

Winter 12-16-2018

# To identify and determine the attributes of the Iranian-Islamic Information Contexts' Manuscripts as to Information and Knowledge Organization

Morteza Mohammadi Ostani

*1. PhD candidate at Department of Knowledge and Information Science, University of Isfahan,  
mmohamadiostani@gmail.com*

Mozaffar CheshmehSohrabi

*Associate Professor in Department of Knowledge and Information Science, University of Isfahan (Corresponding Author),  
mo.sohrabi@edu.ui.ac.ir*

Ahmad Shabani

*Professor in Department of Knowledge and Information Science, University of Isfahan*

Asefeh Asemi

*Associate Professor in Department of Knowledge and Information Science, University of Isfahan*

Seyed Mahdi taheri

*Allameh Tabataba'i University, taherismster@gmail.com*

Follow this and additional works at: <https://digitalcommons.unl.edu/libphilprac>

Part of the [Library and Information Science Commons](#)

---

Mohammadi Ostani, Morteza; CheshmehSohrabi, Mozaffar; Shabani, Ahmad; Asemi, Asefeh; and taheri, Seyed Mahdi, "To identify and determine the attributes of the Iranian-Islamic Information Contexts' Manuscripts as to Information and Knowledge Organization" (2018). *Library Philosophy and Practice (e-journal)*. 2176.  
<https://digitalcommons.unl.edu/libphilprac/2176>

## **To identify and determine the attributes of the Iranian-Islamic Information Contexts' Manuscripts as to Information and Knowledge Organization**

### **Abstract**

**Purpose:** is to materialize the theme here.

**Methodology:** The content analysis method is applied herewith respect to developmental-applied research. The attributes (data) are extracted and adjusted through the Delphi technique and Documentation method. The statistical population consists of 14 experts in the field of manuscripts' studies, and the field of information and knowledge organization. The sampling follows the targeted sampling method. For data accumulation a researcher designed questionnaire is applied to identify the attributes herein.

**Findings:** 19 main attributes and 224 sub-attributes are necessary to describe and organize Iranian-Islamic information contexts' manuscripts. The importance of these attributes was explained in the Iranian-Islamic information context. The two main attributes of *note* and *related objects* rank the highest sub-attributes.

**Practical implications:** Applicable in: 1) devising a useful metadata application profile for describing and organizing the Iranian-Islamic information contexts' manuscripts, especially in the electronic environment and 2) applicable in strengthening or completing the Text Encoding Initiative (TEI).

**Originality/value:** In general, the focus of the extracted attributes' descriptions here is more on manuscriptology attributes than bibliographic attributes. The diagnosis and determine the manuscripts' attributes, provide appropriate access points to improve accessibility to these valuable resources for researchers, which would lead to the development of manuscriptology studies and increase the relevant scientific outputs.

**Keyword:** manuscripts, attribute, Iranian-Islamic information context, description and organization of information, manuscriptology

## Introduction

Manuscripts, as the written legacy of the past are highly contributive in identifying the culture, civilization, and the ancient sciences, always considered by scholars of all disciplines. These precious and rich resources can be viewed in different perspectives like history, art, library and information science, sociology, etc. The historical and scientific nature of manuscripts constitute the two main reasons for their worth (Azimi and Nazi, 2011).

Iran is the origin of a great civilization that after converting to Islam, enjoyed the growth of science through great scientist who found the written sources of Iranian and Islamic civilization. One of the valuable resources, the legacy of global civilization, is the handwritten manuscripts. There are no detailed statistics of the count of the copies available in the Muslim world. Based on the run studies, among the Islamic countries, Turkey and Iran possess the greatest volume of these manuscripts (Afzali, 2008; Kasai, 2004) and more than half of the Islamic manuscript are scattered five countries of: Turkey, Iran, India, Egypt and Iraq (Kasai, 2004). In addition to Iran, the Persian manuscript and their catalogs are found in the libraries of many countries, including the Indian subcontinent (Khalidi, 2003), Pakistan (Amen and Shafique, 2009; Ashraf, 1971), Turkey (Hassanzadeh Niri, 2017), Russia (Motaghi, 2016), Balkan countries (Peri, 2018; Karahalilovic, 2017) and even the USA (Gacek, 2004).

Since the initiation of Islamic-Iranian culture in the 3<sup>rd</sup> century AH, the organization of resources and manuscripts was commonplace, but the modern method of describing manuscripts formed after the publication of manuscript cataloging rule for the Library of Congress in 1954. The rules and standards are developed to describe the manuscripts influenced by the Christian-Western information context, while there was a need to compile guidelines and instructions for description of Iranian-Islamic information contexts' manuscripts. For example, in the Princeton University Library, as one of the centers with the most Islamic manuscripts, only 18 to 19 attributes are displayed in the bibliographic records to describe the manuscripts. Harvard University Library also mentioned only 14 attributes in the Islamic Heritage Project (IPH) for description of the Islamic manuscripts, which indicates a low level of recognition to the Iranian-Islamic information context's manuscripts. The Islamic cataloger follows the traditional method as well, where, the catalogs are presented in two parts of bibliographic and manuscriptology. These catalogs vary greatly both in content and in the volume of information provided, acknowledged in *Emrani* (2006), *Azimi and Nazi* (2011), *Ghali Nasr* (2009) and *Harinarayana and Gangdharesha* (2005) researches. These differences are due to the lack of homogeneity in the records.

Because of their unique nature the precise description and organization of manuscripts is important. An increase in access and retrieval points for the manuscripts identification will not be possible without proper and complete description and organization. Description and organization of the manuscript cause to preservation and protection of their record. Even in the absence of manuscript, these records can provide sufficient information about the manuscript to users (Khoshbakht and Khosravi, 2009). Factors like the lack of academic education, the scientific nature of manuscripts (Azimi and Nazi, 2011) the lack of documentation

tools for names and subjects (Matlabi, 2013; Azimi and Nazi, 2011), and the lack of unit rules and standards (Banieghbal, Vazirpour Keshmiri and Alizadeh Far, 2015; Nazi and Ghasempour, 2011), the existence of different dates in manuscripts (Nabavi, Fadaei and Naghshineh, 2014) lead to a lack of homogeneity and coherence in the description of Iranian-Islamic information contexts' manuscripts. This homogeneity and coherence of the information contained in the records will have a contributive effect in the retrieval and optimum recognition of users.

