



Research on the Design of Macau Tourism Cultural and Creative Products under the Perspective of Narratology

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Abstract

Macao, as a critical tourist destination at the junction of Chinese and Western civilisations, showcases the opportunity to feature its regional culture via culture-based tourism products, and tourism marketing presents further opportunities for cross-cultural connection. That said, there is significant thematic homogenisation, superficial and uninspired narratives, and a lack of user experience variation and engagement with the cultural products. This study employs the discipline of Narratology and analyses how narrative frameworks can be redesigned in cultural product development. This study proposes an eight constituent dimension framework: Narrative Theme, Plot Narrative, Character/IP Narrative, Situational Narrative, Symbolic Narrative, Functional Narrative, Experiential Narrative, and Emotional Extension Narrative. This study employs the Kano Model to conduct a narrative analysis, concluding the Narrative Theme is Must-be quality (M), Character/IP Narrative is high-sensitivity One-dimensional quality (O), Plot, Functional and Experiential Narratives are classified as the

Attractive quality (A). From this, the study develops a narrativised design approach prioritising cultural storytelling and experiential engagement. This work proposes and underscores the importance of narrative cohesiveness, the development of local IP, and the need for product stereotype breakdown with novel, immersive experience narratives. This work is the first to provide both perspective and praxis for Macao tourism cultural products.

Keywords: narratology, cultural and creative products, narrative design, user experience, kano model.

1 Introduction

Cultural and creative products are becoming key vehicles for showcasing urban culture and tourism experiences. Cultural and creative tourism products developed for Macao exhibit issues of thematic homogenisation, superficial cultural mining, and a lack of dimensionality in user experience. Macao is a unique city that combines and juxtaposes Eastern and Western old and recognises urban historical, festive, and intangible cultural heritage resources that have and still possess high regional and cultural symbolism. Dominating Macao's tourism-related cultural and creative products are embedded issues of cultural



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and visual and aesthetic decoration and memorabilia functions that lack evocative narrative forms, cultural memory, and emotional resonance.

Recent years have seen "narrative design" rise in prominence within design research. The term narratology—the study of how stories are told—was first integrated into literature and film studies and emphasised the importance of understanding meaning and emotion through the analysis of plot construction, character formation, narrative points of view, and chronology. The interdisciplinary expansion of design studies led to the adoption of narratology into product design, spatial design, and brand communication, as it serves as a bridge between cultural content and user experience. The integration of culture and emotion into design through "storytelling" has advanced design to a new paradigm, where the components of design are no longer limited to functional and aesthetic considerations. With the incorporation of narrative frameworks, products enable users to experience culture, understand a vision, and create memories [1].

Guided by this, this paper investigates the use of narrative mechanisms in designing Macao's tourism culture and creative products from the perspective of new narratology. The research first engages with the classic narratological theories of Tzvetan Todorov [4], Gérard Genette [5], Mikhail Bakhtin and others to identify and extract narrative components relevant for the design domain and builds a narrative design framework comprising eight components: narrative themes, plot narrative, character/IP situated narrative, symbolic narrative, functional narrative, narrative of experience, and narrative of emotional extension.

This is followed by employing survey questionnaires and case studies to introduce user preference research techniques to examine the narrative element and experience the design dimension of cultural and creative products. In the end, drawing from the theoretical and empirical findings, the paper outlines a user-centred and culturally immersive narrative design approach, which addresses the need for innovation and cultural promotion concerning Macao's cultural and creative products.

Woven within cultural product design, this research also contributes to narratology's qualitative research branches by constructing a framework narrative design approach which deepens the theoretical innovation regarding cultural products. The innovation of Macao's tourism culture and creative products is supported by a systematic framework which the

narrative design approach provides.

2 The Current Situation of Macao's Historical and Cultural Heritage and Cultural Creative Products

2.1 Cultural Analysis of Macao's Tourism Resources

Macao boasts abundant cultural tourism resources, with a rich collection of both tangible and intangible cultural heritage. In 2005, the Historic Centre of Macao was inscribed as a UNESCO World Heritage site. The historic center, centered around the old town of Macao, connects 22 historical buildings, including the A-Ma Temple, Ruins of St. Paul's, the Zheng Family Mansion, the Almeida Theatre, and the Guia Fortress, as well as 8 public squares such as Senado Square, the Largo do Senado, and the A-Ma Temple Square. These landmarks are significant representations of the exchange and fusion of Eastern and Western cultures in Macao. The architecture is colorful and unique, possessing high historical and aesthetic value. In addition, Macao also has a wealth of intangible cultural heritage, including Cantonese opera, Nanyin singing, the Dragon Boat Festival, and traditional herbal tea culture, all of which are vital tourism resources and can be developed into derivative cultural and creative products for tourism.

2.2 Current status of Macao's tourism cultural and creative products

Macao's cultural industry has developed with strong momentum, and the "creative design" sector has been steadily advancing. In 2010, the Macao Special Administrative Region (SAR) government officially launched initiatives to promote Macao's cultural industry, and the sector has continued to improve, with the cultural industry system being increasingly perfected. In 2020, to further promote the diversification of Macao's economy, a cultural industry plan was developed for the five-year period from 2020 to 2024, tailored to the local context. With the encouragement and support of policies, Macao's cultural and creative industries have also experienced new developments. The "creative design" sector includes services such as brand design, cultural and creative product design, exhibition design, fashion design, advertising design, industrial design, and architectural design. In 2021, there were 1,470 operating entities (an increase of 61), and the service revenue from the "creative design" sector amounted to 2.25 billion Macao Patacas, reflecting a 22.1% increase.

