

## Article

# Consumer Perceptions of the Commodification and Related Conservation of Traditional Indigenous Naxi Forest Products as Credence Goods (China)

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**Abstract:** Commodification of Traditional Knowledge (TK) has been posited as a possible, although contested, alternative for the conservation of indigenous resources. Here we examine the case of the Chinese Naxi minority, with particular reference to the practice of sacred “Dongba” papermaking. The commodification of TK is a complex process with many pitfalls and trade-offs between the environment, economy, and social empowerment. In the process of commodification, consumers have arisen as an important force in environmental politics. To date, little is known about the way domestic tourists, the main consumer base of indigenous products, perceive Dongba paper. In this context, we examined their knowledge of Naxi culture, their willingness to pay for sustainably produced paper, and their perceptions of the product’s authenticity. This socio-economic study is based on a survey ( $n = 415$ ) in rural Southwest China. We found a significant potential to market Dongba paper as a sustainable indigenous product. Although knowledge about Naxi culture was circumscribed (3% could identify the plant used for papermaking), the majority of respondents (55%) was willing to pay for TK protection. Respondents also preferred third-party labelling. We posit that TK products could be seen as credence goods, necessitating certification to ensure product authenticity and establish consumer trust. Markedly, the survey also found that attitudes as to who should provide third-party assurance are contradictory. The Chinese government was preferred as the strongest assurance of genuineness, but paradoxically, commanded the least trust in its ability to manage and fund the conservation of TK.

**Keywords:** indigenous knowledge; forest products; China; Naxi minority; native and aboriginal peoples; certification; commodification; ethnic tourism

## 1. Introduction

Traditional Knowledge (hereafter: TK) is widely recognized as a resource for sustainable development [1] and sustained natural resource management [2]. Globally the integration in decision-making and promotion of TK and the customary laws by which it is governed are encouraged and even mandated by many (inter)national agreements and policy instruments [3]. It is also generally agreed that the benefits derived from TK should be shared fairly and equitably with the knowledge holders [4]. Yet, TK is almost universally seen as under threat and disappearing, as the

rural communities that represent and practice it are vanishing under the pressure of processes of globalization, urbanization, and industrialization.

China is no exception to this [5], and numerous studies have documented how ethnic communities are drawn into complex, multi-layered, and at times, downright, paradoxical processes of development that may well mean their end [6–8]. While the integration of traditional lifestyles and livelihoods into global markets and processes of development is not without peril [9], the commodification of TK has been proposed as a possible means of protecting TK [5,10]. For the sake of precision, the term commodification [11], rather than commoditization is used. The latter implies the replacement (or supplementation) of TK's social value amongst knowledge holders by a value recognized by the market, whereas “commodification” specifically focuses on “the way that goods that used to be distinguishable in terms of attributes end up becoming mere commodities in the eyes of the market or consumers” [12].

In China, there are 56 recognized ethnic groups, ranging from Tibetans and Uyghurs to Mongols and Manchus (and including the largest group of Han-Chinese). The densely forested, mountainous southwest of China is inhabited by a variety of smaller ethnic groups, of which the Naxi (also known as *Nakhi* in Wades–Giles spelling) is one. They inhabit the foothills of the Himalayas in the northwest of Yunnan Province, and the southwest of Sichuan Province, whereas an important concentration is found in what was formerly known as the Lijiang Naxi Autonomous Prefecture (present Lijiang City). It is estimated there are approximately 308,000 Naxi living in China [13]. For the Naxi, the surrounding forests and mountains have great eco-cultural and spiritual significance, recorded as early as the late 1930s [14] and continuing to date [15].

The Naxi customarily used the inner bark of *Wikstroemia delavayi* (in Chinese: *lancangyaohua*) to produce paper for documenting so-called “Dongba” sacred scriptures. The term is derived from the eponymous Dongba shaman priests (or Bon priests), who used an ancient system of pictographic glyphs to record religious scripts (Figure 1). Due to its low lignin content (approximately 10%) and thin fibers, the bark of this tree makes high-quality paper, whereas its chemical constituents are said to possess anti-microbial properties [16], not unimportant in a humid and warm environment as Lijiang. Traditional Dongba papermaking was on the verge of extinction as a result of China's developmental policies and the various revolutionary campaigns during the 1950s until the late 1970s.



**Figure 1.** Dongba script on customarily made paper. Source: Courtesy of the Harvard-Yenching library.

In the wake of the reforms since 1978, the central and local governments pushed “ethnic” and “eco”-tourism as a means to develop the indigenous areas [17]. On the one hand, the commodified display of local indigenous cultures has led to an economic boost coupled to a marked revival of Dongba papermaking. On the other hand, however, it has brought increasing pressure on the Naxi's

forests leading to calls to strengthen customary, communal forestry, while looking for commercially viable alternatives for Dongba papermaking.

As Yang et al. [15] duly noted: “The decrease and dwarfing of *W. delavayi* populations due to commercial exploitation highlights the need to implement community management practices in forestry schemes.” This observation may be particularly relevant against the backdrop of studies that suggest a failure of state afforestation campaigns while these, simultaneously, appear to have weakened customary forest practices [18,19]. Furthermore, it has been reported that Dongba papermaking is losing its link to spiritual praxis and increasingly needs to compete with “false Dongba” papermaking based on industrial processes and alternative fibers [15]. Within this paradoxical, fractured development, indigenous communities try to give new meaning to their identity [20] while reinvigorating customary agro-forestry. These involve a three-year rotation in the harvesting of *W. delavayi*, its use as an alternative, organic form of pest-control, and the maintenance of home gardens for ethno-medical practices [21].

