

THE INTEGRATION OF MODERN TECHNOLOGY WITH TRADITIONAL PRODUCTS AS LONG AS PRESERVING THE VISUAL IDENTITY OF THE PRODUCT

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Abstract: This paper investigates the integration of modern digital technology in the traditional products, focusing on the preservation of their core visual and emotional identities. It presents the concept of “silent modernization” - adding functionality without changing the aesthetic appearance of heritage objects. To operationalize this concept, the study proposes the Visceral Technological Seamless (VTS) Model. This theoretical framework consists of three outer layers: an unalterable aesthetic heart that brings about emotional echo, a technological stratum that functions under the surface, and a smooth interface that interrelates the physical with the digital performance. Utilizing a qualitative comparative case study approach grounded in a multidisciplinary literature review, this research contrasts two distinct integration strategies. That illustrates the application of the invisible technology concept of the invisible technology yet maintains the original identity of the product and its main use. The second case addresses the issue of E-reader gadgets, which can be described as the example of the substitution strategy where the digital function, stripping them of their traditional and cultural functionality, replaces the physical appearance of books. The findings suggest that visual identity is more important in consumer acceptance of the modernized traditional products that technologies can either complement or inadvertently diminish. Ultimately, the VTS Model provides designers with a systematic approach to the fair allocation of aesthetic conservation and functional innovation that will make sure that heritage and technology can co-exist and thrive in modern markets..

Key words: Preservation, Silent modernization, Visual identity, Design heritage, Technological

integration, Aesthetic authenticity, Traditional products, User experience, Embedded technology, Product semantics

JEL classification: 033, M31, L67

1. INTRODUCTION

Given the rapid development witnessed by the industrial sector worldwide, traditional products are struggling to compete in the global market (Zhu, 2023). This makes it difficult for a specific archetype—the modern traditionalist consumer—to find products that are suitable for their specific needs. For this consumer, the visual identity of the product is an anchor to their personal history (Mugge, Schifferstein, and Schoormans, 2010). Therefore, the framework for seamless technology used in this study is rooted in Mark Weiser’s theory of Calm Technology, which posited that ‘the most profound technologies are those that disappear (Weiser, 1991). In this context, this means technology should recede into the background, allowing the end-user to focus on the traditional object’s primary function and aesthetic rather than the digital tool. This led us to the core of our investigation:

Can a product reach this “invisibility” while still delivering modern utility?

And given that almost all products in the global market have begun to lose their cultural and symbolic value, this situation becomes more complex. Compounding the issue is the nearly wholesale alteration of traditional goods, substituting them with purely utilitarian devices. Furthermore, as noted earlier, traditional consumers possess distinct needs, attached to heritage, memories, and emotional feeling trends. Our mission is to preserve this consumer base and,

moreover, to expand it to include the younger generation. A suitable approach to executing this mission is by refining traditional products for improved competitiveness in the modern marketplace.

Therefore, a calculated design approach is necessary to ensure that the visual identity of the product is preserved. Donald Norman's theory of emotional design (Norman, 2004) gives the essential framework for analyzing this connection, specifically its concept of how to create designs that stimulate emotions. According to the theory, designers should aim to reach consumers on three cognitive levels: visceral, behavioral, and reflective. In context with this theory, the challenge is to enhance the behavioral level (functionality) without erasing the visceral and reflective levels. An effective integration merges the emotional with the technical. This research also incorporates the Fifth Paradigm of Marketing by Raja Rajamannar (Rajamannar, 2021), specifically focusing on the Second Paradigm (Emotional Marketing), which identifies the shift from logical consumerism to emotional and subconscious brand connection.

The existing literature provides a strong technical vision for preserving emotional connection and engaging modern technology. However, while this technological concept is robust, a significant gap emerges in two practical areas.

Firstly, there is a design challenge:

How to integrate modern technology with traditional products without compromising the visual identity of the products?

Secondly, there is a presentation challenge:

How to present the new hybrid form of the traditional products without causing aversion?

