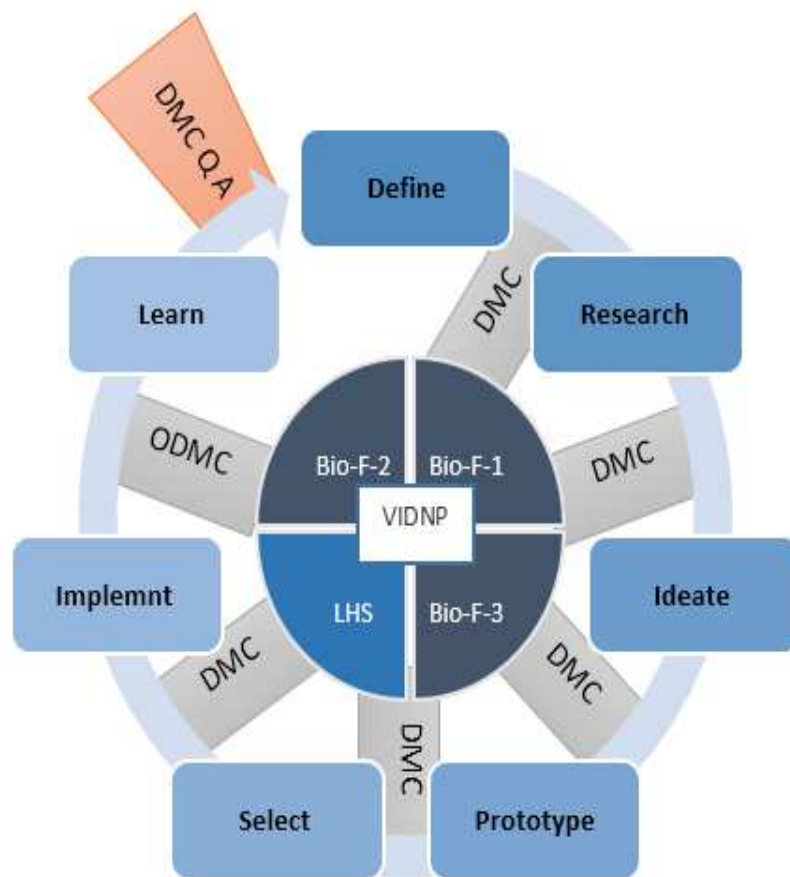
Figure 1: VIDNP

a. Decision-making committee (DMC)

The DMC can be classed as the engine of the success of the new conceptual model, especially if there are two pillars – heritage style and biodiversity features – which will demand a team which can lead to the main aim of this research. The main pole of the committee is the designers. Furthermore, biodiversity scientists and society can be among the decision-makers. Biodiversity scientists can help the designer to choose and describe the most famous plants, animals and birds as well as their features, proportions, and natural dimensions. The society is the neutral party in the evaluation. It plays a clear role in forming the visual identity during the life cycle of the projects, which will appear through the following process.

b. VIDNP design process:

As introduced above, visual identity can play a clear role during the design process. Based on these challenges, to make the national park an attractive place for the visitor is not an easy task. The rapid and steady development in the concepts and techniques of visual identity can lead to a decrease in this view. The main challenge is how to make it more sustainable and renewable, as well as being a distinctive new brand. The design of the visual identity process adopted from Ambrose and Harris (2010) is shown in Table 3, and appears in a development manner in Appendix (A) at the end of the research. For this reason, it can be developed through a special process for thinking about the visual identity of the national parks, as the following model is based on design thinking process classification with more details. In addition to that, thinking about some attributes can be extracted and matched from Butler (2017) which will be described within the design process, especially in the selection stage.

Table 3. Design thinking process

| Design Process	Description	National Park
Define	What is the problem?	Looking for a unique identity
Research	History and background	Gathering the information of attributes and key elements of national parks
Ideate	Creating solutions	Integration of the biodiversity features to VIDNP
Prototype	Thinking of alternative solutions before the final submission	Apply the features to the obvious components of national parks, such as facade, interior wall, main gate
Select	Choose the suitable solution by revising all proposed solutions	Choose the suitable design style through several criteria
Implement	Develop the design and submit	Apply it to the real project
Learn	The feedback that can be helped in the future process	Feedback: Assessment of the trial based on the local community and tourists

1. Define:

A national park is a place which includes several components which can be attractive points for visitors. For this reason, thinking of designing a unique identity that matches local community and tourist wishes is an essential demand. Therefore, this will have a great impact on their identification and acceptance. Alsoudah as a national park is one of the icons of the Asir region and attracts many local and foreign tourists. A case study to assess its current status and how it could be affected by biodiversity features is, at this stage, the starting point of the DMC work.

