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Research Article

TRADITION OR TECHNOLOGY? HERITAGE MASTERS AND CHATGPT IN THE TRANSFER OF INTANGIBLE CULTURAL HERITAGE KNOWLEDGE

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Abstract

This study examines the effectiveness of ChatGPT-4o in intangible cultural heritage (ICH) knowledge transfer by comparing its responses with those of heritage masters specializing in pottery making in Cappadocia. Structured interviews were conducted with ten heritage masters, followed by the same questions posed to ChatGPT-4o. Findings indicate that ChatGPT-4o provides comprehensive and accurate general information about pottery history, materials, and techniques, often supplementing details beyond what heritage masters shared. However, heritage masters demonstrated superior knowledge in localized, nuanced aspects, particularly in the pottery firing process. The study highlights the potential of AI-based tools in preserving and disseminating ICH knowledge, while also recognizing their limitations in capturing experiential, tacit knowledge. The results suggest that while AI applications like ChatGPT-4o can be valuable in ICH education and promotion, they cannot fully replace heritage masters in transferring deeply embedded cultural knowledge.

Keywords: Artificial Intelligence, Chatgpt, Intangible Cultural Heritage, Heritage Masters, Cappadocia

Introduction

Intangible cultural heritage (ICH) is an important element of society, along with the knowledge and skills of heritage masters and other practitioners (Xie, 2022). Artificial intelligence (AI) applications have recently come to the forefront in disseminating and preserving information included in these elements (Mendoza, De La Hoz Franco and Gómez, 2023). The digitalization process, which accelerates with the impact of developments in AI, affects many elements and areas in the social field (Arıkan, 2024). One of these areas is ICH elements (Adewumi, 2022). AI-supported applications provide a different and new development area in managing and maintaining ICH elements (Yu, 2023). Compared to traditional methods, new AI-supported digital applications can convey ICH elements in a detailed and clear way (Sun, 2022). Moreover, with AI support, collecting information about ICH elements can be realized faster and easier (Lvping, 2021) because AI applications increase the accessibility of ICH information (Wang, 2022). As a result, various digital applications based on AI and their databases enable the preservation and development of ICH elements and the dissemination of ICH knowledge (Sun and Liu, 2022).

ChatGPT is one of the AI applications that have been effective in various sectors and fields, especially in the cultural heritage and tourism sectors in the last few years (Demir and Demir, 2023a). ChatGPT's features such as performing text analysis and sentiment analysis, generating fast and comprehensive answers to questions, and providing solutions to any problem have initiated an era in which ChatGPT is frequently used (Spennemann, 2024a). The release of ChatGPT 3.5, the free version of ChatGPT, an AI language model, in 2022 has increased the frequency of use as well as research on the effectiveness and future of ChatGPT in various sectors (Dwivedi et al., 2024). The tourism sector has also experienced a period of intensive research on ChatGPT. In this period, tourists' ChatGPT usage intentions and perceptions (Ali et al., 2023; Arora et al., 2024; Pham, Duong and Nguyen, 2024), service compensation and complaints (Dalgıç, 2023; Koç et al., 2023; Tan, Liu and Litvin, 2025), potential impacts and contributions of ChatGPT to the tourism sector (Demir and

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Demir, 2023b; Dwivedi et al, 2024; Gursoy, Li and Song, 2023; Sigala et al., 2024), the role and future of ChatGPT in tourism education (Altun et al., 2024; Dalgıç, Yaşar and Demir, 2024; El-Akhras et al., 2024).

The number of studies on cultural heritage, which is an important product of the tourism sector, and ChatGPT is limited. Research on ChatGPT and cultural heritage includes interpreting cultural heritage values with ChatGPT (Spennemann, 2023), learning cultural heritage with ChatGPT (Virvou et al., 2023), accessing cultural heritage with ChatGPT (Yılmazer and Karaköse, 2023), ChatGPT and the future of cultural heritage (Spennemann, 2024b). However, no research has been found within the scope of ICH and ChatGPT. It is important whether ICH elements are accurately transferred by ChatGPT as information content. Because there are hesitations about the reliability and accuracy of information in the content of ChatGPT. ICH is a valuable element because it contains the past experiences of the society and is passed down through generations. For this reason, the information content about ICH elements in AI-supported applications such as ChatGPT must be sufficient and accurate.

One of the disadvantages or criticisms of ChatGPT is that ChatGPT produces inaccurate or incomplete information (Jo, 2023). At this point, the question that needs to be examined is whether ChatGPT can create as accurate and sufficient information content as heritage masters in ICH knowledge transfer. It is seen that this question has not yet been examined in research. In this context, the main purpose of this research is to compare heritage masters and ChatGPT within the scope of ICH knowledge transfer. In line with the aim of the research, interviews were conducted with heritage masters who make pottery in the Cappadocia region. Then, the same interview was conducted with ChatGPT-4o. The results obtained were compared and the effectiveness of heritage masters and ChatGPT in ICH knowledge transfer was evaluated.

Conceptual Framework

ChatGPT, Tourism and Heritage

ChatGPT can be defined as a chat tool designed and created by OpenAI. The free version was first offered to users in November 2022, and then ChatGPT-4o was released in March 2023 with updates and innovations (Skavronskaya, Hadinejad and Cotterell, 2023). The processes of individuals obtaining information in line with the purpose they have changed with ChatGPT (Kim et al., 2024). Through ChatGPT, various tasks such as news, articles, translation, software, and visual creation can be performed (Edwards, 2023). ChatGPT, which is an advanced and flexible language model, has become the center of attention with its natural language processing feature that produces human-like answers to its users' queries (Gursoy et al., 2023). ChatGPT helps users with simple or more complex tasks in their daily routines (Lund and Wang, 2023).