What today is largely under-researched are the perceptions of the largest consumer group of Dongba paper: domestic tourists. Over the past decades, consumers have emerged as critical actors in environmental politics. Often supported by (trans)national nongovernmental organizations (NGOs), consumers may engage in collective action to boycott polluters, strengthen global standards on social, economic and environmental rights, and exert pressure on transnational companies to protect rural smallholders and resource-poor peasants [22,23]. In this context, we conducted a socio-economic study on consumers’ views on TK products. More in particular, we examined the questions: Would Chinese consumers be willing to pay a higher price for “authentic” and more sustainably produced Dongba paper? And if so, how much? Is there a (cor)relation between consumers’ awareness of traditional knowledge and the willingness to pay? And what agency is perceived as best positioned to guarantee the authenticity and quality of indigenously produced goods?

Apart from the introduction and conclusion, the paper is divided into three sections. In the following section, we will review the options of TK as a specific feature to market products, with particular reference to the literature on “credence goods.” The subsequent section describes the methodology, as well as the logic and design of the survey questions. The final section presents the research findings of the survey, structured along the research questions above.

## 2. Commodified Traditional Knowledge and Credence Goods

Worldwide there is, by and large, a consensus that the protection of TK is a meaningful way to preserve indigenous resources while empowering the native communities depending on them. The notion of TK is acknowledged and included in multilateral agreements, such as the Convention on Biological Diversity [24] (article 8j), the Nagoya Protocol [4] (Preamble 20–25, article 5bis) and the International Treaty on Plant Genetic Resources for Food and Agriculture [25] (Article 9.2). Yet, the manner through which TK could be best protected, and with what effects on indigenous communities and their resources is much less clear and, in fact, contested. Even the question of what exactly constitutes such knowledge is a matter of debate in and of itself. Possible interpretations range from the *bricolage* or local means of getting by that the state, intentionally or not, fails to, see as valuable [26], to claims about “inimitable methodologies” [27]. Here we adhere to its definition as the “intellectual and intangible cultural heritage, practices and knowledge systems of ( . . . ) indigenous and local communities” [28].

From a regulatory point of view, co-management by pooling traditional and scientific knowledge and institutions has been proposed for its protection. However, others have documented the pitfalls in this regard, including adverse effects on indigenous communities [29], the unequal position of TK vis-à-vis scientific knowledge [30], and even, their incompatibility [31,32]. Another bone of scholarly contention consists of the question whether TK can and should be commodified, i.e., branded and marketed as a commercial product [33], a question often, although not necessarily, tied to the pharmaceutical industry or tourism [34]. In this regard, studies have identified the negative

environmental impacts that the commodification of TK may entail [35,36], ethical dilemmas [37,38], and issues of power and representation [39]. Against this backdrop, critical questions that need to be considered include, but are not limited to, the beneficiaries of TK application (e.g., local communities, corporations, government, research institutions); the right of access to TK; and the constraints of its commercialized use [40].

Tang has argued that the perceived decline of TK should at least partially be attributed to market influence which changes subsistence patterns [5]. We agree with Lizarralde's suggestion that raising demand for market goods is shifting production patterns towards cash crops and reducing reliance on traditional livelihood patterns [41]. At the same time, TK in China (and other countries) may have a significant marketable potential in a niche-market, as well as against a wider background of Chinese consumers' shifting perceptions on the risks and disadvantages of intensive, high-tech, and industrialized production of rural produce and food [42]. Chinese traditional products fail to compete in the market much in the vein of Industrial Revolution artisans in Europe [43], as production costs are higher than industrialized and often state-supported competitors. Yet, their main selling point could be its TK component, providing possibly new opportunities to support and maintain traditional livelihoods.

A TK-derived product, when sold on the market, has to compete with any other substitute good. Assuming that a potential buyer would rather purchase a TK-derived product, regardless of the motivation for such a purchase, and that the buyer would be willing to pay extra for such a product, this preference would result in a price premium benefitting the vendors and producers of TK-derived products [44]. A range of reasons could create a consumer preference for TK-related products, such as the desire to support the protection and continuation of TK and the knowledge holders, but also a less altruistic desire to consume a perceived "authentic" [39,45] product could play a role in consumer demand [46]. A range of reasons could create a consumer preference for TK-related products, such as the desire to support the protection and continuation of TK and the knowledge holders, but also a less altruistic desire to consume an authentic product could play a role in consumer demand [46].

It needs to be noted that the authenticity of indigenous products is the perceived result of an interplay between different stakeholders involved in the production and reproduction of TK. Differently stated, in a rapidly changing context where Naxi culture and practices are being redefined, the perception of Dongba paper as authentic is the result of an ethno-political game, rather than an objectifiable feature in itself. It is what has also been described as the "politics of authenticity" [45].