To tackle these challenges, this paper aims to fill the gap by providing a detailed analysis of Donald Norman's theory of emotional design, focusing on the interaction between visceral, behavioral, and reflective levels. Then, it presents two distinct sets of case studies. The first case study will focus on an illustrative example of seamless technological integration. The second case study will examine an example of functional substitution, where digital features become dominant over traditional tactile characteristics. Finally, the research paper will propose a new design model—the VTS Model—that can provide a framework for preserving traditional products while integrating modern technology.

2. THEORETICAL FRAMEWORK:

The survival of craft in the digital era needs a multidisciplinary strategy between the sensorial

traditions and the contemporary utility. This study matches three different, yet complementary frameworks namely: Emotional Design by Donald Norman, the Fifth Paradigm of Marketing by Raja Rajamannar and the Calm Technology by Mark Weiser.

2.1. THE COGNITIVE LAYER: EMOTIONAL DESIGN (NORMAN)

Donald Norman (2004) lays down the ground rule that the vision of the product should be attractive to the user on the three cognitive levels that include the visceral, the behavioral, and the reflective.

Visceral Level: The direct physical and perceptual reaction to an object, e.g. the beauty of the materials, the iconic silhouette of a traditional product.

Behavioral Level: This level is related to functionality and the user experience. The main design challenge is to improve behaviors by making technology visible (such as screens, or cameras), in a way that affects the "aesthetic" appeal, and can incite cognitive dissonance.

Reflective Level: Personal identity, meaning and heritage are related to this reflective level for the "modern traditionalist" consumer. The emotional bond is broken when the tactile properties of a craft object are lost, reducing the item to a purely functional commodity.

2.2. THE COMMERCIAL LAYER: EMOTIONAL MARKETING (RAJAMANNAR).

This design conflict is in line with the Fifth Paradigm of Marketing developed by Raja Rajamannar. According to Rajamannar, we are in a new dawn of Quantum Marketing but the core of high-value consumer connection is still based on the Second Paradigm (Emotional Marketing). The consumer in the First Paradigm was motivated by logic and utility but the Second Paradigm saw a move towards the emotional and subconscious connection with the brand.

The sale occurs all in this Second Paradigm on the traditional product. The customer is not purchasing on technical specifications but on a symbolic brand image and a sense of being cool or being heritage. In accordance with what Rajamannar argues out, a brand that does not provoke an emotional reaction turns into a commodity. Thus, when technology transforms the look of the product into a technical one, when compared with a traditional one, the consumer would be pushed out of the Second paradigm (Emotion) to the First paradigm (Logic).

The classical product will never make it in the First Paradigm, were inexpensive, all-digital

products will be offered. Therefore, safeguarding the cultural and visual identity of the object is a critical strategic consideration. Connection to Market Survival: Traditional products that retain their emotional attraction of the Second Paradigm provide something that the technology will not provide, a story.

The study implies that the Modern Traditionalist is ready to purchase a higher price on technology that does not affect the tradition of the craft. Using the principles of Rajamannar, we are able to view that integration should be sold as an enchantment of the traditional form and not as a substitute of it.

2.3. THE TECHNICAL LAYER: CALM TECHNOLOGY (WEISER).

The main challenge in sustaining this emotional connection is the intrusiveness of contemporary hardware. This study applies the principles of "Calm Technology," identified by Mark Weiser, which postulates that the most impactful technologies are those that fade away (Weiser, 1991; DAC Group, 2018). This theory provides the technical roadmap for Seamless Integration. Weiser suggests that technology must move into the background of our consciousness, acting as an invisible partner rather than a demanding object (Weiser, 1991).

In this model, we offer technology as an invisible partner, thereby shielding the visceral identity demanded by Norman (2004) and the emotional resonance demanded by Rajamannar (2021). The technology operates invisibly in the background, ensuring the traditional craft remains the primary focus of the user experience. Regarding the connection to Smooth Integration, Weiser's vision provides the technical solution to the design issue. To be considered traditional, a craft object requires embodied technology. This creates a condition of Invisible Design, whereby the user is accorded digital benefits without the visual disruption of visible ports or buttons.