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ChatGPT, an AI-based application, has the potential to contribute to the improvement of processes and services in tourism businesses with its ability to obtain, calculate, and analyze large amounts of data (Fakfare et al., 2025). ChatGPT is also considered as an auxiliary support for businesses in making decisions and increasing efficiency (Carvalho and Ivanov, 2024). In addition to businesses, ChatGPT also helps tourists with various issues. ChatGPT can serve as an assistant for tourists to search for information about their travels, create travel plans, and learn detailed information about destinations (Xu et al., 2024). ChatGPT can also be used in the field of tourism education. Dalgıç et al. (2024) state that ChatGPT positively affects tourism students' digital literacy and learning outcomes.

In the tourism sector, it is seen that ChatGPT is effective in different ways in businesses, tourists, and even tourism education. Apart from these areas, it is also necessary to examine whether ChatGPT is effective within the scope of cultural heritage and ICH. Sigala et al. (2024) mention that ChatGPT can be used to create a game based on the past in cultural heritage sites. Thanks to this game, the cultural heritage experience can be immersive and entertaining. Another contribution of ChatGPT in the field of cultural heritage is that it can increase accessibility, especially for people with disabilities (Sigala et al., 2024). There are also some negative

aspects of ChatGPT in the field of cultural heritage. According to Sigala et al. (2024), this negativity is that ChatGPT generates inaccurate information about cultural heritage or the response content is not of high quality.

Spennemann (2023) asked ChatGPT to write an article (essay) about cultural heritage values and to include references in this essay. It was determined that more than half of the references used by ChatGPT in the essay created as a result of this request were incorrect. Spennemann (2024b) emphasizes the possibility that cultural heritage comments or content created with AI-supported applications like ChatGPT may constitute the manifestation of cultural heritage.

Intangible Cultural Heritage (ICH)

Culture and heritage are the basic elements that constitute the spiritual wealth of a society (Idris, Mustaffa and Yusoff, 2016). Heritage consists of elements with value and meaning integrity (Macdonald, 2013) and can be interpreted according to different classifications. Tangible cultural heritage consists of elements that have a specific structure and have maintained their physical structure for a long time. ICH, on the other hand, is a concept developed as a result of UNESCO's efforts to protect cultural heritage. From 1972 until 2003, there were various uses such as folklore and traditional culture instead of ICH (Oğuz, 2013). According to the Convention on Intangible Cultural Heritage, ICH can be classified as oral traditions, performing arts, rituals, practices related to nature, and traditional craftsmanship (UNESCO, 2003). Definitions related to ICH are also made within the scope of these elements. For example, practices and skills that belong to the community and are maintained by community members are defined as ICH (Cominelli and Greffe, 2012). ICH are all intangible elements of culture and heritage (Lenzerini, 2011). Xue et al. (2019) interpret ICH as a multidimensional and dynamic set of values.

ICH, which has been going on since the existence of societies, is a reflection of people's knowledge and skill treasures. This wealth of knowledge and skills supports the continuity of society by forming the identity of individuals through interactions (Yoshida, 2004). The elements within the scope of ICH are important for every society as they are transferred between generations and have comprehensive knowledge and skills in terms of content. Although generations and times change, ICH elements exist in every period and are produced again and again (Petronela, 2016). ICH constitutes significant information for the understanding and interpretation of tangible heritage elements (Byrne, 2008). ICH elements gain meaning and importance by establishing a link between the past and the future of society, providing continuity, and having a direct impact on the social structure (Petronela, 2016).

Specifically, ICH has some characteristic features. Firstly, ICH elements become tangible through people's practices. Secondly, ICH elements are constantly recreated by people and heritage masters. Thirdly, ICH elements provide the formation of community identity (Su, 2018). Xiang (2011) explains the characteristics of ICH elements as intergenerational transmission, oral transmission, nationality, uniqueness, and variability. One of the important elements of these characteristics is heritage masters.

ICH masters or practitioners are individuals who transfer ICH elements to future generations and give dynamism to these elements (Eichler, 2021). Heritage masters have a leading role in the preservation and continuation of ICH elements (Basat, 2013). Heritage masters are effective with their knowledge and skills in the transfer, recreation, and teaching of ICH elements (Yaşar and Yayla, 2023). Considering this importance, heritage masters should be willing and voluntary in the process of transferring ICH knowledge and skills to young people (Teke, 2013). Otherwise, the sustainability of ICH elements may be negatively affected.

Methodology

The main purpose of this research is to make a comparison between heritage masters and ChatGPT within the scope of ICH knowledge transfer. In line with the aim of the research, firstly, a structured interview was conducted with heritage masters. In the structured interview, the interview is conducted within the scope of the questions predetermined by the author. Apart from these questions, no other questions are asked of the participants. After the interview with the heritage masters was completed, the same questions were asked to ChatGPT-4o. In a way, an interview was conducted with ChatGPT-4o. In the structured interview form, there are 5 questions other than demographic questions. These questions were created by the author within the scope of knowledge transfer literature.

Knowledge transfer or sharing is a process that takes place between individuals or businesses (Ronra Shimray and Kodand Ramaiah, 2022). Explicit knowledge refers to information that can be transferred through documents or electronic media. Tacit knowledge includes personal information that cannot be easily

transferred (Cooper, 2006). Knowledge about ICH is passed down through generations as belonging to a community and taught by individuals who are considered masters in this field (ICOMOS, 2002). Without knowledge transfer, ICH cannot be transferred between generations (Sun, Chen and Liao, 2021). Apart from the knowledge transfer of heritage masters, new technologies can be used for this purpose. New technologies and applications can be useful in preserving and presenting heritage elements (He, Ma and Zhang, 2017). Digital platforms and applications can be used to transfer knowledge and experiences related to heritage elements (Aytekin and Rızvanoğlu, 2019). However, the adequacy and scope of information in the databases of AI-based applications may lead to inaccurate transfer of heritage elements (Younes et al., 2017).

In line with this information, interview questions were created to determine whether AI-supported ChatGPT-4o is as effective as heritage masters in the process of ICH knowledge transfer. The interview questions are related to pottery, which is an important ICH element in the Cappadocia region. Cappadocia is a rich region in terms of ICH elements. ICH elements such as carpet and rug weaving, pottery, and Soğanlı dolls are frequently produced in the region (Yolcu, 2014). However, pottery is the main ICH element that is recognized by Cappadocia and attracts the attention of tourists. In this context, interviews were conducted with heritage masters who produce pottery. The questions in the interview form are as follows:

1. When and how did pottery making start in the Cappadocia region? Can you tell us as much as you know about its history?