Regardless of the motivations for the preference for TK-derived products, a consumer who is not part to the traditional consumption pattern of the product is unlikely to be able to determine the extent to which the product is TK-derived. In this aspect, TK-derived products could benefit from a third-party assurance of authenticity and value, quite similar to organic and sustainable agricultural products. Consumers of TK derived-products may tend to perceive these as endowed with specific intrinsic features (i.e., quality, sustainability, and/or safety). In fact, a consumer's choice in favour of TK is likely made by comparing a bundle of (detectable and undetectable) characteristics of the good. This type of good has been theoretically conceptualized as having "credence" characteristics, a notion developed by Nelson [47], and Darby and Karni [48]. In other words, the production information is asymmetric, and consumers may be unable to detect the presence of certain properties unless they are informed so [49].

In present-day China, the legal and marketing tools that relate to TK-derived and related products include trademarks [50,51], designated geographical origin labelling [52,53], and Immaterial Cultural Heritage labelling [54,55]. All three methods intend to raise consumers' awareness of the products' local and traditional qualities and thus, simultaneously, aim to increase the potential market price of the products. However, none of the existing approaches explicitly guarantee that a traditional production process has been applied and neither is such a traditional process explicitly required of the producer.



To address the authenticity issue of TK-derived products, the marketing models of other credence goods, such as organic products, “fair-trade” foods, and environmentally harmless household supplies could be used as potential models. These products employ third-party assurance to communicate the qualities desired by the consumer, while at the same time attempting to influence consumer and industry behaviour [56]. Both public, private and non-governmental institutions can provide third-party assurance through quality standards or certification and labelling schemes [57].

Several questions and challenges arise out of the proposed understanding of TK-derived products. First of all, the prospects for the commodification of TK-derived products depend on consumer preference for such products and their willingness to pay a price premium for a product that is directly TK-derived rather than a look-alike substitute. Secondly, consumers who choose TK-derived products with the conservation of indigenous communities and the customary use of natural resources in mind, have to feel confident that the price of the product will benefit the cause. This includes trust in the efficiency of conservation methods and trust in the integrity and capacity of the third party assurance provider with regards to delivery of the earned price premium to the intended conservation goal.

### 3. Methodology

#### 3.1. Case Study

The city of Lijiang in Southwestern China is a major Chinese tourist destination. It was officially opened for tourism in 1985 in which year it attracted 400 foreign tourists [58]. In 1997, the city was listed as a UNESCO World Heritage Site. By 2011, Lijiang attracted 11.8 million tourists—of which well over 90% from China—who spent a total of 15.2 billion yuan [59]. In addition to spectacular natural scenery, Lijiang is also home of one of the 56 officially recognized ethnic groups—the Naxi, and “ethnic exoticism” and eco-cultural specialties are integral to tourist consumption [60].

As described in the introduction, the Naxi’s sacred texts are written by Dongba shaman priests in a pictographic script on traditionally handmade paper. Ancient Dongba scrolls were enlisted into the UNESCO Memory of the World Register in 2003 [61]. Dongba priests generally consider only scripts transcribed onto customary, handmade paper to be holy text, losing spiritual authenticity if written on other kinds of paper (He Zhiben, Chief Dongba, Baishuitai, oral communication, 29 February 2012). Yet, handmade Dongba paper is not only a valued historical relict and cultural heritage, but it is also a handicraft that can be sold by the locals and easily brought home by tourists.

In the Lijiang area, besides some interest in Naxi garments (highly priced, voluminous, and of little practical use to tourists), Dongba paper is the only major souvenir. The price is comparably low, whereas there is a wide range of different products: note books, maps, book marks, and postcards are practically usable items and gifts [62]. It needs noting that Naxi cuisine, music, architecture, and dance are not easily transferable (only items that are consumed locally are generally perceived as having ethnic flavour, while Naxi style Lijiang restaurants have not been very successful in urban centres around China). Other tourism services and products in Lijiang are similar to other tourism hotspots around China and have limited competitive force. In early 2014, there was one chain of four shops in Lijiang specializing in Dongba paper, which indicates the role that Dongba paper plays as a tourism product.

The Dongba Paper is made of the inner bark of *Wikstroemia delavayi* Lecomte (Thymelaeaceae), and sometimes *Wikstroemia chiangensis* W.W. Sm [15]. One kg of sun-dried inner bark of *W. delavayi* (at least 200 twigs) can produce only ten pages of Dongba Paper, size 25 cm by 60 cm [63]. Dongba papermaking is believed to have been influenced by traditional Tibetan papermaking [64,65] and consists of a labour-intensive 11-step production process: (1) Collecting *W. delavayi* branches; (2) Peeling; (3) Drying the raw materials; (4) Soaking the materials; (5) Washing; (6) Boiling; (7) Re-washing; (8) Pounding; (9) Forming the pulp; (10) Dredging the pulp to make paper, and (11) Smoothing the paper [16].

Several factors limit the potential for commercial development and commodification of Dongba paper: Source materials for Dongba paper are scarce and costly; production is located relatively far from the sales points; the product appears simplistic, while production is complicated, time-consuming, and requires the presence of a Dongba priest [63]. Entrepreneurs have in the past applied for patents based on traditional Dongba papermaking practices (6 patents, all void) [63]. One patent was awarded [65], and the patent certificate was displayed in the designated shop as a confirmation of the vendor's legitimacy. Yet, on 4 July 2007, a group of paper producers petitioned the Patent Re-examination Board of the State Intellectual Property Office to void this patent. On 12 May 2008, the patent was declared invalid [66]. This legal action led to the founding of Legal Aid for Traditional Knowledge and Arts (LATKA), an arts and traditional knowledge legal aid organization registered under the Wu Zuoren International Foundation of Fine Arts, and, in the interest of disclosure, a supporter of this research.

