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# Determining Metadata Schema for Small Medium Enterprises (SMEs)

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## ABSTRACT

Content management system (CMS) is a technology that can be used to support business activity of Small Medium Enterprises (SMEs). Related works regarding metadata analysis have been done by Yang and Chan (2000), Khazraee (2011), Rasaiah et al. (2015) through different methods. This research will use the approach of domain analysis, system centric analysis and user-centric analysis to complete research entitled metadata for small medium enterprises (SMEs) using user centric analysis. As the result, we found recommendation of metadata element set for SMEs that consists of five main sections, including manufacture, product, seller, costumer and transaction.

**Keywords :** Metadata Schema, Smes, Business Activities

## I. INTRODUCTION

Content management system (CMS) is a technology that can be used to support business activity of Small Medium Enterprises (SMEs) [1]. Features available in CMS can generally be used to create, archive, search, disseminate information in a flexible and integrated manner [2]. However, to design and build a CMS, we need to identify the metadata corresponding to the CMS domain at first. In the context of content management system (CMS), metadata is used to describe an object of data to be managed in CMS [3].

Some researchers attempted to build metadata that match the domain of the system to be built [4], [5]. For example, a study conducted by Yang and Chan (2000) about metadata analysis on Chinese Medicine domain using two analytical approaches: system centric analysis and user-centric analysis [6]. Research conducted in 2011 by Khazraee (2011) explained metadata analysis using a domain analysis approach that exist in the field of cultural heritage [7]. The recent research conducted by Rasaiah et al. (2015) performed analysis to build metadata in the field of spectroscopy [8].

Based on the above background, this research will use the approach of domain analysis, system centric analysis and user-centric analysis to complete research entitled metadata for small medium enterprises (SMEs) using user centric analysis.

## II. RELATED WORKS

Some researchers have completed works to build metadata that match the domain of the system to be built, e.g. a research conducted by Yang and Chan (2000) about metadata analysis on Chinese Medicine domain using two analytical approaches, including system centric analysis and user-centric analysis [6]. Research conducted in 2011 by Khazraee (2011) explained metadata analysis using a domain analysis approach in the cultural heritage field [7]. The recent

research conducted by Rasaiah et al. (2015) performed analysis to build metadata in the spectroscopy field [8].

## III. RESEARCH METHODOLOGY

This research used metadata analysis approach to obtain the result of research as seen in Figure 1.

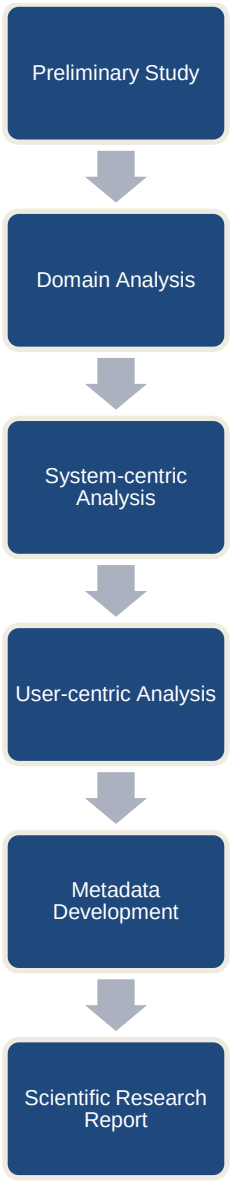


**Figure 1.** Research phase

First, in the preliminary study, we searched and reviewed scientific papers that relevant to the object of research. Second, we conducted domain analysis by investigating the subject or object involved in a metadata domain [9]. Third, we conducted system-centric analysis by observing the information architecture of a system that has a relationship with the metadata domain [10]. The user-centric analysis stage is performed to determine the required metadata elements of the system user side [11]. We conducted interview with ten SMEs regarding their business activities and their data record. The last phase is metadata development and scientific publication writing.

## IV. RESULTS AND DISCUSSION

In this section will deliver about metadata element set and its description based system-user side.

### A. *Domain Analysis*

In this section, we defined the purpose of metadata development, actor and business activities that are involved. We have found metadata development is to document data related to the product plan until product sold in SMEs. We defined actors of this business activities are costumer, seller and manufacture.

### B. *System-centric analysis*

Based literature review, there are metadata that have been used in system to support vocational training of small and medium enterprises (SMEs) in rural areas. This metadata proposed by Tzikopoulos et al. 2007 [12], as shown in Figure 2.