Libraries and information centers apply content standards that are not particular to manuscripts, such as Anglo-American Cataloging Rules 2nd revision (AACR2R), Association College and Research Libraries (ACRL), Encoded Archival Description (EAD), International Standard Bibliographic Description for Older Monographic Publication (Antiquarian) (ISBD (A)), Describing Archive: A Content Standard (DACS), and Resource Description and Access (RDA) in describing and organizing the manuscripts. Particular rules and standards are developed and applied in describing manuscripts like Ancient, Medieval, Renaissance and Early Modern Manuscripts (AMREMM), Electronic Access to Medieval Manuscripts (EAMMS), Descriptive Cataloging of Rare Books (DCRB) and Archives, Personal Paper and Manuscripts (APPM).

In addition to having procedures regarding the influence and development of new information technologies and the movement of libraries towards digitization of resources, the need to develop related mechanisms regarding new information environment. Text Encoding Initiative (TEI) was devised in 1994 to encode electronic texts into the machinable form (Ide and Sperberg Mc-Queen, 1995). In this plan, there is a section for description of manuscripts in the machinable form, the attributes of which are applied and verified by many database manuscripts (Nabavi, Fadaei, and Naghshineh, 2014; Uhler, 2008; El Banny et al, 2009; Day, 2010). Some metadata standard elements like Metadata Object Description Schema (MODS), Metadata Encoding and Transmission Standard (METS) and Dublin Core (DC) are applied in the description and organization of manuscript in the Web environment (Arabgari, 2017). These cases indicate a lack of comprehensive identification of manuscript attributes and inconsistency in the expression and application in the description of manuscript as to information and knowledge organization.

Although there exists global rules and standards designed and developed as for organization of information resources in general and manuscript in particular, there exists no particular scheme or mechanism that meets the specific needs of the Iranian-Islamic information contexts' manuscript. Iranian-Islamic manuscripts have their own attributes that distinguish them from the medieval and western manuscript. Most of the existing standards and rules are focused on the attributes of the Christian-Western information context's manuscript. This fact necessitates the identification and determination of particular attributes of the Iranian-Islamic information context's manuscripts for better and complete description. The main objective of this study is to represent the complete attributes of the Iranian-Islamic information context's manuscript for a full and complete description as to their recognition with respect to information and knowledge organization. In pursuit of this objective, other sub-objectives like homogeneity and consistency in the

description and organization of manuscript, especially in the new information environment, devoting more attention to the attributes of the same, increasing the access points for the researchers are of concern.

### **Background research**

There exist many studies run on the description and organization of manuscript and ancient western handwritten. Many researches like *Jordanous* (2012) and *Sanderson et al* (2011) automatic access and descriptions of manuscript by applying Link Data method and projects like Digital AccEss to Books of the RenAissance (DEBORA), (Baechler, Bloechle and Ingold, 2010) and the Sharing Ancient Wisdom (SAWS) (Uhlir, 2008), which automatically extracts the related metadata to document manuscriptology, indicates the proper application of information technology and metadata in accessing and describing manuscripts. The world's largest manuscript project is Manu Scriptorium's National Library of the Czech Republic project (Uhlir, 2008). This library is the European manuscript center, which is based on the TEI. The running projects like Manuscripts Access Through Standard for Electronic Records (MASTER) and European Networking Resource and Information concerning Cultural Heritage (ENRICH) are also based on TEI with the objective to integrate European manuscript (Arabgari et al., 2013). *Chamnongsri et al.* (2006) studied the application of the conceptual model Functional Requirements of Bibliographic Records (FRBR) in description and organization of the manuscript in the Thai National Library. Most of the recent studies in this field are run based on a TEI and in the Muslim world, several studies are run based on this scheme as well, like *El Banny et al* (2009), *Ghali Nasr* (2009), and *Harinarayana and Gangdharesha* (2005). These researches have not adequated the TEI for description and organization of the Islamic information context's manuscript, since they were originally designed for another objective and did not support all the attributes of Islamic manuscript.

In Egypt, as one of the largest centers for manuscript in the Muslim world, some attempts are made for the homogeneity and drawing cataloging rules for the Islamic information context's manuscript by Tawfiq Iskandarin (1965), Salah al-din al-Munajjid (1973), Abd al-Sattar al-Halwaji (1989), and Isam al-Shinti (1998), which include a numbers of manuscript elements based on standards like ISBD and AACR2R (Ghali Nasr, 2009). Francois Deroche (2005) drew the Arabic manuscripts codicology rules. In general, there exists no study on identifying and determining the attributes of Iranian-Islamic information context's manuscript and in some cases, some centers and libraries have introduced manuals of their own, mostly not appropriate for the new information environment.

Researches on Persian manuscripts in Iran are of two main categories:

- 1) that explain the principles and rules for the description and organization the manuscript and its important elements like *Motafaker Azad and Paydar Fard* (2015), *Fereydouni and Emadi* (2011), *Teymoorkhani and et al* (2011), *Anvar* (2002, 2066, 2010), *Pishnamaz Zadeh* (2002), and *Khanipoor* (2000). These studies are run with respect to personal taste or organizational perception on cataloging. In most of these studies, only the elements and requirements have been of concerned

in order to devise a good catalog, which constituted the basis of most of the current catalogers. With no emphasis on the description and organization of manuscript in the new information environment and their comprehensive attributes.

2)The application and adaptation of the Persian manuscript records as to description, content and metadata standards like Arabgary (2017), Nabavi, Fadaei, and Naghshineh (2014), Fakhri Sa'adat (2014), Banieghbal, Vazirpour Keshmiri, and Alizadeh Far (2015), Arabgary, Kamran, and Rezaei Sharifabadi (2013), Gholamhosseinzadeh (2011), Azimi and Nazi (2011), Khoshbakht and Khosravi (2009), and Emrani(2006).

Here, some of them are briefly mentioned:

Emrani (2006) proposed a worksheet with 76 elements for the description and organization of manuscript and lithography, based on the catalogs of large domestic and foreign libraries and content standards. Azimi and Nazi (2011) assessed the manuscript card catalogs of five major Iranian libraries for identifying a unit pattern, and realized that a unit pattern is not observed; consequently they devised a card catalog of 110 elements. Nabavi, Fadaei, and Naghshineh (2014) indicated that the highest use of content and metadata standards is Anglo-America, Ancient, Medieval, Renaissance and Early Modern Manuscripts (AMREMM), and the Text Encoding Initiative (TEI), and for the homogeneity and documentation are used as scattered resources. Moreover, he concluded that the use of metadata standards in the description of manuscripts is at a very low level. Fakhari Sa'adat (2014) assessed the degree of adaptation of bibliographic records of Astan Quds Razavi manuscript according to the Resource Description and Access (RDA) standard. He claimed that this standard in explaining the particular attributes of manuscript, especially in the manuscriptology, is weaker than the rules of Astan Quds Razavi and identified only 33 elements related to manuscript. Arabgari (2017) compared the metadata standards used in Persian manuscripts in Iran with manuscripts outside Iran. His is obtained results showed that the Text Encoding Initiative (TEI) is the most widely used in the manuscript database in the world and the Persian manuscripts database uses metadata standards METS, Dublin core, and MODS, respectively. He considers the lack of homogeneity in using metadata standards to be the weaknesses of Persian manuscriptology.