2. Can you give information about the materials and material properties used in pottery making in the Cappadocia region?

3. What are the methods used in pottery making in the Cappadocia region? Can you tell us?

4. Can you tell us about the process of firing pottery in the Cappadocia region? What is done in this process?

5. What are the ornamentation techniques used in pottery decoration in the Cappadocia region? Can you tell us?

The sample of the research consists of heritage masters who produce pottery in Cappadocia. Accordingly, interviews were conducted with 10 heritage masters. When the responses of the participants during the interview process begin to show similarities, it can be inferred that the number of participants is sufficient (Miles and Huberman, 1994). There are various explanations regarding the adequacy of 5-25 participants (Creswell, 2013). Within the scope of this information, it makes sense that the interviews should be terminated when the responses become repetitive (Marshall, 1996). Accordingly, the number of interviews was limited to 10 participants. The demographic characteristics of the participants are given in Table 1. According to Table 1, all participants were male. The age range of the participants is 23-51 years, their education level is secondary/high school and their pottery-making experience varies between 9-30 years.

Table 1. The Demographic Characteristics of the Participants

Participants	Gender	Age	Education	Pottery making experience
P1	Men	46	Secondary School	17 years
P2	Men	37	High School	9 years
P3	Men	44	High School	15 years
P4	Men	47	High School	27 years
P5	Men	51	Secondary School	21 years
P6	Men	42	High School	14 years
P7	Men	47	High School	18 years
P8	Men	23	Associate Degree	12 years
P9	Men	27	University	15 years
P10	Men	48	High School	30 years

The interviews were completed between October 01 and December 01, 2024. Interviews were conducted based on the participants' voluntariness. Before the interviews, the subject was informed and it was stated that ethics committee permission was obtained. *Ethics committee permission was obtained from Isparta University of Applied Sciences Scientific Research and Publication Ethics Board with the decision dated 19.08.2024 and numbered 17.* The longest interview lasted 23.43 minutes and the shortest interview lasted 10.36 minutes. The average interview duration was 14.23 minutes. After the interviews were completed, the audio recordings were transcribed. They were checked for the last time before the analysis.

The notes obtained were analyzed within the scope of thematic analysis. Within the scope of this analysis, themes were determined for each question. For thematic analysis, the steps suggested by Braun and Clarke (2006) were followed. Accordingly, themes were identified, checked, and named. In the research, some issues were taken into consideration to ensure the reliability and validity of the interview data obtained. Care was taken to ensure that the heritage masters interviewed were of different ages, educational backgrounds, and most importantly, had pottery-making experience.

Findings

The interview data were analyzed by thematic analysis. In this analysis process, each question was evaluated within itself. Thus, the effectiveness of heritage masters and ChatGPT-4o in the process of ICH knowledge transfer was determined.

History of Pottery in Cappadocia

The first question asked to the heritage masters was "When and how did pottery making start in the Cappadocia region? Can you tell us as much as you know about its history?'' The purpose of asking this question was to determine how well the heritage masters know the history of pottery in the region and to determine the transfer of knowledge. The same question was then asked to ChatGPT-4o.

It was determined that all of the heritage masters had a good command of the history of pottery in the Cappadocia region, especially in Avanos. Heritage masters emphasize two points while conveying the history of pottery. These two points include the recent and the old periods. Within the scope of the recent period, heritage masters convey that pottery has existed within the process they know and that they learned from their grandfathers and ancestors. P3 and P7 express similar things in this regard. P3 says, *"It has been going on since the time we were born and grew up. We know that it goes back a long time."*, while P7 states, *''I am 55 years old. Pottery has been made in Avanos since our grandfathers.''*

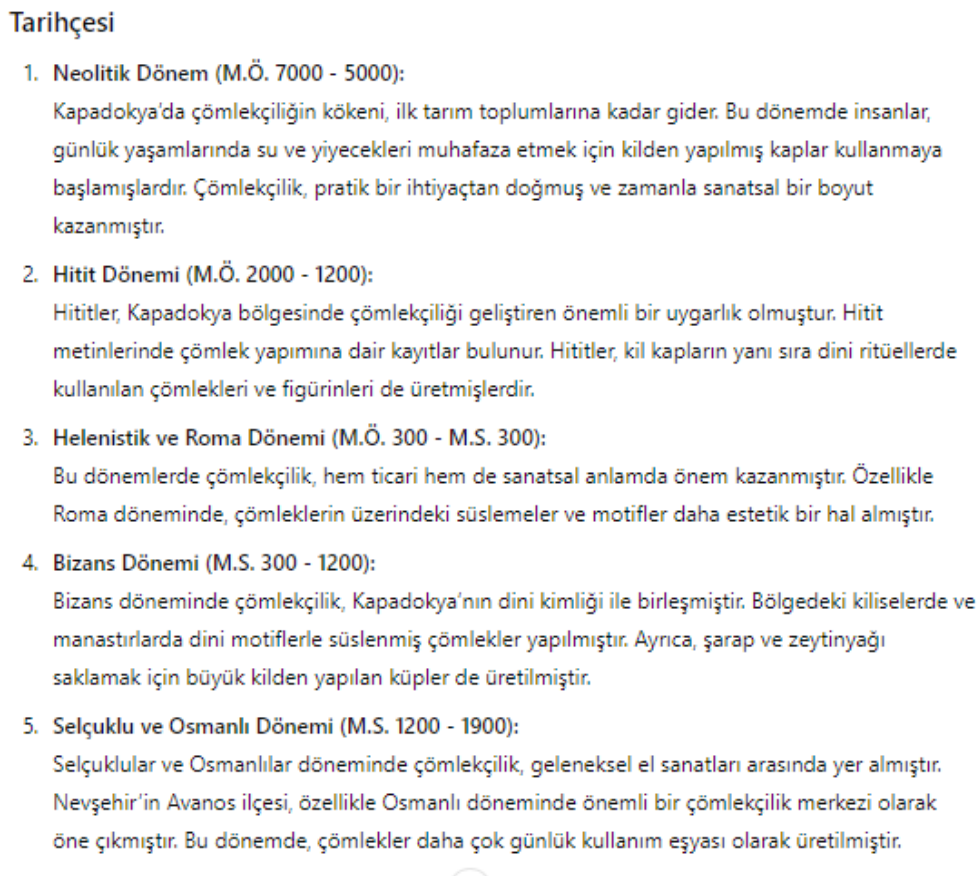
Heritage masters are also very familiar with the ancient history of pottery in the region. All of the heritage masters state that pottery in the region dates back to the Hittite period. For example, P10 says *"It has been done since the Hittites"* while P9 says *"It started by the Hittites".* It is noteworthy that some heritage masters have more knowledge about the history of pottery than the Hittites. For example, P2 provides information about the Neolithic period and the Roman period in addition to Hittite information. P2 says, *"The history goes back to the Hittites. It may be even older. There are remains of pottery made during the Roman period. During the Hittite period, there are pottery fragments along the Kızılırmak. In Avanos, almost until the Neolithic period..."*

