



**EFFECTIVENESS OF INTERPRETIVE EXHIBITS IN INFLUENCING
STUDENTS' INTENTION IN BIRDWATCHING ACTIVITY AT A BIRD
INTERPRETIVE CENTER, FRASER'S HILL, PAHANG, MALAYSIA**

By

NURAAIN AMALINA BINTI MOKHLI

**Thesis Submitted to the School of Graduate Studies, Universiti Putra
Malaysia, in Fulfilment of the Requirements for the Degree of
Master of Science**

November 2022

FPAS 2022 24

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in
fulfilment of the requirement for the Degree of Master of Science

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NURAIN AMALINA BINTI MOKHLI

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Chair : Associate Professor Manohar a/l Mariapan, PhD
Faculty : Forestry and Environment

Birdwatching has a significant contribution to the sustainability of wildlife and natural resources. In efforts to promote such activity, managers are encouraged to employ non-personal interpretation as an alternative to influence participants' affect and intention to participate in such activity. Bird Interpretive Centre, Fraser's Hill, operates to provide educational information on birds and birdwatching activity. However, the exhibits at the centre lacked the interpretive elements and the behavioural objective or the 'call for action' that could convey important messages to visitors and influence their affect and behavioural intention. Thus, it hampered the opportunity for the management to promote birdwatching activity through the available exhibits.

The present study sought to evaluate the effectiveness of the interpretive exhibit in influencing university students' intention to participate in birdwatching activity at the Bird Interpretive Center, Fraser's Hill. The elicitations of students' salient beliefs and affective responses were used as a basis to design the interpretive exhibit. A quasi-experimental design was utilised using the control and intervention groups to compare the effectiveness of the non-interpretive and interpretive exhibits, respectively. Questionnaire data were collected from 119 first-year students from the Faculty of Forestry and Environment, Universiti Putra Malaysia.

The findings indicated significant differences between the mean scores of the control and intervention groups for the affective responses, intentions and design evaluation, except for the birds' sound construct in the affective responses and the title and contents construct in the design evaluation. The intervention group

showed significantly higher mean scores than the control group for all other affective, intention, and design constructs. Besides, a regression test showed a significant association between affect and intention. The intervention group exhibited a more significant predictive value of affect on the intention of 'plan' (47.3% of variance explained) and 'will definitely' (58.3% of variance explained). However, the control group contributed a higher predictivity of affect on the intention of 'intend' (54.7% of variance explained). Results of each affective response construct also showed that students' affective responses towards birdwatching strongly predicted their intention for all three constructs (intend, plan, will definitely). In contrast, their affective responses towards birds' special abilities showed the weakest relation with the intention constructs of plan and "will definitely" and no significant association with the 'intend' construct.

The study has shown that the new interpretive intervention exhibit is more effective in influencing students' affect and intention to participate in birdwatching compared to the existing non-interpretive exhibit at the Bird Interpretive Centre. These findings indicated that the interpretive exhibit developed in this study successfully delivers the messages and the 'call for action' and shapes students' affect and intention based on the objective of the interpretive exhibit.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia
sebagai memenuhi keperluan untuk Ijazah Master Sains

**KEBERKESANAN PAMERAN INTERPRETASI DALAM MEMPENGARUHI
NIAT PELAJAR DALAM AKTIVITI MEMERHATI BURUNG DI PUSAT
INTERPRETASI BURUNG, BUKIT FRASER, PAHANG, MALAYSIA**

oleh

NURAIN AMALINA BINTI MOKHLI

November 2022

Pengerusi : Profesor Madya Manohar a/l Mariapan, PhD
Fakulti : Perhutanan dan Alam Sekitar