The review and survey of the background showed that most manuscript studies focus on adapting the records of manuscript through standards, as well as determining the elements needed for the description of manuscripts and devise a standard card cataloging. As observed, some researchers adopt the records of manuscript databases to the content standards like: TEI, AACR2R, APPM, AAEREM, EAD, RDA, etc. or metadata standards like: MODS, METS, and Dublin Core. This adaptations indicate a lack of homogeneity in the applying the content and metadata standards in the description of manuscripts, because some of these metadata or standards do not corresponds to the description of the Iranian-Islamic information context's manuscript.

To determine the elements of manuscript for describing and cataloging, and ultimately devising a standard worksheet.

## **Methodology**

The method adopted in this study is of content analysis. This is a developmental-applied research; because it seeks to identify and determine the attributes of the Iranian-Islamic information context's manuscripts for description and organization. In this process, first, the draft of the required attributes of description and organization of the Iranian-Islamic information context's manuscripts is extracted by documentary method, next, these attributes are completed through Delphi method.

The statistical populations consists of experts in the fields of manuscript studies and information and knowledge organization. Here, with respect to the knowledge and skills in the field of manuscript studies and cataloging Iranian-Islamic information context and expertise in the field of metadata, on the other hand, the panel is composed of 14 experts in the fields of manuscript studies and information and knowledge organization. The sampling method of purposeful sampling therefore, it is sought to present experts from major centers and libraries like Astan Quds Razavi, the National Library and Archives of the Islamic Republic of Iran, the Library, Museum and Document Center of Iran Parliament, the Central Library of Tehran University, the Ayatollah Mar'ashi Najafi Library, the Ayatollah Boroujerdi Library, Islamic Zakhair Assembly, Shiite Bibliographical Institute and university professors. In order to collect the required data a researcher designed questionnaire is applied to identify the attributes of Iranian-Islamic information context's manuscript. In designing the initial attributes of the manuscript the bibliographic and manuscriptology elements of the major catalogs libraries, the views of the catalogers inserted in different information sources, Chapter four of the Anglo-American Cataloging Rules (AACR), and the elements of the Iran MARC's metadata format are applied.

For data collection, in the first round of the Delphi panel, the collected attributes by the documentary method are sent to panel members in a checklist. The questionnaire consists of 31 main attributes and 219 sub-attributes with a hierarchical structure (main attribute, sub-attributes and sub-sub-attributes). In the questionnaire, the appropriateness and significance of the attributes for description and organization of the Iranian-Islamic information context's manuscript are measured through the five point Likert scale 1 to 5 in a very low, low, moderate, high and very high order, respectively. The part also have been consider to mention the attributes that were not mentioned. After receiving the responses, the usefulness and importance of the attributes in description and organization of the Iranian-Islamic information context's manuscript are analyzed. The average of 3 and higher for each attribute is considered as the consensus level. Some of the main attributes and sub-attributes (16 main attributes and 25 sub-attributes) are omitted according to the experts and panel experts due to being inappropriate, low value (average), or overlapping with other attributes, thus the removal of attributes 29 sub-attributes. Some of the main attributes and sub-attributes are proposed by the Delphi panel,

which are added to the questionnaire (4 main attributes and 30 sub-attributes). In the second round of Delphi, after receiving comments by experts and applying the corrections in the questionnaire, it is sent back for more comments and final corrections.

## Findings

In order to accomplish the objective here, a questionnaire derived from the Delphi panel is analyzed in two rounds. The results of this process are determined by 19 main attributes and 224 sub-attributes. The order of the attributes is not considered, but it is important to identify and determine the attributes. Each of the attributes of Iranian-Islamic information context's the manuscript have being philosophy and important.

The main and sub-attributes are tabulated in Table 1.

Table 1. Main attributes for description of Iranian-Islamic information context's manuscript

No.	Main attribute	Sub-attributes (1 level)	Sub-attributes. (2 level)	Sub-attributes (3 level)
1	Title	7	-	-
2	Author	-	-	-
3	Type of manuscript	-	-	-
4	Originality	-	-	-
5	Classification	-	-	-
6	Identifier	-	-	-
7	Holdings	2	-	-
8	Access condition	-	-	-
9	Custody	-	-	-
10	Content structure	8	9	-
11	Transcription	2	6	6
12	Subject	-	-	-
13	Correction	3	13	-
14	Rights	8	8	4
15	Language	5	-	-
16	Related objects	2	6	32
17	Certificates of transmissio <i>(Ijāzah)</i>	3	-	-
18	Physical description	6	10	10
19	Note	14	30	30
Sum	-	60	82	82

Due to the lack of space to provide all the attributes (main and sub) in the form of a table, only the number of sub-attributes in three levels of hierarchy is sufficient.



According to Table 1, some of the main attributes do not have a sub-attribute, or some attributes have a sub-attribute of the first or second level of the hierarchy. The main attributes are described as follows:

**1. Title:** The importance of the title's attribute in Iranian-Islamic information context's manuscript is even greater than that of the author, while in the Western information context, the author's attribute are more important. The title appears at the beginning or sermon of the manuscript after the phrase *ammā ba'd*, *ba'd* or in the manuscript colophon after the phrase *tammāt*, *tamām shud*, *farāgh shodam*. In this attribute, the following 7 sub-attributes are identified: 1) title proper (for translation works), 2) the sub-title, 3) the uniform title, 4) the parallel titles, 5) the alternative title, 6) the scribe's title and 7) supplied title. Some of these sub-attributes are available in other sources of information like books. The uniform title is applied to make links among the related works as to translation, selection, and commentary. The scribe's title is the title chosen and noted by the scribe according to subject and content of the manuscript. The supplied title is the title given by the cataloger to the manuscript; even some catalogers refer to how to reach this title, like exploration or scientific inductance, the correspondence and similarity of the text, the nature of the manuscript and dependence.

**2. Author:** In most cases, the author's name is mentioned in the manuscript, but in some cases the cataloger mentions how to reach the name in the note by applying induction, the matching of the beginning and the completion of the same books, the recognition of the signature, etc. The important point in this attribute is to documentation with the standard lists like Databases Documentation Bank National Library of Iran, Virtual International Authority File (VIAF), etc. This issue has been neglected in the Iranian-Islamic information context.

