



CHAPTER II LITERATURE REVIEW

In the literature of database systems, relational data models play an important role in the entire of database field. Such data models often deal with well-defined and unambiguous data. However, problems arise when one has to deal with ambiguous data.

There are many approaches to deal with these problems. One such approach is to extend classical relational data models by using the theory of fuzzy sets and possibility to be fuzzy relational data models. Some of these models not only deal with ambiguous data, but also with imprecise relations. Studies of fuzzy relational data models follow two directions. One deals with models with data representation and query language. Another concerns theoretical aspects of models.

The following studies are some of those dealing with data representation and query language.

1. Buckless and Petry(1982). Their model differs in two ways from classical relational data models. Firstly, attribute value need not be atomic, it may be fuzzy set. Secondly, they define a similarity relation on elements in a domain to identify similar tuples.

2. Umano(1982). This study proposed fuzzy database systems, called FREEDOM(Fuzzy Relational Extension for Data Organization and Manipulation). Its data representation is based on the concept of possibility distribution explicitly and also measures associations among entities by possibility distributions.

3. Zemankova-Leech and Kandel(1984). This model was developed as an expert systems tool. It can deal with both fuzzy data as well as fuzzy relations, their query language looks more natural-like because of the use of linguistic quantifiers.

The only work concerned with aspects of the models is by Raju and Majumdar(1988), who studied the functional dependencies property called fuzzy functional dependencies, as well as lossless join problems in their fuzzy relational model. Their results are inference rules, similar to Armstrong's rule and lossless join decomposition theories as they occur in classical models. Furthermore, they applied the ABU algorithm to test lossless join decomposition for a given set of fuzzy functional dependencies.