The total added value reached 750 million Macao Patacas, a growth of 18.6%. The total amount of fixed capital formation saw a significant increase of about six times, reaching 41.92 million Macao Patacas. Additionally, tourism is one of Macao's key industries. Prior to the pandemic, the number of inbound tourists was growing. Although the number of visitors in 2020 dropped sharply by 85.0% compared to 2019 due to the pandemic, with the full resumption of cross-border travel, the number of visitors to Macao from January to February 2023 approached 3 million. On March 18, 2023, the number of visitors reached 96,000, the highest single-day entry count in three years [2]. Overall, the development of tourism cultural and creative products in Macao is showing a positive trend, with the tourism industry experiencing a revival. At the same time, the Macao SAR government has increased its support for the cultural and tourism industries, providing new opportunities for the development of tourism cultural and creative products.

Macao offers a wide variety of themed products. However, the issue of homogenisation still exists. Macao has a great deal of cultural legacy and tourism resources, which is why the culture and tourism related creative products have a particularly diverse range of themed offerings. In 2021, the Cultural Affairs Bureau, together with the local cultural and creative brand "Youmi", produced the first set of museum related cultural products based on the collections of the art and other museums in Macao. Moreover, Youmi, o-moon, and the Fu Hong Society have created tourism cultural products enriched with local cultural features, such as elements found in Macao's heritage buildings and streets, Portuguese tile patterns, road signs, celebrations, and festive events. These products have a truly special Macao cultural essence.

Nonetheless, just like in many places, Macao's tourism cultural and creative products are highly homogenised. Not enough has been done to draw on regional history. Furthermore, the range of functions that the products offer is still limited. Currently, products such as washi tape, postcards, and keychains are the most common and most popular offerings. These products are unoriginal and unimaginative. In addition, most of Macao's cultural products are just like other standard products in the marketplace, retaining some regional decor, but changing the form of the product, combining with more innovative regional techniques, and culturally reinforcing the Macao products is absent. People see the products as unique, but do not engage with the product or the deeper cultural

meanings of Macao that should be part of the product.

Macao's tourism cultural products continue to exhibit narrative deficiencies. The past few years have seen some narrative experimentation in the design of Macao's tourism cultural products, leading to innovative items like the Fu Hong Society's street sign bags and Macao scenic silk scarves. Yet, Macao's cultural and creative products, as a whole, lack a narrative framework. Macao's cultural products like keychains, sticky notes, and phone cases are simplistic, and the narratology remains underdeveloped. These items contain culture on the surface or obliquely articulate cultural messages in a piled on the product. The narrative framework fails; products are designed to enable passive reception of culture. Cultural stories embedded in the product lack the depth required to achieve resonance, which, in turn, weakens the emotional bond after the purchase. The narrative of a cultural product is also embedded in texture and colour. The consumer uses touch and vision to gather information, and the colours and materials of the product are able to convey a message. The consumer perceives the cultural product to understand the story, reinforcing the narrative. The story's tone is captured in the colours and materials of the product, illustrating texture and colour, and narrating a story.

3 Theoretical Basis and Research Framework

3.1 Overview of Narratology Theory

Originating from the 1960s structuralism movement, narratology considers the study of "narrative" as meaning construction, concentrating on "how stories are told" as a process. As a discipline describing and systematising the analysis of narratological structures, narratology offers a comprehensive analysis of the generation of meaning in various texts, media, and novel interactive forms [3].

In the narrative structure theory, Todorov (1971) formulates the most elementary grammatical structure of all narratives as a three-stage logic of "equilibrium—disruption—restoration." This model illustrates a narrative's dynamic process as it begins with some stable state, encounters some trouble or disruption, and finally comes back to a (possibly) new stable state. This universal principle simultaneously describes the narrative dynamics mechanism and the structural guide for product design storytelling at the level of experiential storytelling, which can be understood as the "functional development—experiential

twist—emotional elevation” user journey design framework [4].

Subsequent to analysing Genette’s work concerning the analysis of narratives, the expansion of narrative analysis in the form of Genette is due to the fine differentiation concerning the forms that narratives take [5]. He explained that narratives could be divided up analysis-wise into three connected levels: the ‘story level (histoire),’ the ‘narrative level (récit),’ and the ‘discourse level (discours).’ Following this, and concerning the analytical system, narrative time (sequence, duration, and frequency), perspective, and voice are explained. This offers analytical insights for designers of interactions concerning information hierarchies, limits concerning user experience, and immersion [5].

Additionally, by approaching Bal’s dynamic theories of narratives as systems, one may say that the narratives in question consist of a functional chain of “events-actors-focus.” In this chain, actors not only drive the plot, but are the crucial nodes at which meaning collapses and focus shifts. From this angle, profound implications can be drawn for the design of products. For example, the correlation between “character design” and “user experience.” Users are not passive meaning recipients, but through ‘immersion’ in a given role during the interaction, they meaningfully ‘co-construct’ the narrative with the system [6].

The field of narratology has built a comprehensive theoretical framework which includes aspects such as plot grammar, narrative techniques, and systems of symbols. Bringing this framework into the field of designing helps designers to systematically shift the well understood ‘story logic’ into ‘design logic’ and facilitates an interdisciplinary shift from a narrative in literature to an experience narrative. This shift improves the emotional and cultural value of a product and aids in user experience design by working with organised and practical analytical and constructive frameworks.

3.2 The Integration Path of Narratology and Design Studies

In design studies, narratives are regarded as key means to connect and integrate “cultural content—design expression—user experience.” Gaver claims that design involves the integration of form and function, and involves “the process of constructing stories.” A product’s form and function, as well as its aesthetic, should answer the cultural and emotional needs of

its users, in addition to the material needs. In his “emotional design” theory, Norman reiterates that the enjoyment of an experience is facilitated by the ease of use, but is advanced when a product elicits emotions and memories on a deep, psychological level. Thus, with storytelling, narrative design builds profound contexts in which users actively engage in identity recognition and form emotional ties in the interaction [7].