**3. Type of manuscript:** As to their content the manuscripts are categorized in terms of content into two general categories of "one-text" and "collection". Collections have a special position in the Iranian-Islamic information context's manuscripts, and their number is sizable. Collections are in the form of treaties (*risālah*), *Munshāt*, accordion books (*muraqqat*), Anthology (*safīnah*), and *Bayaz*, the recognition of which is very difficult and sometimes impossible.

**4. Originality:** The authenticity and value of the manuscripts in the Islamic-Iranian information context are expressed in terms of the original manuscript (*Musawwadah*, *Mubayyadah*,) copies (transcript) and model (exemplar) manuscript. The original manuscript, is a manuscript written by the author himself (Safari Agh-Ghaleh, 2011; Fadaei, 2007) and in terms of originality and value is of the most authoritative copies. The original manuscript are based on two types of *Musawwadah* (draft) and *Mubayyadah* (fair copies). The *Musawwadah* is the same as the original manuscript of the author's script, where the rhythm and modifications appear, and the *Mubayyadah*, after completing the manuscript, is written by the author himself or calligrapher. Most of the manuscripts in the Islamic-Iranian information context are of *Mubayyadah* type. The copies (transcript) are manuscripts that are not script's author and is scribal from the original manuscript. The model (exemplar) manuscript is based on the logical recording of the word close to the author's manuscript (Fedaei, 2007).

**5. Classification:** is the number or notations obtained from valid schemas like Congress or Dewey classification for retrieval and access to the physical manuscript.

**6. Identifier:** This attribute is applied in identifying and retrieve the manuscript(s), that is, anything that gives physical or digital access to the manuscript like the Digital Object Identifier (DOI).

**7. Holding:** The mark(s) that an organization or library assigns to each manuscript and represents the number of inventory of a manuscript. The registration number and the previous registration number are sub-attribute. Because the manuscripts like books do not have the international identifier (like the ISBN), the registration or retrieval number provided by the centers or libraries, are applied as the local identifiers. A manuscript may be replaced and each center or library assigns new numbers that are important in describing the given manuscript according to its policy.

**8. Access condition:** This attribute is determined and introduced to describe the conditions and limitations of access to a manuscript adopted by the organization or library with respect to the exquisite manuscript status. Understanding these conditions and limitations will be beneficial for researchers and organizations.

**9. Custody:** This attribute describes acts like photographing, transmitting, or displaying involved in protecting the manuscript(s).

**10. Content structure:** This attribute explains and describes the attributes of the content structure of the manuscript that includes sub-attributes like defective, pre-incipit, incipit, final incipit, post-final incipit, rubric, final rubric, and colophon. According to Table 1, each of these sub-attributes has additional attribute in the second-level hierarchy. Detecting defective content and the incompleteness of manuscript will be beneficial in this context. Due to lack of public access to the manuscript(s), providing a beginning and ending section of the manuscript will help check the differences and similarities with other manuscript(s). In manuscripts, there usually exist two types of incipit (beginning) and two types of final-incipit (end). The incipit is applied at the beginning of the manuscript contents, the final-incipit at the completion of the original text or the words of the author and the colophon at the end of the scribal and words scribe. In Iranian-Islamic information context, many of these incipits or colophons are scribal in the shapes of triangle, upturned triangle, square, leaf and flower in different colors, which are applicable in terms of aesthetic approaches.

**11. Transcription:** This attribute is to describe the issues of writing and the root of manuscript refers to the scribe, the date and place of scribal, chronograms, re-scribal, re-scribal's scribe, and date and place of re-scribal. According to Table 1, this attribute has two sub-attributes of scribal and re-scribal, 6 sub-attributes of the first level and 6 sub-attributes of the secondary level. All transcription the sub-attributes are depicted tabulated in Table 2.

Table 2. The sub-attributes of transcription

Main attribute	Sub-attribute (1 level)	Sub attribute (2 level)	Sub attribute (3 level)
		Scribe	-

<b>Transcription</b>	Scribal	Date of scribal	Start date	
			End date	
			Chronograms	
			Place of scribal	-
	Re-scribal		Re-scribal's scribe	-
		Date of re-scribal		Start date
			End date	
			Chronograms	
		Place of re-scribal		

According to Table 2, sub-attribute scribal has sub-attribute of the secondary level like the scribe, date of scribal, and place of scribal and the sub-attribute date of scribe has third level sub-attribute like the beginning date, end date, and chronograms.

The scribe's name is necessary, because sometimes the manuscript has several scribes and different part written by different scribes, referred to by the part. In some cases, the scribe is not completed and the manuscript is completed by another scribe named the re-scribal (*Nunevīsī*). The date and place of scribal and re-scribal indicates the historical and spatial identity that is usually mentioned in colophon. The date of scribal in the Iranian-Islamic information context are mentioned according to different calendars like Lunar (*qamarī*), solar (*shamsī*), Anno Domini (*mīlādī*), *Yazdijridī*, *Jalālī*, *sultānī*, and so on. The date of scribal may be expressed in terms of events, wars, the royal history, etc. In some cases, date is expressed in the form of a cipher, named chronograms. In essence, the chronograms date back to the seventh century AH in Persian literature, and it is a meaningful or meaningless term(s) which represents history by summing up the numerical value of the alphabet letters.

**12. Subject:** This attribute is important for retrieval, like sources like a book. Manuscript catalogers, due to unfamiliarity with the subject headings, choose and assign a subject according to their knowledge of the manuscript. It may even be possible to give different terms to a single subject and lexical control is not observed. This is one of the problems of the manuscript catalogers of the Iranian-Islamic information context. Iranian manuscript catalogers try to choose subjects with old terminologies which would fit information context of the manuscript.

**13. Correction:** Editing of manuscripts is equivalent to correcting the same. Bad readings or defection in transcription of the manuscript, manipulation of the text for political reasons and beliefs by the scribes and convert it to the other manuscript, necessitates the correction of the manuscript. In order to correct the manuscript, one should be able to access the original manuscript (manuscript of the author's script) or an authored manuscript by author. Correction is a process that usually takes place in several sessions. Conventional methods of correction include collation (*muqābalaḥ*), *samā'*, and *qirā'ah*. Hence, this attribute has just mentioned<sup>3</sup> sub-attributes and 13 sub-attributed of the second level, Table 1. In collation, the scabbled manuscript will be collated, completed and corrected through the original

manuscript or other valid manuscript. In *samā'* and *qirā'ah* the manuscript is read by a scribe or someone else for the author or the scientist of that field, in order to correct mistakes. Collation and *samā'* is a proof of the accuracy and antiquity of the manuscript. Mentioning the location, date, and names of the individuals involved in this process is a necessity in the Iranian-Islamic information context's manuscript.