Besides a limited circle of local practitioners who can evaluate Dongba paper based on experience, expertise and personal connections, paper sold to tourists on the market is essentially a credence good. The controversial attempts at patenting the production processes underline the importance of credence and authenticity. Dongba paper has already evolved into a brand in itself and is in high demand. However, the commodification has been fraught with difficulties, and there appears no mechanism for channeling the benefits of consumer interest in Dongba paper directly into the conservation of the traditional practices of Dongba papermaking and the natural resources that underpin it.

### 3.2. Survey Design

We surveyed tourists who visited the city of Lijiang around the traditional Spring Festival (Chinese New Lunar Year) and explored their views on the significance of TK components to the touristic products they consume. In addition, they were asked about their opinions on how the benefits from such product sales should be shared, as well as about their preferences for the institutional arrangements to guarantee the genuine nature of TK components, and the achievement of conservation objectives related to the product's source materials.

To assess the views held by tourists visiting Lijiang—by far the most significant consumer group for Dongba paper—we designed a close-ended questionnaire that probed interviewees' stances on questions of cultural and biological diversity conservation and the sharing of the benefits from TK-derived products. The survey was carried out by four specially trained undergraduate students. Most of the surveys were completed at the storefront of a paper shop nearby the Great Waterwheel, one of Lijiang's major tourist attractions. This form of purposive sampling, albeit not necessarily statistically representative, provides baseline insights into the views held by a major (and in the near future, potentially expanding) consumer base [67]. The majority of the downtown respondents were either independent travellers, or strolling away from their travel group during free time. An additional estimated 10% of the surveys were distributed to tourists on buses. To protect the rights and interests of the respondents, the survey did not record or store personal data. Moreover, no interview or survey was carried out without prior informed consent from the respondent.

To ease interviewees into the process of answering, we started off with a general question asking them to evaluate the beauty of Lijiang. In addition to basic personal information, such as age and gender, we, directly and indirectly, enquired about factors that allowed us to deduce interviewees' social standing (employment status) and income level (i.e., cost of lodging in Lijiang). We also asked questions that can be useful in evaluating prior knowledge about the cultural and biological diversity in the region. The three questions regarding cultural knowledge were designed to be progressively more difficult.

The core of the questionnaire consisted of questions regarding respondents' views on the importance of TK preservation and preferences for methods of preservation. Finally, the respondents were asked to allocate hypothetical funding of 100,000 RMB for various TK preservation stakeholders. This number was chosen based on specific psycho-cultural considerations in the Chinese context.

In Chinese, numbers are ordered by the tens of thousands (*wan* in Mandarin) thus 100,000 (circa 16,000 USD at that time; 1 USD = 6.29 RMB) is an easy number to handle as it is expressed as ten *wan*. 100,000 RMB is a considerable amount beyond the average Chinese white-collar worker's annual income, but well below the cost of significant consumer investment, such as housing. Therefore, 100,000 RMB fits this exercise well as it is easily understood and constitutes significant spending, but at the same time is not beyond the life experience and therefore comprehensible by the respondents. Discrete choice designs are widely used in a variety of social research areas [68]. A discrete choice experiment elicits participants' preferences and priorities within a set of mutually exclusive hypothetical alternatives [69].

The willingness to pay (hereafter: WTP) is defined as the maximum amount an individual is willing to sacrifice to procure a TK good. The inclination to purchase a product, particularly the differences in WTP for incremental differences in products has been widely used in marketing as well as to analyze public good provision [70]. The use of the approach to analyze sensitive ethical decisions, such as the provision of medical services, has attracted certain controversy [71]. However, the method remains useful since it can simulate hypothetical choice making in situations where such choices are not actually made via market or legal regulation, and when carefully designed and employed, can avoid pitfalls in reliability, validity, and ethics of application [72].

The interviewees could choose to fill the questionnaire themselves or have a surveyor fill it in after reading out the questions. Surveys were available in standard Mandarin simplified characters, and the volunteers administering it were Chinese. The results were analyzed in three sections. First, in addition to a basic socioeconomic description of the sample, the respondents' answers were tabulated and analyzed for major trends. Then, the hypothetical fund's allocation exercise was analyzed using univariate descriptive statistics [67]. Various indicators except for the hypothetical fund's allocation exercise data were correlated as the last step. Additionally, several proxy variables were designed based on respondents' answers, and those were included in the correlation.

For each knowledge question, a dummy "yes" or "no" variable was designed ("corr\_3", "corr\_4", "corr\_5" for questions three, four, and five, respectively, with the value one for correct answers and zero for wrong answers). Each respondent's overall knowledge was calculated on a three-out-of-three basis and then expressed as percent ("score" variable) [67]. Respondents who expressed a preference for TK preservation by supporting a price increase for TK-derived paper with original material use or TK preservation using substitute plant materials were assigned the value of one for dummy variable "support". Those who expressed interest in paying a price premium for TK-derived paper were assigned a value of one dummy variable "wilpay". Respondents who indicated willingness to pay extra for TK derived products (by choosing to pay a price premium for TK-derived Dongba paper) were assigned the value of one for dummy "wilpay2", while those who indicated willingness to pay the highest premium of ten RMB (a 50% price increase) were assigned value one for dummy "wilpaym" (meaning, "will pay maximum").