Cultural product design hinges upon making culture tangible and communicable in a palpable and perceptible manner. Narratology offers a systematic theoretical framework that allows designers to apprehend cultural content in abstract form. With the aid of narrative architecture, culture is not merely a stagnant visual emblem—it is a dynamic semiotic system that is perpetually reconstructed through interaction and perception. The logic of narrative design is primarily expressed in three facets: content, form, and experience. At the content level, meaning is reconstructed through themes and characters of a narrative, endowing the design with target imagery and a coherent storyline; at the form level, the design is organised according to plot and narrative rhythm, imparting temporality and structure; at the experience level, users’ emotional and cultural discord is harmonised through multimodal interaction and emotional guidance. These three facets interact and form the overall logical framework of narrative design, culture and function having a coherent narrative structure.

In the tourism industry, the creative application of culture into design can easily be accomplished by incorporating a narrative perspective. Taking the cultural resources of a region, tourism cultural products are innovatively transformed into high value cultural carriers. At their core, they are a form of storytelling design. Within design, narrative design centres on the articulation of cultural connotation and spiritual value, features which are also dominant in the philosophies behind cultural and creative products. With the application of design methods such as narratology, designers are able to tap into the rich repository of regional stories and cultural symbols which can be incorporated into the designed products as a way to fulfil not just the functional, but the emotional and cultural needs of the user as well.

Furthermore, narrative design enhances the emotional and cultural attachment of the users. The narratological “author—text—reader” schism

Table 1. Mapping of narratological elements and cultural creative product design dimensions.

No.	Narrative Design Dimension	Theoretical Basis	Design Manifestation
1	Narrative Theme	Todorov's narrative structure	Use region-specific stories and festival legends as the core content to establish a cultural throughline.
2	Plot Narrative	Genette's theory of time and narrative levels	In use, present an experiential arc of "unfolding—development—climax."
3	Character/IP Narrative	Barthes's functional-chain theory	Construct localized characters or mascot figures to build a cultural IP.
4	Situational Narrative	Genette's narrative levels	Create spatialized scenes or scenario-based immersion (e.g., motif collage, scene packaging).
5	Semiotic Narrative	Barthesian semiotics	Material, color, and pattern convey cultural symbols and metaphors.
6	Functional Narrative	Chatman's narrative rhetoric	Functional actions carry story meanings (e.g., opening or rotating to reveal cultural information).
7	Experiential Narrative	Affective design theory (Norman)	Users generate emotional memory through interaction, DIY, or participatory processes.
8	Affective Extension Narrative	Post-narrative engagement	After use, memories persist and stories circulate (e.g., collecting, sharing, etc.).

offers a glimpse into the "designer—product story—user" alliance in this design context. Users interact and emotionally project themselves into the story through developed events and plotlines the designers constructed in the story of the product. The cultural and creative products receive their distinct personality and cultural traits from this narrative, transforming the design from the material to the experiential and providing a layer of spiritual sustenance [8].

Multiple approaches exist towards enhancing a product's expressiveness through narrative design techniques. For instance, appearance narrative involving form, colour, and symbols convey imagery of a culture; situational narrative immerses otherwise contemplative observers and participants into a culture by crafted ambience; functional narrative offers story hints and clues through user activities, enabling a product to attain a designated meaning and function through operation. These storying techniques enhance a product's narrative characteristics, but also emotional and cultural characteristics in the bond they foster with the user.

To explain methodologically the application trajectory of narratology in the context of design, this paper integrates the synthesised work of various scholars and researchers including Todorov [4], Genette [5], Bal and Barthes by distilling eight dimensions of narrative

design from four parameters: content, structure, symbols, and experience. These dimensions serve to narrate a story and possess logic to a narrative, while also relating to the cultural and creative product design on the emotional touchpoints, thus establishing a connection between elements of the narrative and the design dimensions (see Table 1). This paper intends to pivot its research focus in later stages to solidify these narrative elements into definable structural design parameters to establish narrative design theory elements which are achievable and verifiable.

3.3 Theoretical Model and Research Framework

This study develops a research model focusing on "narrative design mechanism – user experience feedback", seeking to determine the logic behind the transformation of narrative design in culture and creative product design and its corresponding user preference. In constructing a model capturing its essence, the previous accounts of intersection integrating narratology and design studies have been used.

Contemporary narrative design goes beyond the depiction of culture. It is also the innovative reproduction of relationships signified through the multiplicative narrative strands. Combining and interrelating cultural symbols with narrative themes, plots, and characters evokes emotions and fosters meaningful connections. This multiplicative narrative

speaks to the fulfilment of cultural dissemination and sentiment propagation objectives.

The research model comprises three tiers of narrative content, design articulation, and experience. For this analysis, the storytelling layer of the product revolves around the geo-culture, history and emblematic representations, creating the product's storyline and spiritual narrative. The design expression layer changes the narrative mechanisms into design language. The product becomes "narrative-able" by structural articulation of shape, colour, material and function. The user experience layer functions as the reproduction stage of the narrative meaning, enabling the users to emotionally identify and culturally resonate through the engagement of the interaction, emotion, and memory. These three layers are interdependent and constitute a "cultural narrative—design transformation—user experience" feedback loop that embodies the changing transformation mechanism and narratology theory in the design domain.

To be specific, this dissertation adopts KANO model user expectation theory for attributor user need identification at various levels of potential product features for eight different dimensions such as "narrative themes, plot narrative, character/IP narrative, situational narrative, symbolic narrative, functional narrative, and emotional and experiential narrative." The case analysis scrutinises the tourism cultural and creative industry in Macao, creatively confirming the theoretical and empirical application of the KANO model, then deriving from this narrative design optimisation and development pathways and strategy formulation. The synthesis of theory with 'real world' research helps elucidate the connection between narrative design, culture promulgation, user engagement, and market worth, thus offering the rationale and empirical evidence for the narrative design strategies outlined in the following chapters.