2. RESEARCH

Usually when deciding to start thinking about the identity of the national park, the first thing is to think about the current status. What are the current components of the park? Based on that, DMC starts to gather the information to develop the future image before studying the visual identity. In the current status of the Alsoudah Park, there are six main components that can be taken into account in thinking about the visual identity. These are outdoor furniture, the main gate, toilets, prayer space, shelters, and street light as shown in Figures 2, 3, 4, 5, 6 and 7.

Figure 2: Outdoor furniture
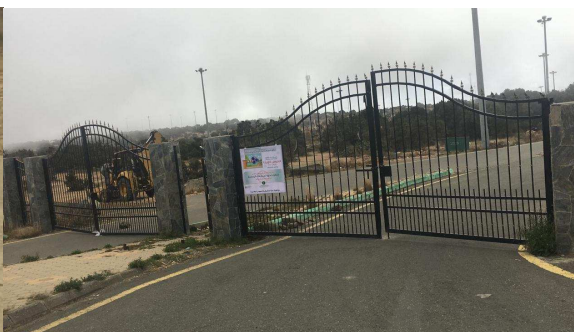
Figure 3: The main gate

Figure 4: Toilets

Figure 5: The prayer space

Figure 6: Street light	**Figure 7: National park shelter**

3.   IDEATE

The main idea of the visual identity has to be sustainability for the original components of the national park. The first sketches have to be abstracts of the new trends which show the biodiversity as related to the most prominent birds, animals and plants selected in Alsoudah national park, as shown in Table 4, on the one hand. On the other hand, they should also feature the heritage line based on local materials and traditional style, some features of which appear on the toilet building facade. These candidates' concepts can lead to complicated ideas and strong sense. One or two of them can be selected in parallel with heritage style or mixing their features together, as shown in the five routes in Appendix A. After nominating the most suitable and harmonious options, the DCM should apply them on the main elements as explained in the following part.
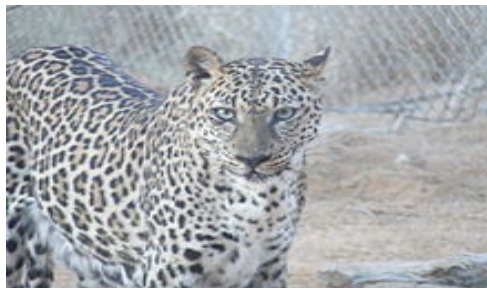

Figure 8: A1-[18-19]	**Figure 9: A2-[20]**

Table 4. The most prominent biodiversity features

The Most Prominent Animals Features	
A1	The Arabian leopard furs have a variety of characteristics, ranging from golden, dark brown or gray to pale, scratch and carved with flowers . In addition to that, its length ranges from 182 to 203 cm (Spalton and Al Hikmani, 2006; Albouq, 2020) as shown in Fig. 8.
A2	Edmy's antelope is small and the maximum length is one meter. As for the color, it is usually dark brown, and it is considered a means of disguise. There are brown lines along its face, as well as a dark brown line on the waist, which separates the abdomen and back. Also, its horns are characterized by rings (Tabishat, 2015) as shown in Fig. 9.
A3	The color of Nubian ibexes is light tan with a white underbelly; the back down of the male has a dark brown stripe and its length is 1 meter (Kingdon et al., 2013), as shown in Fig. 10.
The Most Prominent Birds Features	
B1	The Asir magpie is distinguished by two colors, dark black and white (Al-Hussein, 2019) and as shown in Fig. 11.
B2	The partridge has a bluish-gray color, red beak and legs, white face, a black collar extending between the eyes and the bottom of the neck and vivid feathers. Its sides are striped with different colors, it has a gray and black chest, and its bottom color is orange (Albariia, 2017) as shown in Fig. 12.
B3	The griffon vulture can be described as having a white head, brown feathers and black wings (Abdul Wahab, 2014), as shown in Fig. 13.
The Most Prominent Plants Features	
C1	The juniper tree is evergreen (Al-Abadi, 2017), as shown in Fig. 14.
C2	Wild olive is evergreen (Kabil, 2016), as shown in Fig. 15.
C3	Adenium is a tree which has two colors: pink or crimson for the flowers, and white for the trunk (Eoshen, 2011), as shown in Fig. 16.