Females were assigned value one and males two for the sex variable. People were divided into age groups according to the decade of birth, with those born before 1970 assigned the value of one and those after 1990 the value of four. Education attainment was represented with value one for elementary school or less up to five for graduate degree holders. Vocation was not included in the correlation analysis, but citizenship was reduced to a dummy variable with the value one for China and zero for other countries.

## 4. Survey Findings

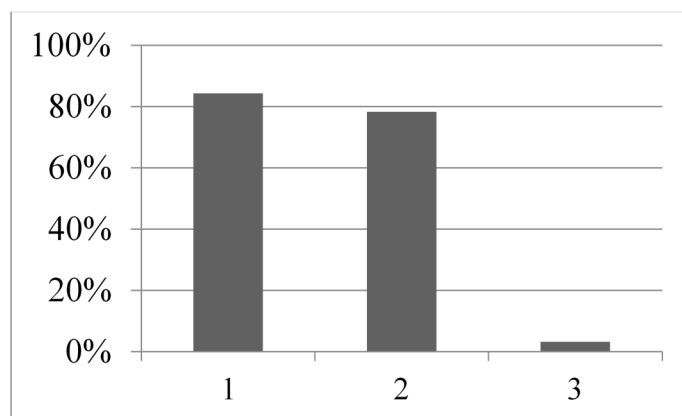
### 4.1. Sample Description

Four hundred and fifty-five respondents completed the survey between 21 January and 22 February 2013; of those 415 provided full information and were included in the analysis. Of the respondents that fully completed the questionnaire, 51% (211) were male, and 49% (204) were female.

26% (109) were born on or after 1990 (23 years old or younger), 51% (210) between 1980 and 1989 (between 23 and 33 years old), 14% (60) between 1970 and 1979 (between 33 and 43 years old), and 9% (36) before 1970 (43 and older). 7% (28) of the respondents had received only primary education, 22% (93) had attended high school, 28% (115) received vocational training, 40% (164) held an undergraduate degree, and 4% (15) a graduate degree. Students constituted the largest employment group at 25% (102), followed by self-employed 18% (73), non-profit 17% (72), and private enterprise employees 15% (62). The age, gender, and education distribution of domestic tourists fits the overall profile of Lijiang's tourist demography as reported by Su in mid-2000, while employment distribution does not [73]. Differences in employment classification are the most likely sources of divergence of employment type distribution. While we do not claim that the survey covers a fully representative sample of tourists (and bias might also have been introduced through the purposive, rather than randomized sampling), the sample size would be statistically representative at a confidence level of 95 percent and a confidence interval of 5.

#### 4.2. Limited Knowledge of Local Conditions

To assess whether pre-existing knowledge of local culture leads to higher support for TK preservation and willingness to pay, we asked three questions of increasing difficulty about the local culture and traditional paper. Overall, 55% (690) of the responses were correct. As can be seen in Figure 2, while 84% (351) of the respondents knew the name of the locally predominant ethnic group, and 78% (326) knew the name for their religion, only 3% (13) could identify the plant (*Wikstroemia* or *lancangyaohua*) traditionally used for Dongba papermaking. Of the thirteen who responded correctly to the most difficult question, three missed the previous question, which indicates that they might have guessed the answers. Overall, the visitors' cultural knowledge should be viewed as fairly circumscribed. While 70% (292) were able to get two out of three questions right, 18% (76) got only one and 9% (37) got none of the questions right. Of the 415 respondents, 10 answered all questions correctly, 292 got two right, and 76 knew the right answer to one question. Thirty-seven did not know the answer to any question.



**Figure 2.** Percentage of correct answers to questions on local culture and papermaking. (Note: 1 = What is the name of the locally predominant ethnic group? 2 = What is the name of this group's religion? 3 = What is the plant (official or Chinese name) traditionally used for Dongba papermaking? Source: This survey).