**14. Rights:** Here, the focus is on the person or institutions that withhold the rights of the manuscript or source. This attribute has 8 sub-attributes of the first level, 8 sub-attributes of the second level and 4 sub-attributes of the third level, Table 1. The 8 sub-attributes of the first level includes right holder, owner, ownership sign, ownership note, patronage (*muhdi-al-ilayh*), patronage's scribal, inheritance, and entailment (*waqf* or *wakf*). The right holder is the person with institution who possesses the manuscript and is different from that of the owner of the manuscript who lived in the past. Someone may both be the owner and right holder of the manuscript. One of the important attribute in describing of the Iranian-Islamic information context's manuscript is the issue of manuscript ownership. A manuscript may have many owners over the years, and this can be more credibility and authenticity of the manuscript. Some owners record the ownership date, conditions, and how they became the owner in the manuscript. In Iranian-Islamic tradition, the manuscript was written in order or patronage by a person, and the scribe mentioned it in a note. The person, whose manuscript is ordered or sponsored, is named patronage (*muhdi-al-ilayh*). One of the genuine Islamic traditions is the *waqf* observed mostly in transfer, ownership and use of manuscript. The entailment is brief and sometimes detailed, and is usually cited with the *waqf* seal. These are mentioned in the note. Attributes like *wāqif*, object of the entailment (*al-mawqūf*), beneficiary (*mawqūf alayhi*), place and sign of *Waqf*, and source of supply are the sub-attributes of *waqf*. The Holy Qur'an is one of the books which are mostly *waqfed*.

**15. Language:** This attribute is applied in describing more information sources with: original, intermediate, margin, note and translation language as sub-attributes.

**16. Related objects:** This attribute is a connectivity attribute and is more appropriate in the new information context with two sub-attributes, related forms and versions. According to Table 1, this attribute has 6 sub-attributes of the second level and 32 sub-attributes of the third level. This attribute is considered as a linking device between entities of a type of manuscript, which is important from the point of knowledge organization. For example, the related forms with that manuscript have a substitution relationship. Due to the particular conditions of manuscripts, the provision of backup and storage of copies in other formats is considered a protection. Forms like microfilm, microfiche, photographic version, and digital version are applied in manuscripts. In describing each one of these forms, attributes are considered as the provider, number of records, date and place of provision, location and technical features. In some of the Iranian-Islamic information context's manuscript refers to some of the related manuscripts that may have a related or whole-part correlation. In the tradition of Iranian cataloging, the catalogers recorded the commentaries, marginalities, translations, etc. in the note. In this information context, there exist many manuscripts associated with the Holy Quran and its

translations, hence, the attributes of the translator, date and place of translation, style of translation, glossator, extent of margin, date and place of margin of essence.

**17. Certificates of transmission:** This attribute is observed in the Iranian-Islamic information context's manuscript. *Ijāzah* is a note, written after the end of *samā* and *qirā'ah* by the author or teacher for the student, and a certificate of ability to quote and teach it. *Ijāzah* is in some way equivalent to modern scientific certificates and diploma. The text of the *Ijāzah* is usually at the end of the manuscript or the preliminary pages and before the beginning of the manuscript text. *Mojiz*, *Mojaz* and date of *Ijāzah* are sub-attributes. The authority who issues the permit is referred to as *Mojiz* and the subject is referred to as *Mojaz*.

**18. Physical description:** One of the most important and influential attributes, especially in the manuscriptology, is the precise physical description of the manuscript because every manuscript has its own unique properties. The sub-attributes of the first level include: dimension, color, number of pages, catchwords, script, and accompanying material. Each one of these sub-attributes to description is applied as additional sub-attributes, tabulated in table 3.

Table 3. The sub-attribute of physical description

Main attribute	Sub-attribute (1 level)	Sub-attribute (2 level)	Sub-attribute (3 level)	
Physical description	Dimension	Paper	-	
		Text	-	
		Cover	-	
	Color	Paper	-	
		Cover	Endsheet	
			Endpaper	
			Dust jacket	
		Spine		
		Ink	Text	
			Margin	
			Incipit	
			Colophon	
			<i>Ijāzah</i>	
	Entailment			
	Number of pages	-	-	
	Catchwords	Location	-	
	Script	Script type	-	
		Script size	-	
		Script quality	-	
	Accompanying material	-	-	

According to Table 3, sub-attribute color has sub-attribute of the secondary level like paper, cover, and ink and the sub-attribute ink has third level sub-attribute like text, margin, incipit, colophon, *Ijāzah*, and entailment.

Dimensions of manuscript refer to its size and physics. In the past, they used certain terms to express the size of the book which in turn express in an approximate manner. The introduction of the dimension and the size of the manuscript in descriptive aspect, property and book maker are of particular essence, and its historical background is reflected in the notes in the Text block (*zahrīyah*) of manuscript. The texture of color in the text, the paper quality and the cover refers to displaying artwork including decorating and highlighting some of the content. In the past, the paper was painted by placing it in vegetable and fruit extracts which contain the color of *hānāei*, *nokhudi*, *nābāti*, blue, yellow, lemon green. Therefore, recognizing and recording the color of paper in cataloging manuscripts is one of the most significant cases (Gasek, 2015).

In the manuscripts, the pagination leaf is not conventional; in order to preserve the order of the leaves, the first word of the next leaf is written in the last row of the previous leaf in the left corner, named catchword. The catchwords are essential for controlling the order of the leaves in the manuscripts. Due to the importance of the script type, the manuscript catalogers assessed them. Undoubtedly, the most common script in the transcription, which gradually becomes more noticeable from the 4<sup>th</sup> century AH, is the *Naskh* script (Marashi, 2008). In some cases, the type of script is obtained by approximating the date of scribal, or the period of life of the scribe or the writer. Hence, identifying a variety of Islamic calligraphy that is known as six pen (*aqlām sittah*) is important. The script attributes can be the script type, size, and quality.