4 Research Methods and User Preference Analysis

4.1 Survey Tools and User Expectation Questionnaire Design

4.1.1 Overview of the KANO Model

The analytical tool being used in this study is the KANO model. It proposes a peculiar relationship between the features of a product or service and the user's underlying satisfaction. This model was developed by Japanese scholar Noriaki Kano. It

classifies user requirements into five categories. These are: Must-be (M), One-dimensional (O), Attractive (A), Indifferent (I) and Reverse (R). One of the categories, Must-be needs, are features that are basic and expected and if absent will produce a strong negative experience. One-dimensional needs are the most crucial in enhancing a user's perceived value of a product, especially since their satisfaction with these needs is positively correlated with their satisfaction. Attractive needs are the most important when it comes to core product direction, especially since there is no expectation of the design features. In recent years, the KANO model has been used predominantly in identifying the design innovation and experience research fields to uncover latent user needs and ideal aspirations. This study aims to apply the KANO model to uncover user ideal expectations on the eight narrative design dimensions of cultural and creative products [9].

4.1.2 Questionnaire Structure and Design Logic

The development of this questionnaire aims to identify the tourism markets in Macao, particularly the cultural and creative products, applying the KANO model's standard two-question method. For each narrative dimension (F and D), one functional (positive, F) and one reverse functional (negative, D) question is posed. The functional question is, "What will be your reaction if the product has this feature?" The reverse functional question is, "What will be your reaction if the product does not have this feature?" The responses are structured in such a way that participants are expected to identify the best choice from the five options, 'Like,' 'It should be this way,' 'Indifferent,' 'Can tolerate,' and 'Dislike' the most. The KANO analysis logic states that different combinations of responses will then determine the functional and reverse functional questions. These will be placed in specific categories, referred to as (A, O, M, I, R, Q) (Table 2).

Section one emphasises basic information and screening of respondents. Capture demographic data such as age and gender. Also, screening questions are important and included to gain insight into whether respondents are relevant to the research. For instance, "Have you been to Macao in the past twenty-four months?" "From any location, have you acquired any 'tourism cultural and creative products?'"

Section two measures expectation regarding the creative tourism products and narratives. This section focuses on the respondents regarding Macao tourism

Table 2. KANO model response mapping.

		Reverse Question				
		Like (5)	It should be this way (4)	Indifferent (3)	Can tolerate(2)	Dislike (1)
Functional Question	Like(5)	Q	A	A	A	O
	It should be this way (4)	R	I	I	I	M
	Indifferent(3)	R	I	I	I	M
	Can tolerate(2)	R	I	I	I	M
	Dislike(1)	R	R	R	R	Q

cultural and creative products. It targets the eight narrative design dimensions outlined above (see Table 3) to assess the expected attributes the user will apply to each feature. The measured dimensions and central expectation are narrative themes, plot narrative, character/IP narrative, situational narrative, symbolic narrative, functional narrative, experiential narrative, emotional narrative, and the extension of emotional experience narrative products.

Table 3. Narrative design dimensions questionnaire for Macao's tourism cultural and creative products.

Narrative Design Dimensions Questionnaire for Macao's Tourism Cultural and Creative Products	
Narrative Theme:	Whether you would like the product to be designed around a clear cultural story or festival theme.
Plot Narrative:	Whether you expect the product to exhibit the development of a story and changes in rhythm during its use.
Character/IP Narrative:	Whether you would like the product to feature local characters or mascot images.
Situational Narrative:	Whether you expect the product to create a local atmosphere or sense of place.
Semiotic Narrative:	Whether you would like the product's material and color to reflect cultural symbols.
Functional Narrative:	Whether you expect the product's usage actions to convey clues of the story.
Experiential Narrative:	Whether you would like to participate in the product's story through interaction or DIY.
Affective Extension Narrative:	Whether you expect to engage in sharing, collecting, or spreading behavior after using the product.

Since classifying demand types based on only the

maximum proportion has certain shortcomings, this analysis uses the Better-Worse coefficient-calculation method, which serves to quantitatively compare different dimensions of demand. This method seeks to gauge the extent to which each attribute contributes to user satisfaction and dissatisfaction on a more granular level. The formula for the calculations is:

$$B = \frac{A + O}{A + O + M + I} \quad (1)$$

$$W = \frac{O + M}{A + O + M + I} \times (-1) \quad (2)$$

A , O , M , and I depict the effective vote counts for Attractive, One-dimensional, Must-be, and Indifferent needs, respectively. The Better coefficient (satisfaction coefficient) signifies that the greater its value, the more potential the feature can 'bring positive gain.' The absolute value of the Worse coefficient (dissatisfaction coefficient) signifies the stronger negative suppression impact the feature 'absence penalty' holds.

Moreover, in order to quantify the total sensitivity of users to each demand, this study computes the Euclidean distance R from each demand to the origin, for which the calculation formula is as follows:

$$R = \sqrt{B^2 + W^2} \quad (3)$$

4.2 Results and Analysis

4.2.1 Sample Description and Data Quality

Out of the 215 questionnaires which were administered, 209 valid questionnaires were returned, translating to a 97.2% valid response rate. Generally, the sample characteristic analysis revealed that all respondents had visited Macao and had purchased tourism cultural and creative products within the last two years, which attests that the respondents had relevant experience on the topic of the study. An analysis of the demographic characteristics revealed

Table 4. Analysis results of Kano model for narrative design elements.