Some heritage masters claim that pottery was taught by the Assyrians. P4 says, *"The Assyrians taught it when they came for trade''.* P8 explains the history of pottery in the region by emphasizing the influence of Sumerians in the general history of pottery. P8 says, *"It is made by the Sumerians. But in our region, it started by the Hittites."*

In the answer created by ChatGPT-4o, the history of pottery in Cappadocia is presented in 6 periods. These periods are the Neolithic Period, Hittite Period, Hellenistic and Roman Period, Byzantine Period, Seljuk and Ottoman Period, and finally Modern Period. The ChatGPT-4o and heritage masters' information about the history of pottery in Cappadocia is consistent and equivalent. For example, P2 emphasizes the Neolithic and Roman Periods when explaining the history of pottery. Similarly, ChatGPT-4o includes the Neolithic and Roman Periods in the history of pottery. In addition, the influence of the Hittites is mentioned by both heritage masters and ChatGPT-4o. In the modern period, ChatGPT states that pottery continues in Avanos. The fact that heritage masters continue their profession in Avanos supports this view.

It is seen that ChatGPT-4o only includes extra information about the Byzantine, Seljuk, and Ottoman Periods. However, the heritage masters explain that these periods are more effective in the ornamentation techniques used within the scope of the fourth question.

Figure 1. History of Pottery in Cappadocia (Created by ChatGPT-4o)



Tarihçesi

1. **Neolitik Dönem (M.Ö. 7000 - 5000):**
   Kapadokya'da çömlekçiliğin kökeni, ilk tarım toplumlarına kadar gider. Bu dönemde insanlar, günlük yaşamlarında su ve yiyecekleri muhafaza etmek için kilden yapılmış kaplar kullanmaya başlamışlardır. Çömlekçilik, pratik bir ihtiyaçtan doğmuş ve zamanla sanatsal bir boyut kazanmıştır.
2. **Hitit Dönemi (M.Ö. 2000 - 1200):**
   Hititler, Kapadokya bölgesinde çömlekçiliği geliştiren önemli bir uygarlık olmuştur. Hitit metinlerinde çömlek yapımına dair kayıtlar bulunur. Hititler, kil kapların yanı sıra dini ritüellerde kullanılan çömlekleri ve figürinleri de üretmişlerdir.
3. **Helenistik ve Roma Dönemi (M.Ö. 300 - M.S. 300):**
   Bu dönemlerde çömlekçilik, hem ticari hem de sanatsal anlamda önem kazanmıştır. Özellikle Roma döneminde, çömleklerin üzerindeki süslemeler ve motifler daha estetik bir hal almıştır.
4. **Bizans Dönemi (M.S. 300 - 1200):**
   Bizans döneminde çömlekçilik, Kapadokya'nın dini kimliği ile birleşmiştir. Bölgedeki kiliselerde ve manastırlarda dini motiflerle süslenmiş çömlekler yapılmıştır. Ayrıca, şarap ve zeytinyağı saklamak için büyük kilden yapılan küpler de üretilmiştir.
5. **Selçuklu ve Osmanlı Dönemi (M.S. 1200 - 1900):**
   Selçuklular ve Osmanlılar döneminde çömlekçilik, geleneksel el sanatları arasında yer almıştır. Nevşehir'in Avanos ilçesi, özellikle Osmanlı döneminde önemli bir çömlekçilik merkezi olarak öne çıkmıştır. Bu dönemde, çömlekler daha çok günlük kullanım eşyası olarak üretilmiştir.

Pottery Materials in Cappadocia

The second question asked to the heritage masters was "Can you give information about the materials and material properties used in pottery making in the Cappadocia region?". The purpose of this question was to determine the materials used in pottery making in the region. The four questions following the first question are more locally oriented questions. With these questions, it is measured whether ChatGPT-4o has a good command of local knowledge.

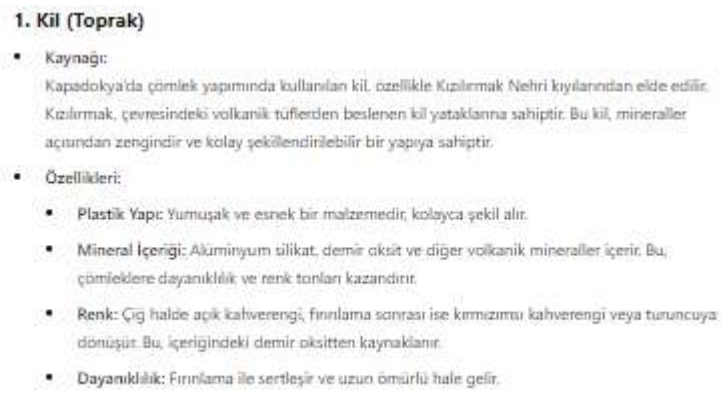
Heritage masters state that the main material used in pottery making is red clay soil obtained from the old beds of Kızılırmak. Stating that the pottery clay is prepared by kneading this soil with water like dough, the heritage masters explain that they do not use any chemical materials other than these two materials. P6 says, *"The material we use is taken from the beds where Kızılırmak passes, from the clays it carries. We make mud out of them with a certain amount of water as if we were preparing dough*.'' P3 states that the soil taken from Kızılırmak provides thermos properties to the pottery due to its clayey structure. P3 explains, *"Completely natural soil is used in pottery making. These soils are usually collected from Kızılırmak beds. There is no raw material other than that. The clay in it usually provides a natural thermos feature to the pots."*