**19. Note:** The Islamic information context's manuscripts usually, in addition to the original text, contain writings on the margins, the beginning, the end, or the middle pages of the manuscript. This attribute is created to note anything not mentioned in previous parts is accomplished through this attributes. Some of these notes represent the historical, social, political, and cultural details of the author, the scribe, the owner or the *wāqif* era. These notes, apart from the text of the manuscript are of great importance and are information treasures considered to be very useful. According to Table 1, the note attribute has 14 sub-attributes of the first-level, 30 sub-attributes of the second-level, and 30 sub-attributes of the third-level. The note attribute is among all the attributes of the Islamic-Iranian information context's manuscripts with the highest level of sub-attribute (74 items). The sub-attributes of the first level of the note consist of: form, title location, contents, summary, *arḍah did*, acquisition method, material, pagination, layout, decoration, binding, treatment, damage and pests, and signs relating to them.

Form: means is the existence of the text, all images and tables in manuscript. In most cases, the content of manuscript is in the form of text, but some manuscripts are viewed in the field of occult or geographic sciences the contents of which are listed in the table. This attribute is one of the attributes considered in the new information or metadata text. The sub-attribute content describes the chapters, and parts and sub-attribute summary means short of the intellectual content of the

manuscript. As well as, Catalogers are interested in to insert the location of the title in the catalog.

The term "*arḍah did*" means viewing or visiting by the deliverer, treasurer or librarian who is serving in the library of kings, emirs, or mosques. They reviewed and stamped these manuscripts. So considered by celebrities, makes the manuscript worthy.

Acquisition method is commonly recorded in elementary pages in the Iranian-Islamic information context. Through these types of notes, it is possible to find where the manuscripts are and what their chronology is. Acquisition method includes purchase, donating, transferring, ordering, and borrowing. For each one of these attributes the related sub-attributes are considered. For example, the features of buyer, seller, price, date and sign purchase are considered for attribute of purchase.

Identification of the paper type is an empirical aspect, otherwise it should be identified by laboratory experts and paper analysts. The majority of Iranian manuscripts belonging to the 6<sup>th</sup> century AH (PishmahZadeh, 2012, p.47), while, considering with the introduction of paper industry in Iran. The hardest part of manuscriptology is the analysis of the attribute of paper, and Iranian catalogers have tried to speculate and guess cite it. Determining the sheet and type of paper in manuscript is subject to the geographical origin, the attitude of the scribal, the importance of the subject and title of the book, the proportion and quality of the paper with the content of the book and ink type (Azimi, 2012, p.39). Sometimes, the marginal paper of the manuscripts will eventually wear out and the bookbinder will have to add new sheets of paper to the manuscript that is different from the original and should be mentioned. If the manuscript is no date of scribal, can understand the time of scribal and other unknown of the manuscript by the type of paper and other evidence. Paper in the manuscript is not merely a physical material for writing, but is a matter of content and research (Teymoorkhani, Akbari Daryan, and Keshavarz, 2011).

The arrangement of different elements (the decorative) in the manuscript is named the layout. This arrangement involves counting the number of rows and columns of the text, margins, and tables.

Iranian manuscripts and art of miniature have always been and are the language of Iranian culture and civilization, therefore, decoration has a particular stance in Iranian manuscripts. According to Akimoshkin, Russian bibliographer, "many Persian manuscripts are a works of art and painting" (Quoted in Pishnamaz Zadeh, 2012, p.49). The drawing art and art arrays in the manuscripts originally appeared in the Qur'an and the holy books and the script and calligraphy appeared and developed the first in the collected poems (*dīwān*).

Undoubtedly, the development of bookbinding industry is learned from the bookbinding of Qur'anic and religious books. Bookbinding in Iran originated in *Barmakīyān's* dynasty. In 9<sup>th</sup> century AH, and this industry has recorded progress with nearly 40 to 50 types of book cover (Pishnamaz Zadeh, 2012, p.48). Cover of manuscript is composed of the three parts like cover, dust jacket, and endpaper that refers to them and the decoration are used.

The attribute of sign refers to any sign that is contribution in manuscript description. These signs include signature, seal, musical note symbols, and over-text (*Bārfāraz*). Seals are one of the most important elements of the manuscriptology, sometimes applied instead of the names of individuals and signatures on the manuscript. Sometimes the name of the author, the scribe, the owner or the *waqif* can only be identified through the form of the seal. Seals are examined from the perspective of appearance, seal statement, nameology, etc. Seals in Islamic societies are of high necessity, and as a personal identification, the texts will not be accredited and authenticated without it (Fadaei, 2007). Because the covers of many manuscripts are exposed to frazzle and damage, it is important to refer to the types of damage and other causatives like pests, bending and how it is treated.

Any letter or note within a manuscript should be assessed and described in full detail. Most of these materials are not involved with the content and subject of manuscript, hence their description is useful in the note attribute.

### **Discussion and Conclusion**

The findings here indicate that in order to describe and organize the Iranian-Islamic information context's manuscript as to the information and knowledge organization based context (description and representation of manuscript with the objective of identifying, facilitating and expediting access to them) 19 main attributes and 224 sub-attributes in accordance with the new standards of knowledge organization are required. The reason for signifying the attributes also is explained in the Iranian-Islamic information context. During the initial design, the attributes are applied to coordinate with the standards and rules of the field of information and knowledge organization like the TEI. The focus here in on some of the attributes, like *uniform title* and *related objects* that provide the basis for connecting with other resources and manuscripts. These attributes are considered as linking devices in the knowledge organization context; because they will link entities from manuscript types. In general, existence of such attributes will link the entities and attributes of manuscripts. The main attributes of the *note* and *related objects* have the highest number of sub-attribute 72 and 40 cases, respectively.

Analysis of the attributes of the Iranian-Islamic information context's manuscripts reveals that the highest focus is on manuscriptology and aesthetic attributes. According to Welsh (1996), existence of miniature and decorative elements in most of Iranian-Islamic information context's manuscripts is influenced by personal perceptions or travelogues and other external factors, which leads to the uniqueness of its design and development in Iran compared to other Islamic countries, especially her neighbors like the Arabian countries, or the Muslim states of the Indian subcontinent and Turkey. Therefore, such unique manuscripts need to be given more attention in manuscriptology attributes due to their better description. Attributes like the type of manuscript, correction, transcription, certificates of transmission (*Ijāzah*), and endowment, physical description, and notes, especially decoration and minatory, indicate their importance in the Iranian-Islamic information context and their difference with other manuscript.

To the knowledge of the authors here, there exists no study on identifying and determining attributes of the Iranian-Islamic context's manuscript thus, this study is



presented to shed more light on the issues. The studies run by *Emrani* (2006), *Azimi and Nazi* (2011), and *Arabgari* (2017) are partly related to this study. The objectives of the available studies is to determine the elements for description of manuscript in order to be registered in the records and devise standard worksheet, something missing in the available studies. In this context, *Emrani* (2006) suggests 76 elements, *Azimi and Nazi* (2011) 110 elements and *Arabgari* (2017) suggest 118 elements to describe and organize manuscript, while here, 19 main attribute and 224 sub-attributes of the Iranian-Islamic information context's manuscript are presented that differ in terms of the number and information context.