Figure 10: A3 –[21]   **Figure 11: B1-[22]**

Figure 12: B2-[23]   **Figure 13: B3-[24]**

Figure 14: C1 -[25]   **Figure 15: C2-[26]**

Figure 16: C3-[27]

4.   PROTOTYPE

Five different design ideas can be used to design the visual identity of the components of the national parks. The main element which can be used for testing is the elevation of the building and the main gate. These two elements can give a first impression for the visitor and tourist. The five routes are heritage style and features of the most prominent birds, plants, animals, and combining two or more routes. All these ideas have to be presented to be discussed by the DMC for each option before the decision.

5.   SELECT

The suitable choice has to be refined through different criteria which are selected based on the visual identity of the brand, as illustrated in Table 5, such as the symbol, a never-ending shape, meeting the enjoyable visitor demand, sustainability, the sculptural and contoured form, the original colour, strength and harmony between the elements. After all these choices and refinements, the final decision will be made by the DCM.

6.   IMPLEMENT

The texture and style features on facade and design elements of the national parks are based on the DCM decision in terms of the design, colour selection and texture of the heritage and biodiversity styles. After this stage, the role of the DCM has to be as an observer.

7.   LEARN

During the design process, the designer notices the local community and tourist demands. This may help rationalize experiences and anticipate expectations by reading the final visitors' needs. In addition to that, as shown in Table 5, the visual identity has to be flexible and easy to develop. For this reason, the DCM has to assess the visual identity quarterly each year. Furthermore, when there is any maintenance of the national park that relates to the visual identity, its effect on the whole image has to be checked. This will reflect positively on identity sustainability.

Table 5. The principles of assessing visual identity design

The Components of Assessing Brand Identity			VIDNP
Reference (Butler, 2017)			Counterpart in VIDNP
1	Logo	Mark, core shapes	The main sign of the main gate of the national park
2	Colors	Choose the color	Selecting the color based on heritage style color and based on biodiversity choice colors
3	Typography	Cohesive visual language	Harmony between the design elements to have a complete image
4	Design system	Enjoyable experience Consistent and cohesive presentation	VIDNP has to be enjoyable for the tourist, perhaps through the sequence and interconnection between the elements of the park
5	Photography	Visual treatments to select and appreciate	Thinking of the final view and the whole image of the national park
6	Illustration	A cohesive and uniform language to avoid clashing styles	Coherence of visual identity style
7	Iconography	Mixed art and science, so has to be clear	Symbolism of national park
8	Visualization	Clarity and comprehension, aesthetic appeal	Attraction to national park
9	Determination	Distinct Memorable Scalable and flexible Cohesive Easy to apply	Distinguished identity Impressive identity Flexible identity Interconnected visual identity design elements Ease of implementation

6. DISCUSSION

The design thinking process that is used in brand identity design has given positive results in integrating design principles such as form and colours into trials of brand identity that occur in the market currently. This process is adopted in the visual identity design of national parks. It will transfigure the visual identity sustainability agenda. Visual identity is an approach that leads to improving the national park image. This is through the linkage between the national park elements and the surrounding environment. The proposed model and design process can help the designer to maximize the acceptance level of tourists and the local community. This will be through decreasing visual pollution and making it more closely related to the surrounding environment, and stemming from it. Integration of biodiversity features and local heritage features with design elements in a process, as suggested in the present study, can lead to enhancing the visual identity acceptance. The VIDNP model and process will make a clear impact on the visual identity of the national park. Also, the extracted features of the biodiversity and the design principles will make an additional impact. This concept will be an inspiration to the designers and decision-makers to review the concept of visual identity in national parks. Also, the inclusion of wildlife experts within the decision-making committee in the identification and the selection stages of appropriate biological diversity and assessment will have significant impact.

7. CONCLUSION

Biodiversity, heritage features and design process are the main core of the VIDNP conceptual model. This model has considered the features of biodiversity and heritage as an aspiration to design and develop the visual identity of national parks. The conceptual model will help the designers to create a sustainable, unique identity. These measurements, principles, determinants and processes lead to high acceptance of visual identity and meet the ambitions of the local community and tourists. This research can go a long way to build many trends in this energetic practice, as well as research. In future research, these principles will be implemented on national park design and can be applied in real projects to assess the