2.4. THE PROPOSED SYNTHESIS

To operationalize the concept of "silent modernization," this research proposes the VTS Model, a conceptual framework and three-tiered architectural blueprint for designers:

- The Visceral (The Aesthetic Heart): It is the external coating that indicates the non-changeable essence of the conventional product. It maintains the original silhouette, tactile materials and visual identity that cause an immediate emotional reverberation and relates the user to their own history and culture.
- The Technological (The Hidden Stratum): This layer operates fully below the surface. It represents

the contemporary digital utility, the sensors, batteries or processing units, a silent servant. It conforms strictly to the tenets of invisible design making the technology to fade into the background.

- The Seamless (The Interface): The crucial linkage connecting the physical object to its digital performance without introducing the cognitive dissonance of visible buttons or screens, which may retain the product as a heritage object and not a gadget.

3. METHODS OF RESEARCH:

3.1. RESEARCH DESIGN AND OBJECTIVES:

The study uses qualitative comparative case study methodology, which aims to examine the traditional products and their integration with modern technology. The main goal is to assess the effects of the technological embedding on the visual and emotional identity of heritage objects. In the process of analyzing this, the following basic questions are raised:

Q1: How to incorporate the traditional visual identity of the product with the modern digital functionality?

Q2: What design strategies characterize the different approaches to integrating modern technology into heritage products, and how do they impact the product's visual identity?

3.2. THE CRITERIA FOR SELECTING CASES ARE AS FOLLOWS

In order to give a contrasting comparative analysis, two different technological devices were chosen according to the following criteria:

Product Lineage: Both products should be from a very traditional and physical media which has a clear visual identity (eyewear and physical books).

Technological Integration: The two products will be required to present functional digital technology that is aimed at making the user experience modern.

For the "silent modernization," the case was chosen as a representative of the Ray-Ban Meta smart glasses, which wanted to maintain an old-fashioned look.

In the Strategy of Replacement (Case 2) the e-Reader devices were chosen as an example of the case where the physical qualities of the original object are clearly modified by digital functions.

3.3. ANALYTICAL PROCEDURES AND EVALUATION METRICS

The analysis is based on a multidisciplinary theoretical framework that fuses Emotional Design, the Fifth Paradigm of Marketing and Calm Technology, as a means to qualitatively evaluate different approaches to technological integration. This approach acknowledges the interpretative nature of evaluating design semantics and aesthetic preservation. The qualitative evaluation metrics used at each of the case studies are:

Embodiment of Strategy: Identifying the physical embodiment of the strategy in the original shape.

The level of visibility: Categorizing the technology's presence as invisible, low visibility, or total replacement.

Conservation of Identity: Evaluating the preservation of traditional features, logos, materials and feel.

In this study, a "seamless" or "preservation-focused" integration is characterized by an "invisible" or a "low" and a complete conservation of the product's identity and embodying strategy. Data for the case studies was collected through a secondary desk review of product specifications, manufacturer documentation, and contemporary technology reviews (e.g., CNET) to visually and functionally analyze the integration of technology into the original product forms.

4. RESULTS

Case study 1 presents an analysis of the Ray-Ban Meta glasses a partnership between EssilorLuxottica and Meta launched Ray-Ban Gen 2 in 20 September 2024. The idea of this partnership is to integrate new and smart technology into a classic eyewear.

Introduction of the case study:

Table 1: The preservation of the classic visual identity of Ray-Ban

Frame shape	The glasses are offered in the classic Wayfarer round/square shape making it visually faint from classic eyewear.
Logo	The iconic Ray-Ban logo is maintained in its traditional placement on the temple arm.
Overall Form Factor	The glasses maintain their classic shape by embodying all the electronics in thicker arms.
Primary Function	The glasses functions as a standard sunglasses or prescription eyewear with high quality lens meaning the core is not threatened.

Source: Author's analysis

This table shows how traditional Ray-Ban features are preserved Meta model.