Product features	Percentage (%)						Kano positioning	Better coefficient	Worse coefficient
	A	O	M	I	R	Q			
Narrative Theme	15.789%	18.66%	40.67%	24.88%	0.0%	0.0%	M	34.45%	-59.33%
Plot Narrative	36.842%	22.488%	20.096%	20.574%	0.0%	0.0%	A	59.33%	-42.584%
Character/IP Narrative	23.923%	36.842%	17.703%	21.531%	0.0%	0.0%	O	60.766%	-54.545%
Situational Narrative	21.053%	30.144%	16.746%	32.057%	0.0%	0.0%	I	51.196%	-46.89%
Semiotic Narrative	18.182%	27.273%	23.445%	31.1%	0.0%	0.0%	I	45.455%	-50.718%
Functional Narrative	33.014%	19.617%	20.096%	27.273%	0.0%	0.0%	A	52.632%	-39.713%
Experiential Narrative	30.144%	17.225%	26.794%	25.837%	0.0%	0.0%	A	47.368%	-44.019%
Affective Extension Narrative	15.789%	31.579%	17.703%	34.928%	0.0%	0.0%	I	47.368%	-49.282%

that 112 respondents were male (53.59%) while 97 were female (46.41%). Most of the respondents were young or middle-aged, with the largest cohort being 18-25 years (34.45%) followed by 31-40 years (17.7%) and 26-30 years (15.31%). There were no characteristics of reverse coding (R) and no suspicious results (Q) were found for any of the functions, which demonstrates response consistency and the overall quality of the data.

4.2.2 KANO Classification of Narrative Dimensions and Better-Worse Results

Based on the KANO evaluation matrix and Better-Worse coefficient calculation results, this section determines the classification of the eight narrative design dimensions in terms of user expectation levels. The results are shown in Table 4.

Analysis of the KANO model, along with computation of the Better-Worse coefficients, revealed significant differences of user expectations along the eight narrative design dimensions. Narrative Theme was rated as a Must-be feature (M), where 40.67% of the respondents verified the crucial importance of the feature and highest absolute Worse coefficient of -59.33%. This means the absence of the narrative theme significantly detracts from user satisfaction, while the inclusion gives only basic satisfaction (with the Better coefficient of 34.45%), corresponding to the idea of “essential if present, crucial if gone.” By comparison, Plot Narrative, Functional Narrative, and Experiential Narrative were rated as Attractive features (A), defined by the description of “pleasant if present, neutral impact if gone.” Among the latter, the highest Better coefficient of 59.33% was observed by the Plot Narrative, corresponding to the strong ability of this feature to enhance user satisfaction. Character/IP Narrative was rated as the One-dimensional feature (O), featuring both the highest Better (60.77%) and Worse (-54.55%) coefficients, where the latter demonstrates the bidirectional sensitivity typical of expectation features, where the level of contentment

strongly correlates to the degree of fulfillment. Situational Narrative, Semiotic Narrative, and the Affective Extension Narrative were rated as the Indifferent features (I), where the corresponding Better and Worse coefficients were placed below 50%, where the highest level of indifference was manifested by the 32.057-34.928%, signifying weak sensitivity of the level of contentment to the presence or absence of the features. In conclusion, the relative comparison of the Better-Worse coefficients confirms the data of the comparative study of the KANO model and provides the quantitative basis for the product optimization priority.

4.2.3 Quadrant Analysis and Sensitivity Interpretation

Using an average Better value of 49.82% and an average Worse value of 48.39% as thresholds, a Better-Worse quadrant chart (see Figures 1, 2 and 3) was constructed and the sensitivity distance (R) for each dimension calculated. The Better-Worse coordinate chart clearly classifies the nature of each requirement: the first quadrant accounts for the Expectation needs, the second quadrant represents the Attractive needs, the third quadrant represents the Indifferent needs, and the fourth quadrant represents the Must-be needs. Based on the theory of KANO model principles, basic needs are generally considered most important, and the traditional hierarchy would be: Must-be needs > One-dimensional needs > Attractive needs > Indifferent needs. From the R-value analysis, the Character/IP Narrative has the highest sensitivity ($R = 81.66$), and this is followed by the Plot Narrative ($R = 73.03$), and hence these two have the highest responsiveness towards user satisfaction and dissatisfaction.

Using quadrant placement, the following strategic analyses can be deduced: Character/IP Narrative, placed in Quadrant 2 (performance priority), registers both higher Better and Worse values, placing it in the area of high investment and high return. This facet deserves highest priority toward resource investment

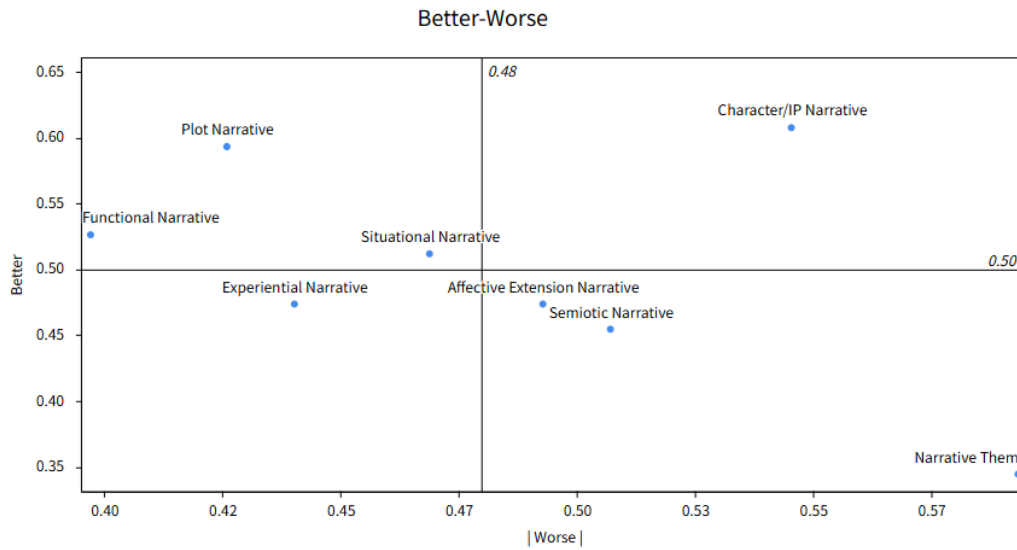


Figure 1. Better-worse coefficient diagram.