feedback of its feasibility. Also, it will be extended to develop an assessment tool for designers to assess to what extent they have met the visual identity principles.
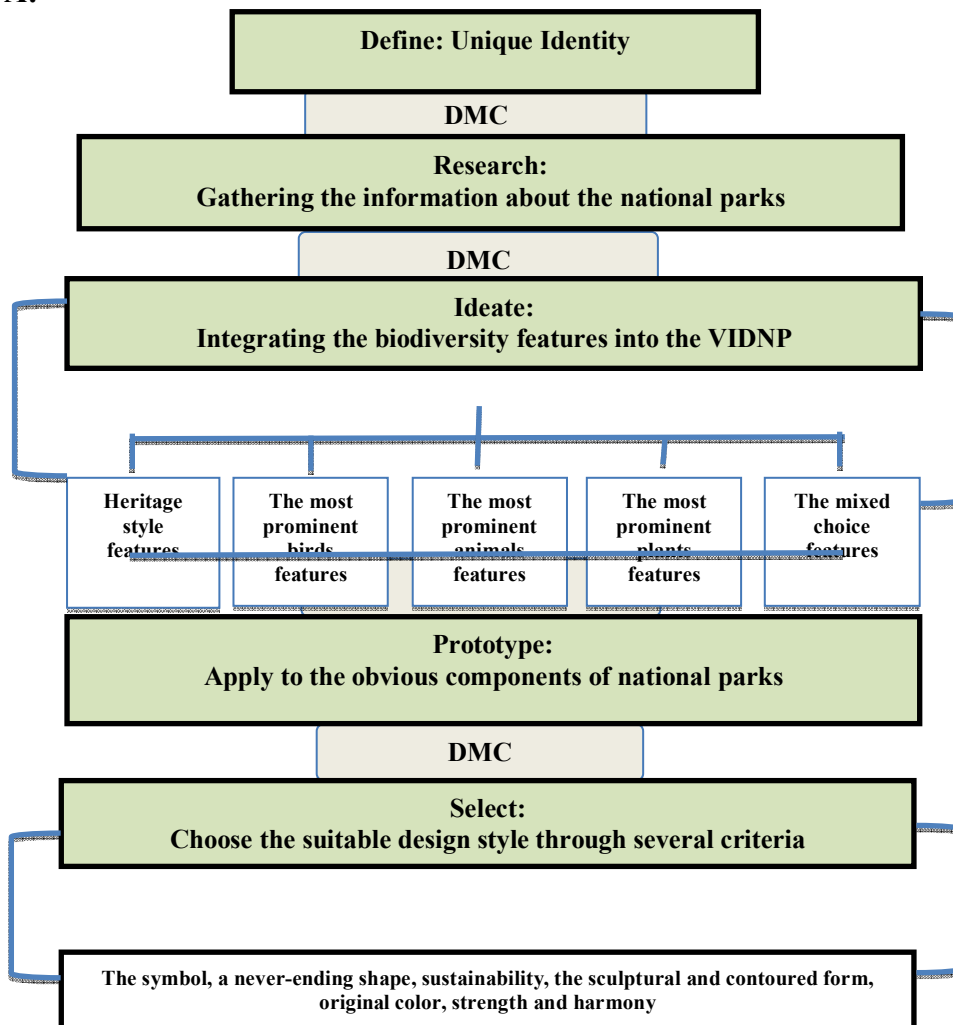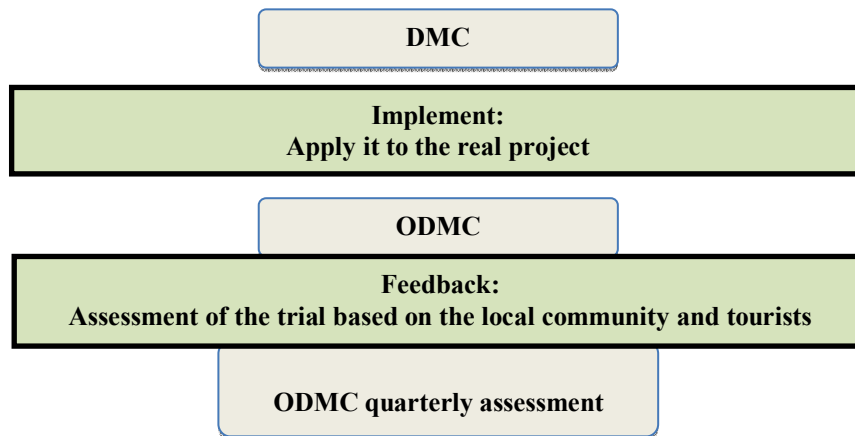
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Appendix A:

DMC

**Implement:
Apply it to the real project**

ODMC

**Feedback:
Assessment of the trial based on the local community and tourists**

ODMC quarterly assessment

Appendix A: VIDNP Design Process