#### 4.3. High Support for TK Preservation, Relatively High WTP

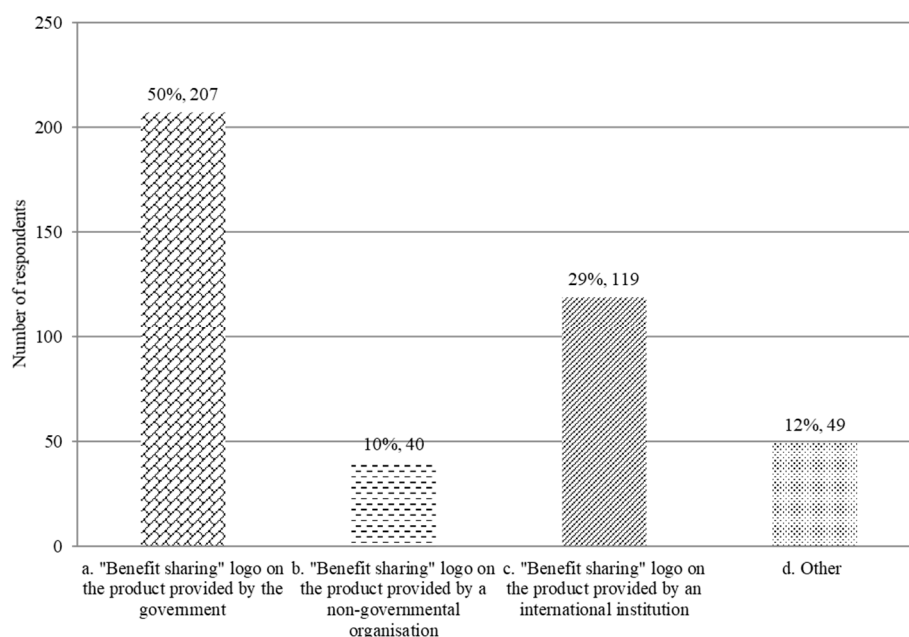
The majority of the respondents expressed support for the preservation of TK-related papermaking. 55% (229) supported a price increase for TK-derived paper with original material use, with the price premium going to the plant resource preservation, while 12% (49) preferred TK preservation using substitute plant materials. 19% (77) of the respondents did not mind a complete



replacement of traditional paper with industrial products, but 14% (60) did not hold any opinion on this question.

When asked how much they would be willing to pay for a 20 RMB worth of TK-derived Dongba paper, 49% (204) claimed to be willing to pay a premium; among those 14% (57) chose the provided option to pay ten RMB extra, and 35% (147) said they would be willing to take the cheaper option of paying extra five RMB. Another 20% (82) did not have an opinion, 19% (77) respondents refused to pay a premium, and 13% (58) indicated that they would not be interested in purchasing such paper.

As Figure 3 demonstrates, when asked how they would prefer to have the fact that a product is TK-derived communicated to the consumers, 50% (207) of the respondents indicated that they would prefer to have a government-approved label for such products. 29% (119) would prefer to see a label provided by an international institution, and 10% (40) would prefer a non-governmental organization to take on the third party labelling. This was admittedly a leading question as an option for not labelling the product was not provided and would have to be suggested by the respondent themselves. Regardless, only one respondent brought up a fourth alternative, suggesting that labelling should be provided by a “government-approved civil institution”. The remaining 12%, (48) respondents who selected the answer “other” did not make suggestions for an alternative, possibly equaling “other” with the “I don’t know” option, which was not selected by any of the respondents who completed the questionnaire.



**Figure 3.** Respondents' preference for third-party assurance. (Source: This survey).

#### 4.4. Government Least Preferred to Manage TK Funds

Finally, the respondents were asked to allocate a hypothetical funding of 100,000 RMB between a range of potential stakeholders. They also had the option to allocate part or even all of the funding to a category “I don’t know” as well as a write-in option under “other”. Only the answers of those who could do the math correctly and split the 100,000 between their choices and still have a sum of 100,000 were used for the following analysis. Thus 24 respondents had to be dropped due to incorrect math. Failure to add up to ten was distributed among all education levels, although medium educational attainment was slightly lower among those with incorrect calculations in comparison to the rest of the participants ( $t$ -test  $p = 0.003$ ). 101 individuals indicated that they did not know how to allocate the monies and were excluded from further analysis. The probability of the allocations between the categories having been distributed at random was less than 0.0001 (ANOVA  $F = 181$ ).

As can be seen in Table 1, few respondents showed a strong preference for dedicating all of the hypothetical funds to only one stakeholder. Of those, nine (3.10% of all participants that were included in the analysis) preferred to channel all the funds to farmers directly, and the same number would turn everything over to civic organizations for the purposes of preserving TK. 2.07% (6) chose government as the receiver of the largesse, and 0.34% (1) would pass the coffers to a Dongba paper makers cooperative. Inversely, only 6.90% (20) of the respondents did not allocate any funds directly to the farmers. 11.38% (33) of respondents would not allocate any funding to a papermaking cooperative, and 8.97% (26) would not contribute funds to civic organizations. Of the four identified options, government was the most likely to receive no funding at all: 46.55% (135) of respondents did not allocate any funding to the government.

As shown in Table 2, the total sum, median, mode, and mean of the amounts that various respondents had allocated to each of the identified options suggest that direct contribution to the farmers was the most frequent choice, albeit the standard deviation for the contributions to the farmers was sizable in comparison to the mean. The median allocation to the paper makers' cooperative and civic organization was the same, with the average allocation and the total sum for the civic organization slightly higher than for the hypothetical cooperative; however, a higher standard deviation for the allocations to the civic organization renders the difference unlikely to be significant. With the median allocation at 10,000 RMB, mode of 0 RMB, and mean of 12,800 RMB, the government was clearly getting the least allocations of all the four readily identified options.

#### 4.5. Education Correlated to WTP and TK Support

Since most of the questions did not concern scales or directly comparable quantities, unsurprisingly little direct correlation could be observed between the original variables (see Table A1 in the Appendix for a complete table of the correlations). It was, however, surprising to observe that there was no significant correlation between the observers' education and their knowledge of the local conditions. In addition, the question regarding accommodation cost, which was intended as a proxy for respondents' socioeconomic status, did not exhibit significant correlation trends.