Kegiatan memerhati burung merupakan satu aktiviti yang menyumbang kepada kemampanan hidupan liar dan sumber semula jadi. Dalam usaha mempromosikan aktiviti tersebut, pihak pengurusan digalakkan untuk menggunakan kaedah interpretasi sebagai salah satu alternatif yang mampu memberi impak kepada afektif dan niat pembaca untuk turut serta dalam aktiviti ini. Pusat Interpretasi Burung, Bukit Fraser beroperasi untuk memberikan maklumat mengenai burung-burung yang terdapat di Bukit Fraser dan juga maklumat tentang aktiviti memerhati burung yang boleh dijalankan di kawasan ini. Namun demikian, pameran yang dipaparkan di pusat interpretasi ini tidak mempunyai elemen interpretasi dan objektif atau 'call for action' yang dapat menyampaikan mesej kepada pelawat dan mempengaruhi emosi dan niat mereka. Hal ini menyukarkan usaha dan peluang pihak pengurusan untuk mempromosikan aktiviti memerhati burung dengan menggunakan pameran-pameran yang tersedia di pusat interpretasi ini.

Kajian ini dijalankan untuk menilai keberkesanan produk interpretasi dalam mempengaruhi niat pelajar universiti untuk menyertai aktiviti memerhati burung. Sesi temubual telah dijalankan bagi mendapatkan keterangan dan mengenalpasti kepercayaan utama dan riaksi afektif para pelajar mengenai burung dan aktiviti memerhati burung. Keterangan tersebut digunakan sebagai asas dalam mereka bentuk produk interpretasi. Kaedah kuasi-eksperimen telah diaplikasi dalam kajian ini menggunakan dua kumpulan iaitu kumpulan kawalan dan kumpulan intervensi bagi membandingkan keberkesanan produk bukan interpretasi dan produk interpretasi. Borang soal selidik telah diedarkan kepada 119 pelajar tahun satu daripada Fakulti Perhutanan dan Alam Sekitar, Universiti Putra Malaysia.

Hasil kajian menunjukkan bahawa terdapat perbezaan yang signifikan di antara skor min bagi kumpulan kawalan dan kumpulan intervensi bagi pemboleh ubah reaksi afektif, niat dan reka bentuk produk kecuali pada item 'bunyi burung' dan item 'tajuk dan isi kandungan'. Kumpulan intervensi juga memperolehi skor min yang lebih tinggi berbanding kumpulan kawalan. Selain itu, ujian regresi menunjukkan hubungan yang signifikan antara afektif dan niat. Faktor afektif daripada kumpulan intervensi menyumbang paling tinggi kepada dua pemboleh ubah niat iaitu 'merancang' (menjelaskan 47.3% varian) dan 'pasti' (menjelaskan 58.3% varian). Walau bagaimanapun, kumpulan kawalan menerangkan hubungan afektif dan niat ('berniat') lebih tinggi berbanding kumpulan intervensi (menjelaskan 54.7% varian). Hasil kajian bagi setiap kumpulan reaksi afektif juga mendapati reaksi afektif pelajar bagi aktiviti memerhati burung menyumbang kepada nilai ramalan tertinggi terhadap ketiga-tiga kumpulan niat (niat, merancang, pasti). Sebaliknya, reaksi afektif pelajar terhadap kemampuan istimewa burung menunjukkan hubungan terendah dengan kumpulan niat 'merancang' dan 'pasti', manakala tiada hubungan signifikan antara reaksi afektif tersebut dan 'niat'.

Kajian ini menunjukkan bahawa produk interpretasi baharu lebih berkesan dalam mempengaruhi afektif dan niat para pelajar untuk menyertai aktiviti memerhati burung berbanding produk bukan interpretasi sedia ada. Ini menunjukkan produk interpretasi yang direka bentuk bagi kajian telah berjaya menyampaikan mesej dan 'call for action' serta membentuk emosi dan niat pelajar berdasarkan objektif produk interpretasi tersebut.

ACKNOWLEDGEMENTS

First and foremost, all praises to Allah, the most gracious and merciful, for giving me the strength to complete this page of my life's journey.

I would like to thank Assoc. Prof. Dr. Manohar Mariapan, the Chairman of the Supervisory Committee, for his assistance and dedicated involvement in every step throughout completing this thesis. Thank you very much for your support and understanding over these years of completing this project. I would also like to show my gratitude to Dr. Evelyn Lim Ai Lin for all the advice, guidance and insightful comments during this study. Thank you once again.