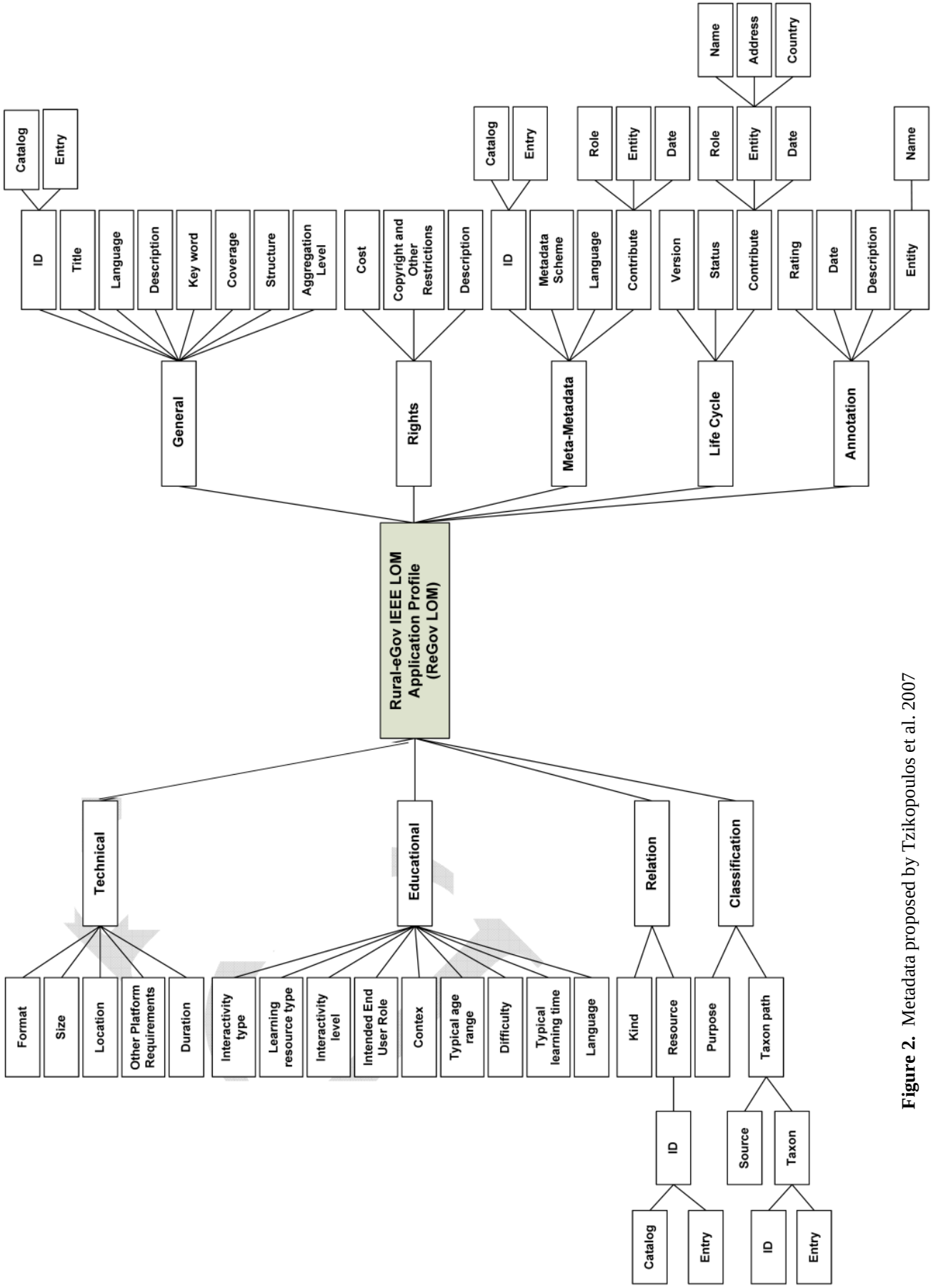


**Figure 2.** Metadata proposed by Tzikopoulos et al. 2007

### C. *User Centric Analysis*

Based result of interview with SMEs in Indonesia, we identified that factory or manufacture, small medium enterprises and costumers are involved to promote and sell product activities. Actor of small medium enterprise (SMEs) needed to record data regarding their activities to track their sales, including manufacture, seller, transaction, costumer and product.

### D. *Finalization*

Based three phases before, we identified data record consisted of description element that related to small medium enterprise activities. The finalization of metadata schema can be seen in Figure 3 below.