The dummy variable for support for TK showed very high correlation with WTP for TK-derived paper: Correlation between "support" and "wilpay" was at  $r = 0.78$  ( $p < 0.001$ ); correlation between "support" and "wilpay2" was somewhat weaker ( $r = 0.31$ ,  $p < 0.001$ ). Correlations between "wilpaym" and other variables were not statistically significant. Education level was the only socioeconomic variable that showed a consistent and statistically significant correlation with the "support" dummy ( $r = 0.24$ ,  $p < 0.001$ ), "wilpay" ( $r = 0.24$ ,  $p < 0.001$ ), and "wilpay2" ( $r = 0.18$ ,  $p < 0.001$ ).

**Table 1.** Results of hypothetical funds allocation exercise: Extreme cases where all or no funding was allocated.

	(1) Pay Directly to Farmers Who Provide the Plant Material	(2) Provide Funds to a Naxi Dongba Paper Production Cooperative, Thus Ensuring the Preservation and Continuation of the Traditional Papermaking Skills	(3) Provide Funds to a Civic Organization to Be Used for the Preservation of Naxi Traditional Culture, Thus Ensuring That Preservation of the Cultural Environment	(4) Transfer the Funds to the Government, Leave It up to the Government to Allot the Funding to Particular Targets	(5) Other
Percentage (number) of respondents who allocated all funds to only one stakeholder	3.10% (9)	0.34% (1)	3.10% (9)	2.07% (6)	0.34% (1)
Percentage (number) of respondents who did not allocate any funds for a particular stakeholder	6.90% (20)	11.38% (33)	8.97% (26)	46.55% (135)	92.41% (268)

Source: This survey.

**Table 2.** Results of hypothetical funds allocation exercise: Cases of respondents who split the funding between different options.

	(1) Pay Directly to Farmers Who Provide the Plant Material	(2) Provide Funds to a Naxi Dongba Paper Production Cooperative, Thus Ensuring the Preservation and Continuation of the Traditional Papermaking Skills	(3) Provide Funds to a Civic Organization to Be Used for the Preservation of Naxi Traditional Culture, Thus Ensuring that Preservation of the Cultural Environment	(4) Transfer the Funds to the Government, Leave It up to the Government to Allot the Funding to Particular Targets	(5) Other
Sum of all allocated funds	9,330,000	7,370,000	8,190,000	3,720,000	390,000
Median for person per category	30,000	30,000	30,000	10,000	0
Mode for person per category	30,000	30,000	20,000	0	0
Mean for person per category	32,200	25,400	28,200	12,800	1300
Std Dev	17,500	13,000	17,600	17,300	8900
Variance	30,800	16,900	31,100	29,900	8000

Source: This survey.

## 5. Discussion and Conclusions

From the results of the questionnaire, we can surmise that the Lijiang visitors whom we surveyed had very circumscribed knowledge of the local cultural traditions yet most (278; 67%) expressed support for preserving TK related to paper production. The 19% (77) who did not mind the disappearance of TK and replacement of TK-derived paper with industrial substitutes should be considered a low percentage. Particularly so, given existing literature accounts from other parts of China where only a small percentage of tourists are reported to be truly interested in the culture and community of purportedly ethnic and cultural tourist destinations [74].

While 49 (12%) preferred substitution of traditional plant materials for other available options, 229 (55%) explicitly preferred the continuous but conservative use of traditional materials and accepted the implied cost increase to the final product. However, when asked for more detailed estimates of the acceptable price premium for TK-derived paper, of the 229 supporters of TK only 137 stated that they would be willing to pay ten or 20 RMB extra (paired *t*-test value between the stated support and WTP for TK conservation in questions six and seven was less than 0.000), and only 37 of those claiming to be willing to pay for conservation of TK in question six stated that they would be willing to pay the maximum price premium presented in question seven. This relationship is confirmed by the correlation analysis which indicates a strong correlation, but far from complete overlap, between support for TK and the willingness to pay a price premium for TK-derived products.

When offered labelling as a form of assurance that part of proceeds from sales of a paper product would be used for benefit sharing as required by the United Nations' Convention on Biological Diversity (CBD), exactly half of the respondents expressed a preference for a government-run labelling scheme. With international institutions and NGOs seen as much less preferable third party assurers, this is not surprising given that governmental labelling schemes tend to dominate in China's consumer goods marketing. However, when asked to allocate hypothetical funding for the benefit sharing and conservation of TK, government institutions garnered the least support: Government was the most likely to not be awarded any funding and received the smallest total amount, as well as had the smallest average awarded amount. Such a contradiction between high trust in the government as the only feasible third-party guarantor of the authenticity of the product while mistrusting the government's ability to distribute benefits highlights the ambiguous attitude Chinese have towards governmental regulation of markets and consumer good quality assurance.

While direct payment to farmers was leading in terms of total amount committed by all interviewees, a hypothetical but concrete Naxi Dongba paper production cooperative, and a generic non-governmental preservation organization were close runners-up, with the latter leading in all indicators but the mode of allocated amount. This suggests that although when asked directly, consumers tend to prefer government as the third-party assurer, however, as the funding allocation exercise indicates, the government does not enjoy trust in terms of channeling the benefits from a TK-derived price premium to the conservation goals.