to ensure a repeatable and significant user experience. Components located in the second quadrant, namely Plot Narrative, Functional Narrative, and Situational Narrative, register higher Better values along with comparatively lower absolute Worse values, making them feasible for differentiation and innovation. These elements have the capabilities of increasing the attractiveness of the product through the infusion of an aspect of “surprise,” while maintaining functional integrity. Narrative Theme, Semiotic Narrative, and Affective Extension Narrative, placed in the fourth quadrant, have higher absolute Worse values and lower Better values, which means they are core needs and should be addressed, as their neglect would cause significant negative impact. Finally, Experiential Narrative, placed in the third quadrant, has lower Better and Worse values, which means it would be open to short-term observation or feasible restructuring, transforming it from the “DIY burden” to the “light interactive reward.”

4.3 Hierarchical evaluation of narrative dimensions based on the KANO model

The quantitative results from the KANO model analysis regarding user expectations aligned with the eight narrative design dimensions pinpoint fundamental design challenges in the thinking and resource allocation regarding Macao’s tourism cultural and creative products. Explanatory Narration is classified as a Must-be feature (M) with high Worse coefficient of -59.33%. This outcome substantiates the foundational position of the “cultural storyline and spiritual essence” of cultural products. Macao’s

cultural themes’ superficiality and homogenization, if not stemmed, will be the most pernicious negative factor linked to user dissatisfaction. Character/IP Narrative is classified as a One-dimensional feature (O) with high Better (60.77%) and Worse (-54.55%) coefficients, meaning user dissatisfaction is the target outcome. This requires that the IP images be thematically and geographically covered to avoid the representational user dissatisfaction outcome. Plot Narrative, Functional Narrative, and Experiential Narrative remain as Attractive features (A) and hence represent the most innovative driving forces in Macao’s current cultural products.

Among them, Plot Narrative received the highest Better Coefficient (59.33%), which strongly encourages designers to deepen the functionality and increase the involvement of products so that they can convey dynamic storylines during use to delight users and achieve differentiated competitiveness. In the case of Situational Narrative, Semiotic Narrative, and Affective Extension Narrative, which are classified as Indifferent features (I), the associated Better and Worse coefficients are relatively low, which indicates that users’ symbolic elements are still relegated to the level of superficial adornment and are ineffective in being integrated within the plot or function, and hence are not functionally low sensitivity. The classification of Semiotic Narrative as ‘indifferent’ does not mean that it is unimportant; it instead highlights the common problem of superficial and homogeneous symbolism in cultural products designed in Macao. Many designs that use Portuguese cultural, such as Portuguese tiles

or street scenes, are simply surface decorations that lack a cultural translation. As Barthes, in the context of 'socio-mythological' analysis of society, noted, narrative is a practice that seeks to ascribe meaning to symbols; it also implies that symbols, if crafted meaninglessly, are replicated simply for the sake of replication, and hence become silent of resonance. The design strategy for these three dimensions should emphasize managing resources—proper symbolic use and integration of these elements within Attractive features—if the value of the system as a whole needs to be increased by low priced technology without spending too much on innovation.

5 Case Study and Narrative Design Strategy

This chapter focuses on Macao tourism and the cultural and creative products marketed with it 'MAKMAK' City Mascot, "Road Sign Bag" souvenirs, 3D Paper Model Architectural Series, and Macao Scenic "Million Possibilities" Silk Scarf. Also, the findings focus on the "Narrative Design Mechanism-User Experience Feedback" framework and the results of user preference analysis. These products exemplify Character/IP Narrative, Functional Narrative, Experiential Narrative, and Situational Narrative. Using the drawings as "basis case objects", this chapter strengthens the case for the refinement narratives derived from critical evaluations of their content, design expression, and user experience for cross-genre narratives. Thus, this chapter provided refinement strategies, case objects, and development directions for integration supplemented with cross-genre narratives. The chapter intends to serve as a comprehensive framework to aid innovation practices in Macao's regional cultural and creative products.

5.1 Deepening Local Cultural Stories, Ensuring Narrative Themes

The KANO model analysis indicates that Narratively Theme is a Must-be feature (M). This is due to the absolute Worse coefficient of -59.33%, which indicates that a user's dissatisfaction with the product would greatly increase due to that feature missing. Therefore, the lowest ultimately designed product is one with a shallow or vague cultural theme which is highly detrimental.

Macao, a city blending the East and West, lacks nothing in terms of resources for crafting tales about its architecture and history as well as those famous sites or daily lives. Like St Paul's Ruins: The existing site of St. Paul's church which was part of St. Paul's

college that is China's first western university and also of East Asia where it played an important role to promote and disseminate culture Zheng's home—The old home of the renowned Chinese scholar Zheng Guanying, here wrote "Critical remarks on prosperity age", can also be made into stories, can create cultural creativity products Take 'the critical remarks on the prosperous era' as background and turn it into a comic story, then print this story on calendars, planners... Taking another example such as Macao Fishermen's Drunken Dragon Festival, it is a very important festival held by Macao Fishermen in order to pray for blessings through drunken dragon dance and lion dance. Extract from those to something you could make. Focusing on local features there would be so many different kinds of cultural story we will get. Each is enough for a theme itself, using those theme we could have various kind of product line created. In terms of theme choice they should look more at these local cultural tales, local customs and local landmarks to find their themes and narrative.