Special thanks to the Fraser's Hill Development Corporation, the guide, and the staff at Puncak Inn, who are in charge of Fraser's Hill's Bird Interpretive Centre. Your willingness to cooperate by informing me about the centre, birds and birdwatching in Fraser's Hill is highly appreciated.

My appreciation goes to students at the Faculty of Forestry, Universiti Putra Malaysia, for their cooperation throughout the study. Without them, this research would have never been accomplished.

Getting through my study required more than academic support, and I am grateful to have supportive parents and siblings who offered their motivation whenever I had a tough time in my study. This paper stands as a testament to your unconditional love and support.

This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

Manohar a/l Mariapan, PhD

Associate Professor
Faculty of Forestry and Environment
Universiti Putra Malaysia
(Chairman)

Evelyn Lim Ai Lin, PhD

Senior Lecturer
Faculty of Forestry and Environment
Universiti Putra Malaysia
(Member)

ZALILAH MOHD SHARIFF, PhD

Professor and Dean
School of Graduate Studies
Universiti Putra Malaysia

Date: 08 June 2023

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LIST OF ABBREVIATIONS

TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
TIB	Theory of Interpersonal Behaviour
MGDB	Model of Goal-Directed Behaviour
ELM	Elaboration Likelihood Model
PBC	Perceived Behavioural Control
FHDC	Fraser's Hill Development Corporation

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

The ecotourism sector has shown significant growth in the tourism industry, accounting for about 20% of total international travel (Charters & Saxon, 2015). The estimated value for the sector was 181.1 billion U.S. dollars worldwide in 2019 and was forecasted to attain 333.8 billion U.S. dollars with a 14.3% CAGR in 2027 (Himanshu & Roshan, 2021). In Malaysia, the number of tourist arrivals recorded an increase of 1%, from 25.83 million in 2018 to 26.1 million in 2019 (Tourism Malaysia, 2021). The growing number of tourists in this country has also been contributed by niche tourism products, including ecotourism (Tourism Malaysia, 2019). Along with other nature-based activities, wildlife viewing, like birdwatching, is also considered a part of ecotourism. These activities are ideal for supporting local economies and providing exposure to participants regarding conservation actions (Santos et al., 2019).

Birdwatching is a niche sector in ecotourism that has continued to expand in recent years. The growing interest in this activity is attributed to birdwatchers seeking different and more diverse bird species (Vas, 2017). Ranking 15th worldwide and 4th in the Asian region, Malaysia is undeniably raising its popularity as a birdwatching hub, with 408 species recorded (eBird, 2021). This country has the potential to develop birdwatching tourism due to its richness of biodiversity, with impressive numbers of 853 bird species in Malaysia (Avibase, 2023). In order to do so, thorough planning and strategies from stakeholders and bird experts are necessary to promote this activity to local and international tourists.

In promoting birdwatching in Malaysia, many annual events such as International Bird Race, International Bird Count, and Borneo Bird Festival have been conducted, which attracted 5000 visitors and international wildlife associations from 10 countries (Tourism Malaysia, 2019). In addition, the launching of Malaysia's birding website (birdsmalaysia.my) functions as a hub for birdwatchers, photographers, tourism operators and guides to promote birdwatching and provide easier access for people to get information about birds and discover the best birding location (BirdsMalaysia, 2021).

Interpretation is another promotion tool that can enhance visitors' interest in participating in birdwatching activities. Interpretation can be classified as personal (face-to-face) and non-personal communication (Sharp et al., 2012). Personal interpretation involves two-way communication between interpreters and visitors like guided tours (Sharp et al., 2012; Ham & Weiler, 2001).

Meanwhile, non-personal interpretation includes static products like exhibits, labels, panels, signage and electronic media (Ham & Weiler, 2002).