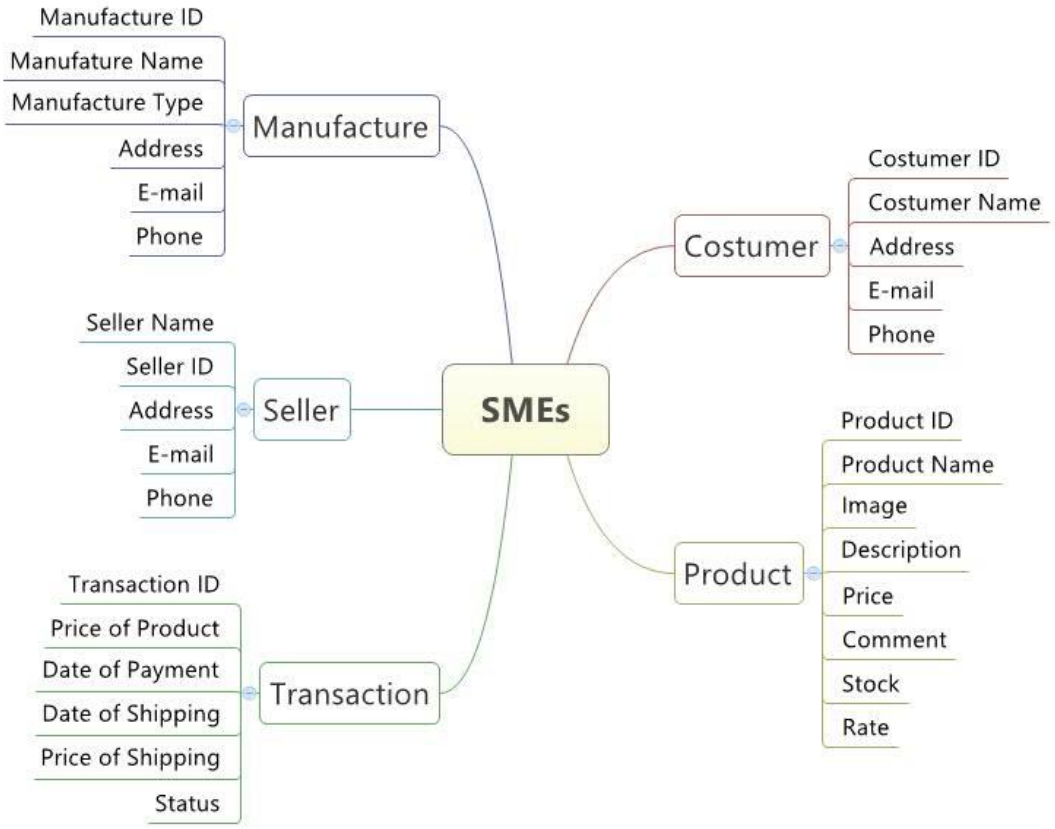


**Figure 3.** Metadata element for small medium enterprise (SMEs) business activities record

### E. Metadata Element Description

This section will elaborate the description of metadata elements that are displayed in Table 1 below.

TABLE I
METADATA ELEMENT DESCRIPTION

| Main Element | Sub Element | Description |
|---|---|---|
| Manufacture | Manufacture ID | Record ID for manufacture |

| Main Element | Sub Element | Description |
|---|---|---|
| | Manufacture Name | Name of manufacture |
| | Manufacture Type | Type of manufacture (scale) |
| | Address | Location of manufacture building |
| | E-mail | The corresponding e-mail of manufacture |
| | Phone | Active phone number of manufacture |
| Seller | Seller Name | Name of product seller |
| | Seller ID | Record ID for product seller |
| | Address | Location of product seller |
| | E-mail | The corresponding e-mail of product seller |
| | Phone | Active phone number of product seller |
| Transaction | Transaction ID | Record ID for transaction |
| | Price of Product | Total of product price |
| | Date of Payment | Detail of product payment date |
| | Date of Shipping | Detail of product shipping date |
| | Price of Shipping | Total of product shipping price |
| | Status | Transaction status |
| Costumer | Costumer ID | Record ID for costumer |
| | Costumer Name | Name of costumer |
| | Address | Location of costumer |
| | E-mail | The corresponding e-mail of costumer |
| | Phone | Active phone number of costumer |
| Product | Product ID | Record ID for product |
| | Product Name | Product name |
| | Image | Detail image of product |
| | Description | Product description |
| | Price | Product price |
| | Comment | Product comment form costumer |
| | Stock | Amount of product stock |

| Main Element | Sub Element | Description |
|---|---|---|
| | Rate | Product rate by costumer |

## V. CONCLUSION

Based on our research, the conclusion that can be derived as follows:

1. Related works about metadata analysis that are used for completing this reasearch, including Yang and Chan (2000) Khazraee (2011) Rasaiah et al. (2015) through different methods.
2. This research used three approaches, including domain analysis, system centric analysis and user-centric analysis to complete research.
3. Recommendation of metadata element set for SMEs that consisted of five main sections, including manufacture, product, seller, costumer and transaction.

## VI. ACKNOWLEDGMENT

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