5.2 Leveraging Local IPs, Deepening Character Narratives

The KANO analysis showed that Character/IP Narrative was a high sensitivity O characteristic which had both a very high Better (60.77%) and Worse (-54.55%) coefficient, thus being an important performance point which could greatly impact user satisfaction. This implies cultural product has to put efforts in producing IP pictures so as to gain some sort of enjoyment. But after looking closely at real-life situations we found out that Macao's tourism mascot MAKMAK and other IPs like the one displayed here (Figure 2) were initially lacking in certain regionally distinct characteristics. For instance, it is not very symbolic enough for people to think of Macao when they see this bird. So the level of satisfaction from such things falls short.

In order to make good use of what the characters bring, we will try to stick as much as possible to the 'local uniqueness' principle, making sure that the IPs take root in things most familiar and irreplaceable for Macao like the Ruins of St. Paul or Macanese food so that when people see those IP pictures they instantly think about Macao and have a feeling that it is theirs: Then create a chain of narrative rather than limiting an IP to only 1 picture: Take Macau's Macanese food for example, we can turn different kinds of Macanese dishes into several IPs. each dish is personalized as a unique ip, and every dish has a story about its origin.

Using multi - dimensional storytelling allows for those characters to constantly reach up to the standards of user expectations with one-dimensional features.



Figure 2. Macau Tourism Mascot Mak Mak.

5.3 Driving Innovation: Deepening Plot, Functional, and Experiential Narratives

Plot narrative is the main factor that could change cultural creative products from being only souvenirs to becoming dynamic experience media. Its essence lies in unfolding – developing – climax during the experience of using a product Drawing on Genette's narratological theory(1980), designers need to manage narrative rhythm, time order and narrative levels so as to transform abstract 'story logic' into concrete 'design process' and experiential rhythm. To be more precise, designers can make use of Genette's *histoire*(level of story), *récit*(narrative level) and *discours* (level of discourse) for arranging information flow and perception within products by users. This kind of plot-focused design does pretty well when showing Macao which mixes up a lot of different cultures along with its long history. Take Macao's World Heritage as an example and build theme concepts like "Fragmentation turns into unity" and "East turns into West". Let the climax be not just something getting done but also a time when the culture shines on them as they piece together or uncover hidden parts. Designers take advantage of pauses and pace in storytelling so that layers of Macau history from architecture become things people can feel through their senses. The above design gives this thing has time and depth and let people understand themselves and create cultural memories by doing things with it. Attractive features: functional and experiential stories have to serve such a whole story logic and together create meaningful and emotional narrative flows.

In order to restore functional stories, our focus is to use a products function as the story. For example Fuhong

Society Road Sign Portable Bag (Figure 3) Functional Storytelling: The small bag holds the streets of Macao and when it's opened there stands that place pointed out by the road-sign. When they do such things in using it like that, they know what kind of landmarks every single road-sign links up with, making that something that could be handy become like an avenue of storytelling that ties them more tightly to this city from the standpoint of culture.



Figure 3. Macau Fuhong Society Road Sign Carrying Bag.

In reconstructive design practice focusing on functional narratives, much depends on how far one can go in creatively engaging with a product's original function and creatively redefining it as a narrative-centric design user experience. This can be illustrated with the Fuhong Society cultural and creative product, the Macao Road Sign Portable Bag (Figure 3). The product design creatively transforms the design of a small storage bag to mimic the shape of a typical Macao road sign. When users open the bag, the scenic spot, as indicated by the road sign, is revealed. The functional action of opening the bag is fused with information delivery to the user about the landmark, creating a narrative experience of, "the view appears as you open it." Such a design elevates the use value of the product, and, enhances the user experience by bridging the user's imagination with the urban fabric, in scope of use integration, function and narrative, and urban space.

Cultural significance can be further enriched by expanding the functional narrative. For example, an

eraser can be designed as a 'vintage' cultural and creative product, embedding a small model of a piece of cultural heritage like an architectural feature or traditional pattern. As the eraser gets used, the cultural features hidden within begin to reveal themselves. This process of 'old revealing new' can symbolize the hard work of 'cleaning and restoring' done in heritage conservation. Erasing, in this case, becomes a symbolic act and allows us to embellish the functional aspect with a narrative that speaks to the emotional dimension of cultural heritage conservation.



Figure 4. 3D paper model of Macao World Heritage
(Source: <https://meeetmacau.com>).

In the context of escalating experiential narrative and user engagement, experiential narrative is centered on expanding user engagement, positioning users as protagonists in the process of storytelling. Experiential narrative is realized in the World Heritage 3D Paper Model issued by the Macao Youmi brand (Figure 4), whereby users are able to participate in the assembly process using a material kit and gain experience of the story of world cultural heritage buildings. But according to the KANO analysis and extensive case study, product experience is quite plain with overly basic assembly instructions that fail to sufficiently enrich the emotional connection with the user.

To enhance this Attractive feature better, the design needs to leverage on Macao's unique mix of Eastern and Western building styles, expanding and enriching the paper model to reveal more architectural elements. This would engage the users to learn more about

the building's history and construction during its assembly. Besides, experiential kits will be designed according to Macao's intangible cultural heritage, i.e., traditional herbal tea or wood carving. By adding progressively complicated hands-on projects, the design can guide people step by step to decipher the story and information behind the product when assembling it and producing it. This would transform the interaction into a real meaningful emotional experience from an ordinary task and enhance the experience value overall.

5.4 Resource Management: Efficiency Optimization and Baseline Assurance for Indifferent Features

Situational Narrative, Semiotic Narrative, and Affective Extension Narrative are Indifferent features (I) with relatively low absolute Better and Worse values. This means that users are low on sensitivity towards their presence and absence, and so they have limited influence on overall satisfaction. This low sensitivity does not mean that these features are useless; it is simply a matter of their current use in products having minimal impact on user satisfaction expectations. For example, symbolic attributes are superficial in nature, situational narratives are usually framed in two-dimensional, static modes (e.g., scarves, postcards, bookmarks), and emotional extension narratives become passive impacts due to the lack of a core narrative driving force. These elements have not been adequately integrated in dynamic plot or utilitarian narratives and thus enjoy lower perceived added value among consumers.