Authors asserted that a practical interpretation could enhance visitors' knowledge and influence their attitude, intention and behaviour towards preferable interpretive outcomes (Kortenkamp et al., 2021; Van der Merwe et al., 2020; Roberts et al., 2014). The affective appeal used in persuasive interpretive messages demonstrated a higher chance of shaping people's behaviour than informative messages (Hardeman et al., 2017). These vivid and memorable messages can attract the audience's attention, provoke their thoughts, and eventually trigger favourable behaviours (Villarino & Font, 2015). The effectiveness of interpretive products is also reflected in the content and artistic design of the products (Moscardo et al., 2003). The theoretical framework such as Theory of Reasoned Action and Theory of Planned Behaviour is used in investigating the effectiveness of interpretation by understanding visitors attitudes, intention and behaviour towards the objects being interpreted (Ajzen, 1991; Fishbein & Ajzen, 1975).

1.2 Problem Statement

Interpretation products function as a communication tool that helps management to accomplish their objectives. The design of the contents in the interpretive products could facilitate management in protecting resources by shaping visitors' pro-conservation action and promoting the tourism resources by attracting visitors' interests and helping them to understand various programs and activities available (Beck et al., 2018; Ren & Folta, 2016; Veverka, 2013; Benton, 2009). Interpretation is also considered an important medium that effectively contributes to knowledge gain, attitude change, intention and behaviour modification through its non-guided interpretive media (Roberts et al., 2014; Hockett & Hall, 2007). Thus, incorporating clear behavioural and affective (emotional) objectives in the interpretive products' contents is essential to ensure the management's objectives to influence people's intention and behaviour could be successfully achieved.

The process of interpretation is crucial to let people understand and appreciate the information they get, thus answering the desired objective or 'call for action' (Lim & Manohar, 2015). According to the Theory of Planned Behaviour (TPB), people's behavioural intention depends on their attitude, subjective norm and perceived behavioural control towards a particular object or subject (Ajzen, 1991). The TPB model emphasises salient beliefs as the foundation of attitude and behaviour formation (Ajzen, 1991). Correspondingly, in interpretation, targeting people's salient beliefs is crucial to ensure the success of the interpretation in influencing attitude and behaviour (Ham, 2008). Furthermore, the TPB model does not focus on knowledge or information to influence behaviour as they function indirectly in the theoretical framework. Instead, the behaviour is determined by people's salient beliefs about the particular object arising from their past experience and information received about the object.

Hence, Ajzen (2011) suggested identifying the information already possessed by people to determine relevant information that could strengthen or support their existing beliefs. In parallel with this, Tilden's principle suggested utilising interpretation through illustrative media or hands-on experience to reveal meanings and engage visitors rather than providing factual information about the object or subject (Tilden, 1957). Thus, an effective interpretive product should be created with the focus on modifying people's behavioural intention by influencing their salient beliefs and affect.

The aim to influence behavioural intention through salient beliefs and affect could be attained by designing effective interpretive products that utilise interpretive principles and elements to persuade people and influence their behavioural intention. Good interpretive products feature interpretive elements of relate, reveal, provoke, whole, art and children, and have a clear theme in line with the objectives of the management (Ham & Weiler, 2003; Tilden, 1957). The content and design of the products also encompass other components, including thematic titles, layering technique, illustration and other interactive displays that could spark visitor interest and grab their attention before they get deeper into the messages of interpretive exhibits (Hall et al., 2010; Ballantyne & Hughes, 2003; Moscardo et al., 2003). Persuasive messages are also essential to evoke visitors' affective responses and behavioural intentions (Miller et al., 2018; Akgun et al., 2017). Through interpretation, visitors can meaningfully relate the messages with their own experience, making them feel affectively and intellectually attached to the object or subject being interpreted (National Park Service, 2023).

Prior research suggested that when applied effectively, interpretation can be remarkably successful at accomplishing management's objectives and influencing visitors' behaviour (Ham, 2013). Ideally, all interpretive exhibits at the centre should effectively deliver interpretive messages and the 'call for action' (behavioural objective). However, findings from the previous study at the Bird Interpretive Centre, Fraser's Hill, found that the centre lacked a 'call for action' with a general and unclear objective in its exhibits (Nuraain Mokhli & Manohar, 2020). Hence, the effectiveness of the products in influencing behavioural intention cannot be measured as the exhibits' design lack specific behavioural objective and call for action.