In its complex production process and physical and cultural distance between the producers and modern consumers, Dongba paper fits the notion of a TK-derived credence good. In contradiction to previous research indicating that tourists in China tend to have low interest and appreciation of local traditions in the areas that they visit [74], the results of our survey indicate that tourist in Lijiang articulate an interest in maintaining traditional practices and express a desire to purchase authentic TK-derived Dongba paper at a premium price. Our survey was not designed to reveal the drivers of that preference, but we can hypothesize that the reasons for the high approval and interest might be due to the consumptive nature of the premise: Visitors are offered an item that is unique and can be acquired without the strenuous effort of developing the deep intercultural competencies that are required to enjoy other forms of traditional cultural products, such as songs in local languages.

The fact that certifying a TK-derived good ensures the quality of the consumed product can atone for the notorious interest in personal betterment versus disinterest in the public good on the part of Chinese consumers. In the case of organic food, selfish goals such as consumer health and better taste

are reported as the main drivers of consumption, with the least weight attached to altruistic factors like farmers' health and environmental benefits such as wildlife conservation and reduced waste of packaging materials [75]. Likewise, it could be said that the assurance that a product is genuinely TK-derived is integral to the direct value that buyers ascribe to the product and the price premium is paid for a selfish desire to obtain a good product instead of an altruistic donation to a good cause.

Labelling as the potential assurance of the genuine nature of the TK elements in the Dongba paper, and the potential benefits that a purchase would have towards conservation of the TK and the related natural resources, seems generally accepted by the interviewees, but there are significant contradictions with regards to who should provide the assurance. On the one hand, government is preferred as the guarantor, but at the same time, there are strong indications that the public does not trust the governmental ability to either conserve the resource or share benefits of the development of it.

This puts our premise of third-party certification of TK-derived products at a curious bind: Chinese government backing is required for the credence of labelling of products while direct government involvement in the conservation efforts and conservation funding management should be limited for similar credence reasons. We believe that under these conditions a registered non-governmental organization with competency for the TK conservation efforts could be a viable option, while at the same time labelling would require a strong partnership with a government institution. If there is to be any hope of trust in such an undertaking, both labelling and conservation need to be transparent and accountable to the public.

Beyond the scope of this paper, and therefore an opportunity for future research is the indigenous perspective on Dongba papermaking among producers, religious practitioners, and the general Naxi community. Their views and actions are directly impacted by the externally perceived value of the TK involved in papermaking. It is the hope of the authors that a more pronounced valuation of TK would contribute to stakeholder capacity to self-articulate and determine their production practices as well as manage the ecological base and environmental impacts of papermaking and trade.

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## Abbreviation

CBD	Convention on Biological Diversity
LATKA	Legal Aid for Traditional Knowledge and Arts
NGO	Non-Governmental Organization
TK	Traditional Knowledge
WIPO	World Intellectual Property Organization
WTP	Willingness to pay



## Appendix A

Table A1. Pearson correlation coefficients of the survey responses.

	2	3	4	5	6	7	8	Corr_3	Corr_4	Corr_5	Score	Suppor	Wilpay	Wilpay	Wilpaym	Sex	Age	Educ	Countr
2	1	0.03	−0.14	0.09	0.06	0.04	0.21	0.03	0.16	−0.02	0.11	−0.1	−0.02	0	−0.15	0.07	−0.05	−0.14	−0.02
3		1	0.32	0.14	0.04	0.14	0.05	−0.72	−0.26	−0.06	−0.56	−0.22	−0.14	−0.02	−0.01	−0.01	0.05	−0.08	0.03
4			1	0.09	0.11	−0.08	−0.12	−0.35	−0.91	0.01	−0.75	−0.04	0	0.02	−0.06	−0.07	0	0.02	−0.07
5				1	0.16	0.2	0.04	−0.04	−0.01	−0.44	−0.14	−0.26	−0.19	−0.23	−0.16	−0.1	0.02	0	0.01
6					1	0.14	0.16	−0.01	−0.1	−0.01	−0.07	−0.07	−0.27	0.04	−0.06	−0.03	0	−0.03	0
7						1	0.14	−0.17	0.03	−0.05	−0.09	−0.35	−0.3	−0.36	0.06	−0.05	−0.21	−0.15	0.05
8							1	−0.02	0.1	0.02	0.06	−0.07	−0.07	−0.11	−0.05	0.08	0.12	−0.04	0.04
corr_3								1	0.38	0.08	0.79	0.2	0.12	0.1	0.02	−0.01	−0.01	0.07	−0.05
corr_4									1	−0.01	0.82	0.01	−0.02	−0.03	0.02	0.05	0.01	−0.03	0.05
corr_5										1	0.29	0.07	0	0.1	0.01	−0.02	−0.07	0.04	0.02
score											1	0.13	0.05	0.06	0.02	0.02	−0.02	0.03	0.01
support												1	0.78	0.31	0.09	−0.1	0.14	0.24	−0.08
wilpay													1	0.24	0.09	−0.14	0.12	0.24	−0.06
wilpay2														1	0.41	0.02	0.09	0.18	−0.11
wilpaym															1	−0.06	−0.01	0.02	−0.02
sex																1	0.06	0.02	0.02
age																	1	0.09	−0.06
educ																		1	−0.16
country																			1

Source: This survey.

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