Most European or American centers or libraries which possess Iranian-Islamic manuscripts, apply describing and organizing rules like AACR2R (Chapter 4), AMREMM, APPM, DCRB, TEI, or organizational guidelines and manuals, most of which meet the needs of medieval and western manuscript. Therefore the above centers would face problems to fully describe the Iranian-Islamic information context's manuscripts and the explanation of their attributes. The identified attributes of the Iranian-Islamic information context's manuscripts in this study can be applied in devising a useful metadata application profile for the description and organization of manuscripts, especially in the electronic environment. These attributes can increase access points and improve accessibility to manuscripts, consequently promote the manuscript studies. The attributes of the Iranian-Islamic information context's manuscripts can have different applications, like strengthening or completing the TEI, including other content standards, and being implemented in library or content management software, which will complete the standard manuscript cataloging worksheet.

## References

- Afzali, M. (2008). An analysis of Persian manuscripts available in Turkish libraries. *Mirror of Heritage (Ayene-ye-Miras)*, 42, 74-99.
- Ammen, K. & Shafique, F. (2009). Oriental collection in the Panjab university library: A case study. *Trends in Informtion Management*, 5 (1), 16-33.
- Anvar, A. (2002). Cataloging: How should cataloging the manuscripts?. *Payam-e-Baharestan*, 17, 29-41.
- Anvar, A. (2006). Principles and methods of cataloging manuscripts. *Payam-e-Baharestan*, 65, 32-38.
- Anvar, A. (2010). Worksheet manuscripts. *Koliyat*, 155, 14-19.
- Arabgari, L. (2017). A comparison of metadata standards entries in Persian manuscripts databases with metadata standard entries in manuscripts databases outside of Iran. *Research on Information Science and Public Libraries*, 23(4), 467-486. URL: <http://publij.ir/article-1-1695-en.html>.
- Arabgari, L.; Kamran, M. & Rezaei Sharifabadi, S. (2013). Metadata standards employed in Persian manuscript databases. *National Studies on Librarianship and Information Organization*, 24(3), 132-148. URL: [http://nastinfo.nlai.ir/article\\_66\\_966aeda5b2f41396468c5deb5aaf3190.pdf](http://nastinfo.nlai.ir/article_66_966aeda5b2f41396468c5deb5aaf3190.pdf).
- Ashraf, M. (1971). *Persian manuscripts in the national museum of Pakistan at Karachi: History, biography, tales and legends, geography, and travel*. Karachi: National Museum of Pakistan. URL: <http://ktp.isam.org.tr/pdficn/140907ic.pdf>.

- Azimi, H. (2012). Analytical study of the element of paper in Iranian-Islamic manuscripts. *National Studies on Librarianship and Information Organization*, 22(4), 39-54. URL: [http://nastinfo.nlai.ir/article\\_144\\_5a6ecb880d9047d9af437ed1e25d8572.pdf](http://nastinfo.nlai.ir/article_144_5a6ecb880d9047d9af437ed1e25d8572.pdf).
- Azimi, H. & Nazi, A. (2011). The analysis of the cataloging of manuscripts in Iran in terms of the existence or absence of a pattern in it and provide recovery solutions to create a national standard format. *Library and Information Quarterly*, 14 (2), 263-282. URL: [http://lis.aqr-libjournal.ir/article\\_42696.html](http://lis.aqr-libjournal.ir/article_42696.html).
- Baechler, M., Bloechle, J.L. & Ingold, R. (2010), Semi-automatic annotation tool for medieval manuscripts. In 12<sup>th</sup> *International conference on frontiers in handwriting recognition*. IEEE Computer Society. DOI: 10.1109/ICFHR.2010.36
- Banieghbal, N.; Vazirpour Keshmiri, M. & Alizadeh Far, N. (2015). The Bibliographic information analysis of Persian Safavi's manuscripts emphasised on scripts and writing characteristics. *Quarterly Journal of Knowledge Studies*, 7(27), 17-30. URL: [http://qje.iau-tnb.ac.ir/article\\_516847\\_56002568f6d4c9a6b5cd132f4df70bd2.pdf](http://qje.iau-tnb.ac.ir/article_516847_56002568f6d4c9a6b5cd132f4df70bd2.pdf).
- Chamnongsri, N., Manmart, L., Wuwongse, V., & Jacob, E.K. (2006). Applying FRBR Model as a Conceptual Model in Development of Metadata for Digitized Thai Palm Leaf Manuscripts. In 6<sup>th</sup> *International Conference on Asian Digital Libraries (ICADL)*. Kyoto, Japan, P. 254-263. DOI: 10.1007/11931584\_28
- Day, M. (2010). *IMPACT Best Practice Guide: Metadata for Text Digitization & OCR*. URL: <https://purehost.bath.ac.uk/ws/portalfiles/portal/276937/IMPACT-metadata-bpg-pilot-1.pdf>.
- Deroche, F. (2005). *Islamic codicology: An introduction to the study of manuscripts in Arabic scripts*. London: al-Furqan.
- El Bannay, O., BenSlimane, R., Rais, N. & El Makhfi, N. (2009). *Application for visualization of Arab manuscripts*. IEEE.
- Emrani, E. (2006). Suggested bibliographic elements for the national catalog of linear editions and lithography. *Koliyat*, 109-111, 9-18. URL: <http://ensani.ir/file/download/article/20121209093232-9325-754.pdf>.
- Fadaei, G. (2007). *Introduction to the manuscripts and rare works* (Persian and Arabic). Tehran: The Organization for Researching and Composing University Textbooks in the Humanities (SAMT).
- Fakhri Sa'adat, A. (2014). *The study of compliance rate of Astan Quds Razavi's bibliographical records manuscripts database with Resource and Descriptive Access (RDA)* (Unpublished master's thesis). Imam Reza International University, Mashhad, Iran.
- Fereydouni, H. & Emadi, M. (2011). A survey elements of cataloging manuscripts and their definitions. *Shamseh*, 3 (12-13), 1-24. URL: [http://shamseh.aqr-libjournal.ir/article\\_50371.html](http://shamseh.aqr-libjournal.ir/article_50371.html).
- Gacek, A. (2015). *A descriptive glossary of manuscripts in Islam world*. Translated in Persian by Ali GholoNami. Tehran: Armaghan-e-Tarikh.
- Gacek, A. (2004). Persian manuscripts in McGill University libraries. *MELA Notes*, 77, 1-9.
- Ghali Nasr, W. (2009). Different practices in manuscript cataloging in Egypt: How could they be reconciled? *Cybrarians Journal*, 20. URL: <https://ecommons.aku.edu/libraries/6>.
- Gholamhosseinzadeh, Z. (2011). Using the Conceptual Model FRBR in the cataloging of digitalized manuscripts. *Library and Information Quarterly*, 14 (2), 171-192. URL: [http://lis.aqr-libjournal.ir/article\\_42693.html](http://lis.aqr-libjournal.ir/article_42693.html).