Table 2: The examination of the integration of technology in the Ray-Ban Meta model

Technological characteristics	Embodying strategy	Level of visibility
12MP camera	A small camera lens is embedded into the top corner of the frame's right hinge	Low the camera is disguised as a small decorative pin
Open-Ear speakers	Micro-speakers are built into the underside of both temple arms, directing sound to the user's ears	None the speaker's grille is hidden from public view.

Microphone	A five-microphone array is embedded within the frame to capture spatial audio	None the microphone ports are extremely invisible
Led indicator light	A forward-facing LED light is placed next to the camera to indicate when the device is recording	Low in intentional way for privacy purpose only
Touch controls	A capacitive touchpad is integrated into the surface of the right temple arm for controls.	None there are no visible buttons

Source: Author's analysis

This table will show how new technology was integrated in the Ray-Ban Meta model and the level of technology visibility.

The Ray-Ban Meta glasses preserve the visual identity of classic eyewear, even with the embodiment of modern technology. All the electronics are well integrated and blend

seamlessly, ensuring the glasses maintain their primary function. Furthermore, studies highlight that the rapid novelty decay of smart glasses can be mitigated by predicting behavioral intention and continued use (Kouroupetroglou, 2023).

Case study 2: E-Reader Devices

Table 3: Alteration of the visual identity of the traditional book

Traditional book features	Digital substitution of traditional features
Physical cover	The unique cover is replaced by a generic plastic or metal casing
Tactile page turning	The physical sensation of turning a paper page is replaced by an artificial screen, button press
Sense of physical feeling	The tangible feeling of a book's changing thickness is lost
Fixed layout and typography	The publisher's intentional design of typography, margins and layout is broken and user-customizable fonts

Source: Author's analysis

Table 4: The takeover of new technology over traditional product

Technological characteristics	Embodying strategy	Level of visibility
E-ink screen	The screen is the product itself; it replaces the paper.	Total the screen defines the user experience.
Device casing	The plastic or the metal replaces the traditional book's cover.	High the physical object the user holds.
User Interface	A software layer with menus, battery icons, and setting are superimposed on the text, creating digital experience.	High the user interface is a constant visual element that deviates from the "just text" experience of a book.
Changing port & buttons	External ports and physical buttons are added to the device's frame making the technological nature of the product is explicit.	High it's obvious that this is a gadget not a traditional book.

Source: Author's analysis

The analysis of E-reader devices indicates a strategy that substitutes, rather than integrates, modern technology into the traditional book format. In other words, it replaces the visual identity of a book entirely. Tables 3 and 4 show

that essential characteristics of a traditional book, such as the physical cover and tactile page-turning, are lost, leading to a shift in user preference toward printed formats for deep engagement (Deva Amirtharaj et al., 2023).

5. DISCUSSION AND COMPARATIVE ANALYSIS

5.1. APPLICATION OF THE VTS MODEL FRAMEWORK: THE RAY-BAN META CASE

The Ray-Ban Meta smart glasses illustrate an application of the VTS Model and the "Strategy of Enchantment".

- **Visceral Integration:** By maintaining the classic Wayfarer shape and the iconic logo placement, the product successfully preserves its visceral and reflective appeal.
- **Technological Invisibility:** Despite housing a 12MP camera, an array of microphones, and open-ear speakers, these elements are effectively disguised or embedded within marginally thicker temple arms.
- **Outcome:** The technology acts as an invisible partner, enhancing the user experience without interfering with the product's primary function or visual identity.

5.2. THE STRATEGY OF SUBSTITUTION: THE E-READER CASE

Conversely, E-reader devices demonstrate a departure from the VTS framework through a "Strategy of Replacement".

- **Transformation of Form:** Replacing a physical cover and tactile pages with a digital screen and plastic casing obliterates the emotional echo and tactile sensation inherent to a traditional book.
- **Behavioral Prioritization:** By prioritizing behavioral enhancements (such as digital storage and usability) over visceral and reflective qualities, these devices transform an object of cultural identity into a purely functional tool.
- **Outcome:** This loss of contemplative, tactile quality often leads to consumer resistance or a persistent preference for printed formats when deep engagement is required.