Keeping in view the need for efficient resource allocation, the overall design strategy must be based on resource management, with emphasis on High-sensitivity sections (Attractive and One-dimensional features) and avoiding over-investment in the Indifferent areas in pursuit of nothing but "surprise elements."

Low-yield qualities, however, need to be optimized for effectiveness. Situational Narrative as an asset to enhance product narrative must be effective in enriching the experience without creating user dissatisfaction. Macao Scenic "Million Possibilities" Silk Scarf (Figure 5) is such an instance, using situational narrative in bringing together significant Macao scenic sites into a single picture, provoking visitors' imagination of the scenic destinations. By glimpsing the scarf, shoppers are reminded of where they have come from and can become fully immersed within the narrative. This approach does rely solely

on a two-dimensional representation of local cultural environments, which is still relatively simplistic. In order to make it more compelling, the narrative could be extended into a more immersive 3D experience. AR technology or audio QR codes, for instance, can be used to create multi-sensory, 3D forms of situational narrative. This would allow the consumer to interact more with the story by blurring situational narrative with Attractive features (i.e., experiential narratives) at low expenditure, without making significant investments in bespoke hardware design.

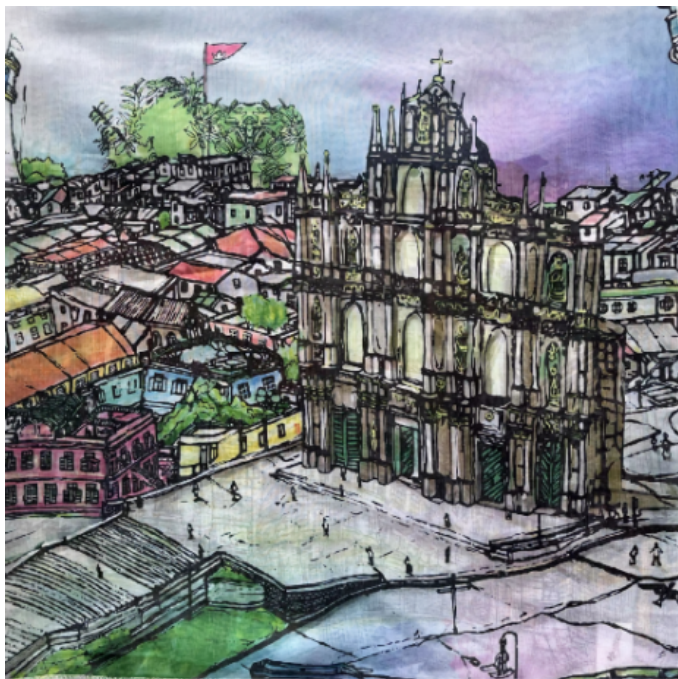


Figure 5. Macau "A Million Possibilities" silk scarf.

On the other hand, one must estimate the baseline for symbolism and emotional extension. Although Semiotic Narrative and Affective Extension Narrative are both Indifferent features (I) in the KANO model, their relative Better-Worse coefficients are almost on the edge of what is critical, suggesting that deviance on the baseline level may still trigger negative impressions, thus user disidentification with the core concept of the product (Must-be feature, M). Low Semiotic Narrative sensitivity at this time is because cultural elements have a tendency to be translated into surface-level visual signs, as in the case of Portuguese tiles or boundaries on the street, without the user establishing active relationships with them. Therefore, design cannot be merely about the "proper presentation" of symbols, but rather about bringing cultural motifs into materialized, tangible, and interactive forms through material selection, craftsmanship details, and structural design, thereby transforming symbolic

decorations into carriers of meaning with cultural tales to narrate.

In the Affective Extension Narrative, its center of interest lies in the user's spontaneous intent to share, accumulate, or disseminate the product upon possessing great core features (Attractive and One-dimensional features). Owing to the fact that this action takes place in a dependent and postponed fashion, design assets should work towards minimizing the cost of emotional expression through friction, for instance, by providing packaging that is photo-display-friendly, having hold space for holding, or containing social sharing triggers so as to allow for easy externalization of feelings.

From the macro-strategic perspective, the symbolic and emotional areas must be treated as baseline designs and risk mitigation tools, not central areas of innovation. Their value is not so much in driving satisfaction, but in preventing the breakage of the user experience. The true design focus should remain on detailed refinement of Attractive (A) and One-dimensional (O) characteristics, with an active pursuit of ways to translate symbolic and emotional ones into Attractive experiential signals. This would involve creating surprise and cultural resonances through highly engaging, story-based interaction, transforming the experience from "passive acceptance" to "active perception."

6 Conclusion

In light of these difficulties, the following are the most important problems and future study directions introduced by this research for the field of cultural product narrative design: First, in the case of Attractive features such as Plot Narrative and Functional Narrative, future studies must employ experimental design approaches to create product prototypes with different narrative rhythms and quantitatively verify their actual impact on user emotional resonance and purchasing intention. This would be the sequel step of taking KANO strategies into real market worth. Second, because Character/IP Narrative is so highly sensitive, it needs to know how to leverage narrative structural systems to create sustainable, multi-layered IP story chains to ensure freshness and cultural richness in product series without the rapid depreciation of IP value. Finally, latest media technologies such as AR/VR should be explored to redesign Indifferent elements such as Situational Narrative into interactive story scenes interacted by users in an efficient and cost-effective manner so that

cultural symbols may be reinterpreted and examined via interactive dynamics. This will contribute to the strengthening of narrative depth and market competitiveness of cultural and creative products.

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