- Harinarayana, N.S. & Gangdharesha, S. (2005). Metadata Standards Available for Cataloguing Indian Manuscripts: Comparative Study. In: *Recent Advances in Information Technology (READIT-2005)*, July 14-15, 2005, Kalpakkam: Madras Library Association and Indira Gandhi Centre for Atomic Research.
- Hassanzadeh Niri, M.H. (2017). Catalogues of Persian manuscripts in Turkey. In: *Persian manuscripts in Balkan and central Europe*, 23-24 Feb. 2017, Sofia, Bulgaria.
- Ide, N.M. & Sperberg Mc-Queen, C.M. (1995). The TEI: History, goals and future. *Computers and the Humanities*, 29 (1), 5-15.
- Jordanous, A., Lawrence, K.F., Hedges, Mark & Tupman, C. (2012). *Exploring manuscripts: Sharing ancient wisdoms across the semantic web*. In: National Conference on Web Intelligence, Mining and Semantics, 2012, 13-15 Jun, Craiova, Romania. DOI:10.1145/2254129.2254184.
- Karahalilovic, N. (2017). An overview of the Persian manuscript collection in Bosnia-Herzegovina". In: *Persian manuscripts in Balkan and central Europe*, 23-24 Feb. 2017, Sofia, Bulgaria.
- Kasai, S.A. (2004). Islamic manuscripts in the World. *National Studies on Librarianship and Information Organization*, 15(1), 136-144. URL: [http://nastinfo.nlai.ir/article\\_716\\_e3bbc4df44d4c29ae8dcdab29f9fc4c3.pdf](http://nastinfo.nlai.ir/article_716_e3bbc4df44d4c29ae8dcdab29f9fc4c3.pdf).
- Khalidi, O. (2003). A Guide to Arabic, Persian, Turkish and Urdu Manuscript Libraries in India. *MELA Note*, 75-76, 1-59.
- Khanipoor, R. (2000). An Introduction to Cataloging Manuscripts. *National Studies on Librarianship and Information Organization*, 10(4), 37-48. URL: [http://nastinfo.nlai.ir/article\\_950\\_403a5a7aebe4e4963c3adbc883666a29.pdf](http://nastinfo.nlai.ir/article_950_403a5a7aebe4e4963c3adbc883666a29.pdf).
- Khoshbakht, M. & Khosravi, F. (2009). A study on the extent to which bibliographic records available in the database of manuscripts of Khane-ye Ketab follow cataloguing rules. *National Studies on Librarianship and Information Organization*, 20(3), 115-122. URL: [http://nastinfo.nlai.ir/article\\_248\\_4d689b8ee7173e73262467656f6c736f.pdf](http://nastinfo.nlai.ir/article_248_4d689b8ee7173e73262467656f6c736f.pdf).
- Matlabi, D. (2013). Cataloging manuscripts. *Koliyat*, 186, 2-3.
- Motafaker Azad, M & Paydar Fard, A. (2015). Survey characteristics of illustrated manuscripts case study: Examine an example of literary manuscripts held in Tabriz Central Library. *Negarineh Islamic Art*, 2(6), 56-70. URL: [http://niamag.birjand.ac.ir/article\\_566\\_99f53efba19bf8fe4fd80fd46cd16b20.pdf](http://niamag.birjand.ac.ir/article_566_99f53efba19bf8fe4fd80fd46cd16b20.pdf).
- Motaghi, H. (2008). *The elements of cataloging manuscripts and that definition*. URL: <http://hosseinmarashi.persianblog.ir/post/53>.
- Motaghi, H. (2016). *Islamic manuscripts in Russia*. Introduction by Abouzar Ebrahimi. Tehran: National Library and Archives of Iran; Islamic Culture and Relations Organization.
- Nabavi, M.; Fadaei, G.; Naghshineh, N. (2014). "Standards utilized for manuscript description by online Islamic databases". *National Studies on Librarianship and Information Organization*, 25(2), 22-32. URL: [http://nastinfo.nlai.ir/article\\_12\\_cec9efb6348a592c7da2f64de984a377.pdf](http://nastinfo.nlai.ir/article_12_cec9efb6348a592c7da2f64de984a377.pdf).
- Nazi, A.; Ghasempour, S. (2011). "Manuscript cataloging in the National Library of Iran: Trends and methods". *National Studies on Librarianship and Information Organization (NASTIONFO)*, 22(3), 105-114.
- Peri, B. (2018). *Catalogue of the Persian manuscripts in the library of the Hungarian Academy Sciences*. Leiden: Brill.
- Pishnamaz Zadeh, G. (2012). Manuscriptology and cataloging of manuscripts training. *Payam-e-Baharestan*, 17, 55-42.

- Safari Agh-Ghaleh, A. (2011). *A handbook of Persian codicology*. Introduction by Iraj Afshar. Tehran: Mirath-e-Maktob Research Center.
- Sanderson, R., Albritton, B., Schwemmer, R. & Van de Sompel, H. (2011). *Shared Canvas: A collaborative model for medieval manuscript layout dissemination*. In: Proceedings of the 11<sup>th</sup> Annual International ACM/IEEE Joint Conference on Digital Libraries (JCDL). 175–184. ACM.
- Teymoorkhani, A.; Akbari Daryan, S. & Keshavarz, F. (2011). An Analysis of the Codicological Information of the Manuscripts Available in the Digital Library of the National Library and Archives of Iran. *National Studies on Librarianship and Information Organization*, 22(3), 47-55. URL: [http://nastinfo.nlai.ir/article\\_149\\_0bebce2af02ff282a868dc374c853d7a.pdf](http://nastinfo.nlai.ir/article_149_0bebce2af02ff282a868dc374c853d7a.pdf).
- Uhlir, Z. (2008). Digitalization is not only making images: Manuscript studies and digital processing of manuscripts. *Knygotyra*, 51, 148-162.
- Welch, S.C. (1896). Miniature manuscript in Iran. *Art and Architecture*, 30, 101-168.