Some heritage masters say that they obtain and use soil from the mountains of Avanos in addition to the soil obtained from Kızılırmak. P7 says, *"The raw material for the mud we use comes from the mountains of Avanos. There are certain earth quarries. It is kneaded just like dough. It reaches consistency after a certain waiting period."* P5 states, *"We use mountain soil. There are three or four types of soil."*

ChatGPT-4o shares common responses with heritage masters. ChatGPT-4o explains the materials used in the region as clay soil, water, and volcanic sand. Clay soil is obtained from the Kızılırmak deposits, as the heritage masters stated. Volcanic sand is the raw material obtained from the Avanos mountains. Both the heritage masters and ChatGPT-4o explain the materials used in pottery making similarly. However, it is noteworthy that the extra information about clay soil, water, and volcanic sand in ChatGPT-4o responses varies. For example, ChatGPT-4o details the properties of clay soil under the headings of plastic structure, mineral

content, color, and durability. ChatGPT-4o also explains in detail what to look for in the water used. Volcanic sand is also described in terms of the properties that contribute to pottery.

Figure 2. Pottery Materials in Cappadocia (Created by ChatGPT-4o)



1. Kil (Toprak)

- **Kaynağı:**
  Kapadokya'da çömlek yapımında kullanılan kil, özellikle Kızılırmak Nehri kıyılarından elde edilir. Kızılırmak, çevresindeki volkanik tüflerden beslenen kil yataklarına sahiptir. Bu kil, mineraller açısından zengindir ve kolay şekillendirilebilir bir yapıya sahiptir.
- **Özellikleri:**
  - **Plastik Yapı:** Yumuşak ve esnek bir malzemedir, kolayca şekil alır.
  - **Mineral İçeriği:** Alüminyum silikat, demir oksit ve diğer volkanik mineraller içerir. Bu, çömleklere dayanıklılık ve renk tonları kazandırır.
  - **Renk:** Çiğ halde açık kahverengi, fırınlama sonrası ise kırmızımsı kahverengi veya turuncuya dönüşür. Bu, içeriğindeki demir oksitten kaynaklanır.
  - **Dayanıklılık:** Fırınlama ile sertleşir ve uzun ömürlü hale gelir.

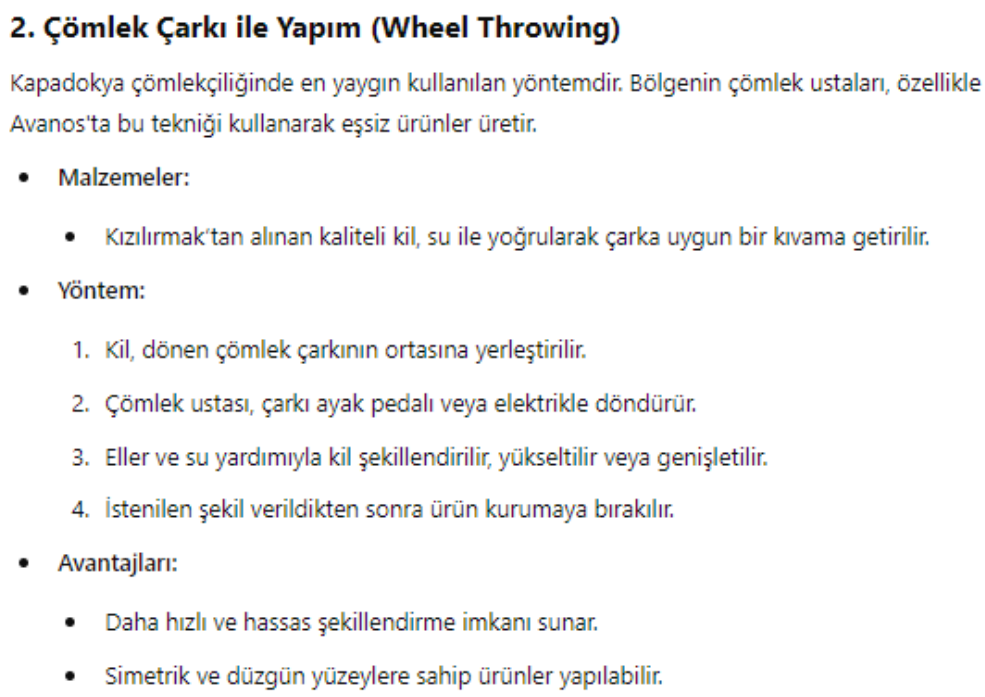
Pottery Making Techniques in Cappadocia

The third question asked to the heritage masters was “What are the methods used in pottery making in the Cappadocia region? Can you tell us?” question was asked. The purpose of this question was to find out whether ChatGPT-4o was able to accurately convey the methods used by heritage masters in pottery making.

Heritage craftsmen state that the main method used in pottery making is the potter's wheel. The heritage masters explain that the potter's wheel used to be operated by hand power but now electric wheels are being used. P4 says, *"We shape it by hand with the potter's wheel. It is also done by machine, but we use the traditional method."* P6 states, *"We usually do it by hand on a rotating wheel."* In addition to the pottery wheel, there are also heritage masters who make pottery with mold casting. The main advantage is that more pots can be produced by mold casting. P1 states, *"Plaster molds and press molds are used in mass production. Hand workmanship is also high in these, but production is higher this way."* P2 explains, *"Occasionally we also do it by casting. We use all kinds of techniques."*

ChatGPT-4o reports that traditional handmade, pottery wheel and mold casting methods are used in pottery-making techniques. In terms of pottery-making techniques, heritage masters and ChatGPT-4o express common responses. It is noteworthy that heritage masters are open to all kinds of pottery-making techniques. ChatGPT-4o makes a difference by explaining the advantages of pottery-making techniques. In addition, the detailed description of the materials and the method is important for understanding the pottery-making technique.