In addition, the management of the Bird Interpretive Center, Fraser's Hill, stated that the centre operates mainly to provide educational information regarding Fraser's Hill and the birds available there (Letchumanon, personal communication, May 4, 2018). Correspondingly, the result from the previous study also indicated that the centre is still focusing more on providing information with limited interpretive elements adopted in the design and messages of the exhibits (Nuraain Mokhli & Manohar, 2020). However, persuasive messages are more effective in changing behaviour than factual information (Hardeman et al., 2017). Van der Merwe (2020) identified visitors' needs in an interpretive centre, including interesting and exciting information presented through audio and visual media and creative text that is easily readable for them with limited technical

terms. Another study demonstrated that an exhibit with basic information and limited interesting conservation story about Rhino has lower visitors engagement compared to another exhibit that incorporates interpretive elements with compelling conservation messages about Rhino (Price et al., 2018). Thus, the focus on providing factual information with limited interpretive elements employed in the exhibits that could help deliver messages to visitors hinder the opportunity to shape visitors' beliefs and influence their intention per the TPB model.

The absence of the objective and the 'call for action' as well as the lack of interpretive functionality in the exhibits, appear to be not cost-effective for the management. As there is no 'call for action' to measure the success of the exhibits in encouraging birdwatching participation, it is almost impossible for the management to come out with data related to the number of visitors that become interested in birdwatching after they visit the centre. Thus, the interpretive centre could not effectively serve its function in delivering messages and influencing behaviour because the functionality of the centre to promote birdwatching is unknown. Therefore, the present study examines the effectiveness of the design and contents in the interpretive exhibit intervention in influencing students' intention to participate in birdwatching.

1.3 Research Questions

- a. How to develop an interpretive intervention that can influence students' intention to participate in birdwatching activities?
- b. How effective is the interpretive intervention in influencing students' affects towards birds and birdwatching activities?
- c. How effective is the interpretive intervention in influencing students' intention to participate in birdwatching activities?
- d. How does affect influence students' intention to participate in birdwatching activities?

1.4 Goal and Objectives

The goal of the present study is to evaluate the effectiveness of interpretive exhibits in influencing students' intention to participate in birdwatching activities.

The following specific objectives are set to fulfil the goal of this study:

- a. To design a non-personal interpretive product to influence students' intention to participate in birdwatching activities.
- b. To compare the effectiveness of interpretive and non-interpretive products in influencing students' affects towards birds and birdwatching.

- c. To compare the effectiveness of interpretive and non-interpretive products in influencing students' intention to participate in birdwatching activities.
- d. To determine the influence of affect in predicting students' intention to participate in birdwatching.

1.5 Significance of Study

This study determines the effectiveness of the interpretive exhibit in influencing students' intention to participate in birdwatching activities. The elicitation interview provides essential information on students' beliefs regarding this activity, which act as a foundation for designing the interpretive exhibit. The elicitation of students' affects or emotions towards birds also provides a guideline on the affective words and pictures that should be used in designing the interpretive contents to get students affectively engaged with birds and birdwatching activities.

The application of thematic interpretation and other interpretive elements of relate, reveal, provoke, whole, art and children in the interpretive exhibit design provides a novel approach to promoting birdwatching as part of the ecotourism activity in Malaysia. Furthermore, the affective appeal incorporated in the design of the interpretive contents seeks to foster students' positive affect towards birdwatching and generate a deeper connection with birds, contrary to the traditional informative approach that mainly focuses on the educational objective.

The current study contributes to the findings on the effectiveness of the new interpretive exhibit in influencing intention compared to the current exhibit at the Bird Interpretive Centre, Fraser's Hill. Therefore, the management of interpretive centres could utilise the design of the interpretive exhibit as a guideline in designing and developing future exhibits that could effectively influence readers' affect and shape their intention in line with the management's objective.

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