To truly understand these theories, we must see it through the lens of the modern traditional consumer. The visual identity of the traditional product is a primary design priority. The relation between this archetype of consumers and the traditional product is intimate, they possess a deep value of craftsmanship, heritage, and physical sensation of a traditional products view them as

objects of identity. For this type of user technology must not overtake the product core rather enhance it, to bring traditional product into the modern era. The modern Traditional consumer sets the rules of how a traditional product should embody modern technology.

The two case studies are the ideal example that demonstrates why VTS Model is needed in the contemporary market. The Ray-Ban Meta glasses effectively realize the VTS framework. Their Visceral layer is not changed, keeping the traditional Wayfarer shape and the usual logo. The Technological layer itself remains fully concealed in the marginally thicker arms, and the Seamless interface, with its use of invisible touch controls and the use of disguised cameras enables digital functionality without disrupting with the physical experience. Herein lies the spirit of silent modernization. On the other hand, E-reader devices represent a divergence from the VTS Model. The aesthetic core of the traditional book is replaced by the Technological layer which is placed above the Visceral one. The replacement of a paper and touch cover with a screen and plastic casing takes away all the emotional echo, which leaves the strategy of substitution and not integration.

5.3. BROADER IMPLICATIONS FOR FUTURE DESIGN

This study proves that the traditional craftsmanship in the digital age is not an opposition to technology but an attempt to find its invisible perfection. The visual image of a heritage product is a critical priority for the modern traditionalist. Behavioral changes of the 21st century should not rule out the visceral and reflective heritage of the past in future design strategies. Following the VTS Model ensures a balanced approach between a good look and a new/different function, the very success of which will allow heritage crafts to flourish in today's market.

Future research:

These limitations underscore a clear path for future research. The next big thing is the pursuit of a true technology invisibility. Research should focus on solar batteries rather than lithium batteries to eliminate the need for charging port or utilize known technologies such as magnetic charger. To achieve a truly seamless design, breakthrough in flexible electronics is essential to eliminate the thicker arms. When technology has the power to integrate within the original product without interfering with the visual identity only then the technology will become truly invisible.

CONCLUSION

This study has tried to outline what is required in order to effectively apply modern technology into traditional products. The results indicate that the solution is not only highly technologically advanced but also extremely human. It is a result of the targeted demands of the contemporary traditionalist consumer, the type of consumer that prizes the craftsmanship, tradition, and the emotional appeal of the visceral shape. The most effective solution, as the case studies showed, is a hidden assimilation that does not interfere with the visual and emotional sense of the object by operating invisibly.

The contrast between the Ray-Ban Metas glasses and the E-reader devices develops an easy dichotomy that future designers can use. The Ray-Ban Meta can be described as the Strategy of Enchantment, where Calm Technology developed by Mark Weiser enables the device to act like an invisible companion, maintaining the position of the product in the Second Paradigm of emotional marketing that was developed by Raja Rajamannar. On the other hand, the E-reader is an instance of a strategy of replacement. By prioritizing utility over conventional appearance, it risks becoming a purely functional commodity that may evoke consumer resistance, and therefore lacks the contemplative quality of the art of bookmaking.

Finally, this paper suggests that the persistence of traditional craft in the digital era relies on highly refined, seamless technological integration. In order to retain the cultural essence of traditional goods, the designers need to follow the rules of Invisible Design, when the behavioral improvements of the 21st century do not suppress the visceral and reflective heritage of the past. At that, this balancing act is the key to the future of the so-called Modern Traditionalist market: it will be necessary to produce products that are modern in their functionality but are timeless in their spirit.

By adhering to the VTS Model, designers can guarantee a fair allocation of aesthetic conservation and functional innovation, ensuring that heritage crafts and modern technology do not just co-exist, but thrive together in the hands of the modern traditionalist.

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