Figure 3. Pottery Making Techniques in Cappadocia (Created by ChatGPT-4o)



2. Çömlek Çarkı ile Yapım (Wheel Throwing)

Kapadokya çömlekçiliğinde en yaygın kullanılan yöntemdir. Bölgenin çömlek ustaları, özellikle Avanos'ta bu tekniği kullanarak eşsiz ürünler üretir.

- **Malzemeler:**
  - Kızılırmak'tan alınan kaliteli kil, su ile yoğrularak çarka uygun bir kıvama getirilir.
- **Yöntem:**
  1. Kil, dönen çömlek çarkının ortasına yerleştirilir.
  2. Çömlek ustası, çarkı ayak pedalı veya elektrikle döndürür.
  3. Eller ve su yardımıyla kil şekillendirilir, yükseltilir veya genişletilir.
  4. İstenilen şekil verildikten sonra ürün kurumaya bırakılır.
- **Avantajları:**
  - Daha hızlı ve hassas şekillendirme imkanı sunar.
  - Simetrik ve düzgün yüzeylere sahip ürünler yapılabilir.

Pottery Making Process in Cappadocia

The fourth question asked to the heritage masters was “Can you tell us about the process of firing pottery in the Cappadocia region? What is done in this process?” With this question, it was aimed to learn what heritage masters do in the pottery firing process.

The heritage masters state that in the pottery firing process, they carry out the processes of preparation, drying, firing, cooling, glazing patterning, and firing for the second time. After the preparation of the pots, the drying process is carried out according to the season. P9 states that the drying process can take 2-3 weeks in summer and up to 5-6 weeks in winter. P9 states, *“After the product is made, it can take 2-3 weeks in summer and up to 5-6 weeks in winter in special drying areas.’’* However, it is one of the common issues expressed by the heritage masters that the drying period is completed within 10-15 days (P7, P8, P4, P1, P6). P6 says, *"The products we make dry for 10 days, then they go to the oven."*

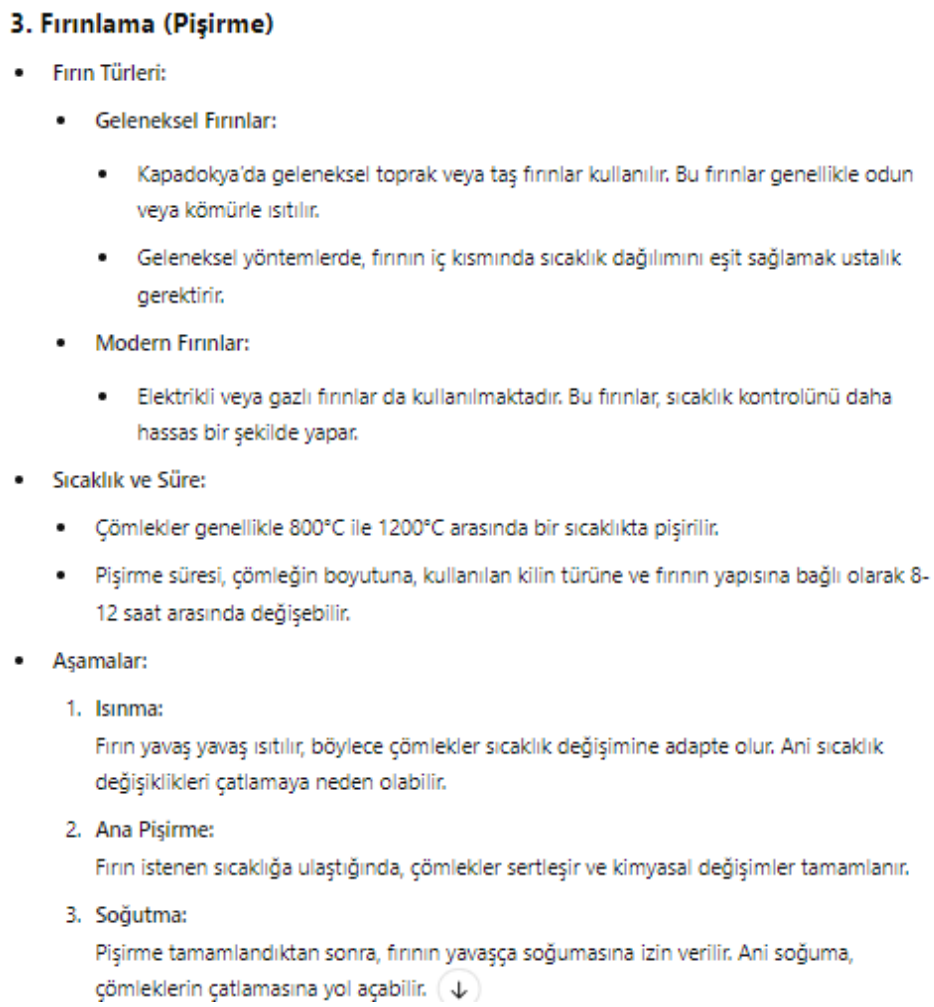
After the drying process, the first firing is carried out. It is explained by heritage masters that traditional black ovens, called black ovens, burn wood and sawdust, and electric ovens are used in the firing process. The firing process varies according to the kiln used. P5 states that the baking process takes 6 hours and 760-770 degrees in wood-burning ovens and 8 hours and 930-950 degrees in electric ovens. P1 says that the first firing can reach 900 degrees in wood-burning ovens and 1020 degrees in electric ovens. P9 states that firing varies depending on whether the pottery is red or white. P9 says, *“If it is red, the first cooking takes place at 900 degrees, and if it is white, the first cooking takes place at 1300 degrees. It takes about 7-8 hours.’’*

Cooling is done after the first firing. If glazing and patterning are done after cooling, a second firing process is carried out. P8 states, *"Then we glaze these products. We put them in the oven once more. The second time it's cooked, it has that shine on it."* P4 explains, *"After the patterning technique, the glazing technique is applied. After glazing, it is left to bake in the oven for 12 hours at 1050-1100 degrees."*

ChatGPT-4o describes the pottery firing process as drying, stacking, firing, glazing, and final control. ChatGPT-4o also states that the drying process differs according to the season, as the heritage masters state. ChatGPT-4o also gives additional information such as not exposing the pots to direct sunlight. The stacking phase is when the pots are placed in the ovens. During the firing process, ChatGPT-4o gives information similar to the information given by heritage masters. ChatGPT-4o states that there are traditional and modern ovens, the temperatures vary between 800-1200 and the firing process can take between 8-12 hours. However, ChatGPT-4o does not provide any fine details such as the information that the firing varies according to

whether the pottery is red or white. ChatGPT-4o, on the other hand, describes the stages of firing, namely warming up, main firing, and cooling, in more detail than the heritage masters.

Figure 4. Pottery Making Process in Cappadocia (Created by ChatGPT-4o)



3. Fırınlama (Pişirme)

- Fırın Türleri:
  - Geleneksel Fırınlar:
    - Kapadokya'da geleneksel toprak veya taş fırınlar kullanılır. Bu fırınlar genellikle odun veya kömürle ısıtılır.
    - Geleneksel yöntemlerde, fırının iç kısmında sıcaklık dağılımını eşit sağlamak ustalık gerektirir.
  - Modern Fırınlar:
    - Elektrikli veya gazlı fırınlar da kullanılmaktadır. Bu fırınlar, sıcaklık kontrolünü daha hassas bir şekilde yapar.
- Sıcaklık ve Süre:
  - Çömlekler genellikle 800°C ile 1200°C arasında bir sıcaklıkta pişirilir.
  - Pişirme süresi, çömleğin boyutuna, kullanılan kilin türüne ve fırının yapısına bağlı olarak 8-12 saat arasında değişebilir.
- Aşamalar:
  1. Isınma:
     Fırın yavaş yavaş ısıtılır, böylece çömlekler sıcaklık değişimine adapte olur. Ani sıcaklık değişiklikleri çatlamaya neden olabilir.
  2. Ana Pişirme:
     Fırın istenen sıcaklığa ulaştığında, çömlekler sertleşir ve kimyasal değişimler tamamlanır.
  3. Soğutma:
     Pişirme tamamlandıktan sonra, fırının yavaşça soğumasına izin verilir. Ani soğuma, çömleklerin çatlamasına yol açabilir.

Pottery Decoration Techniques in Cappadocia

The fifth question asked to the heritage masters was "What are the ornamentation techniques used in pottery decoration in the Cappadocia region? Can you tell us?" question was asked. This question aimed to determine which techniques the heritage masters used in pottery decoration and then to make a comparison with ChatGPT-4o.

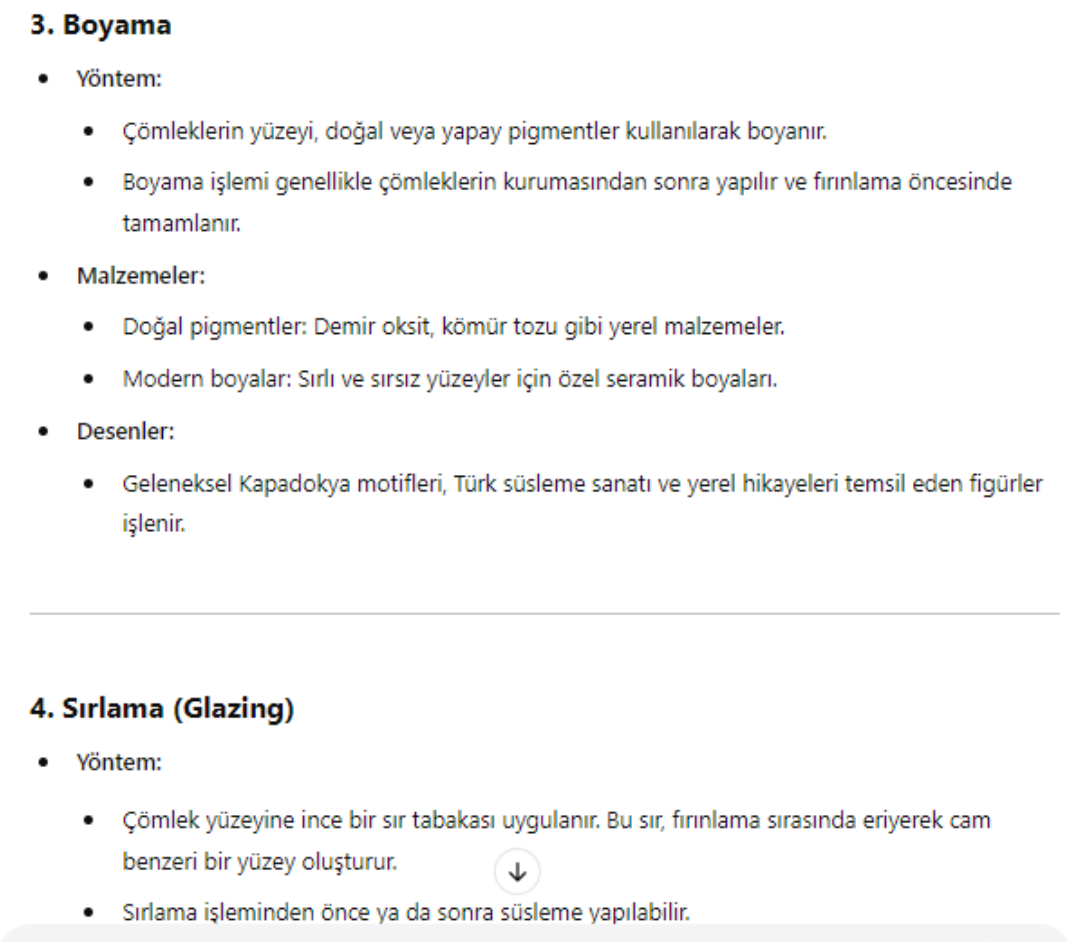
It was determined that the most frequently used pottery decoration techniques by the heritage masters were painting with a rapido pen and glazing. It was also stated by the heritage masters that patterns other than these two techniques were made. P10 states, *"There are rapido style drawings that belong to us. There is also a glazing technique. Here we make the product, bake it once, glaze it, and bake it again. The image is obtained like glass coating."* P7 says, *"The finished product is dried, fired, and painted with brushes."*

Heritage masters state that they frequently use patterns in ornamentation techniques. These motifs and patterns include various societies and civilizations such as Cappadocia, Ottoman, Turkish, Seljuk, Old Hittites, and Phrygians. P4 states, *"We process and shape the figures of the ancient Hittites and Phrygians."* P9 explains, *"Cappadocian or Ottoman patterns are also used."*

P1 emphasizes embossing, carving, and engraving techniques in addition to rapido, glazing, and pattern use. P1 says, *"If you want color, you add the pigment color you want inside and it becomes a colored glass coating. The outside is embossed. We do what we call carving. Some are engraved with the engraving system. This is given as a course in universities."*.

In the responses produced by ChatGPT-4o, the pottery decoration techniques include engraving, embossing, painting, glazing, and carving. It is seen that all of the techniques used by heritage masters are also supported by ChatGPT-4o. In contrast to the materials and techniques used in pottery making, it is noteworthy that there is no difference between the details of information provided by ChatGPT-4o and heritage masters.

Figure 5. Pottery Decoration Techniques in Cappadocia (Created by ChatGPT-4o)



3. Boyama

- Yöntem:
  - Çömleklerin yüzeyi, doğal veya yapay pigmentler kullanılarak boyanır.
  - Boyama işlemi genellikle çömleklerin kurumasından sonra yapılır ve fırınlama öncesinde tamamlanır.
- Malzemeler:
  - Doğal pigmentler: Demir oksit, kömür tozu gibi yerel malzemeler.
  - Modern boyalar: Sırlı ve sırsız yüzeyler için özel seramik boyaları.
- Desenler:
  - Geleneksel Kapadokya motifleri, Türk süsleme sanatı ve yerel hikayeleri temsil eden figürler işlenir.

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4. Sırlama (Glazing)

- Yöntem:
  - Çömlek yüzeyine ince bir sır tabakası uygulanır. Bu sır, fırınlama sırasında eriyerek cam benzeri bir yüzey oluşturur.
  - Sırlama işleminden önce ya da sonra süsleme yapılabilir.

Discussion and Conclusion

This research was conducted based on the questions of whether ChatGPT-4o can replace heritage masters regarding ICH elements and whether ChatGPT-4o can be as effective as heritage masters in transferring knowledge about ICH elements. First of all, heritage masters who are engaged in pottery making in Cappadocia were interviewed and information on various subjects such as the history of pottery and the making process was obtained. Then, the same questions asked to the heritage masters were asked to ChatGPT-4o. The main purpose here is to determine how the heritage masters and ChatGPT-4o answer the same questions in terms of content and whether they are successful in conveying information about pottery.

ChatGPT-4o conveys the history of pottery in Cappadocia in as much detail as the heritage masters. ChatGPT-4o even tells some information about the history of pottery that the heritage masters do not express. It is seen that heritage masters focus on the Hittites in the history of pottery in Cappadocia. Only some heritage masters provided additional information about the history of pottery other than the Hittites. In this case, it can be stated that ChatGPT-4o responded to the general questions with clearer and more accurate information.

These results show that ChatGPT-4o provides sufficient information content for general questions on ICH elements as well as heritage masters. When questions about ICH are more specialized or locally oriented, ChatGPT-4o's knowledge transfer may be more superficial. Spennemann (2023) explains the rationale for this situation. According to Spennemann (2023), individuals, or in the case of this study, heritage masters, grasp and internalize the cultural and heritage elements of the destination they live in since they are young and use these elements in their daily or professional lives. Thus, individuals learn even the finest details about heritage

elements. Similarly, heritage craftsmen have known and experienced pottery making since they were young. As a result, it is usual for heritage craftsmen to have a better command of details about pottery than ChatGPT-4o and to pass this on. This is because artificial intelligence tools such as ChatGPT-4o do not experience and acculturation (Spennemann, 2023).

Yılmazer and Karaköse (2023) state that ChatGPT generates information about cultural heritage in short periods. In this way, promotional activities of cultural heritage elements can be realized. However, the authors express problems in some issues. Among these, problems with the timeliness of ChatGPT are the most important ones. It is stated that ChatGPT does not have an update problem and ChatGPT is important in accessing information in the field of cultural heritage by providing access to visual data (Yılmazer and Karaköse, 2023).

This research has some theoretical and practical implications. The theoretical implications can be expressed in the context of both heritage masters and ChatGPT-4o. First of all, it is seen that the knowledge capacity of heritage masters about pottery is quite good and they successfully transfer knowledge. ChatGPT-4o, on the other hand, has considerable knowledge of ICH elements such as pottery and transfers this knowledge in short periods. Within the scope of practical implications, it is clear that it is possible to use ChatGPT-4o in the ICH knowledge transfer process. It is always possible to access accurate and detailed information about ICH if the right commands and requests are created within ChatGPT-4o.

The main limitation of this research is that only pottery masters were interviewed. For this reason, conducting similar research by interviewing other ICH producing heritage masters in future research will help to diversify the research results. In addition, only ChatGPT-4o was used in this research. No other AI-supported application was used. Making a content comparison of heritage masters, ChatGPT-4o, and other AI-supported applications on a similar subject will contribute to the field.

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