

# **A high-utility user behavior prediction model under mobile commerce environment**

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## **ABSTRACT**

Recently, mining and predicting user behavior patterns in mobile commerce environments is an important topic in data mining spheres. However, quantities of purchased items are not considered in previous prediction models. The mining process does not consider the utility of the item for the prediction. For example, the diamond utility is much higher than the clothes, but we buy the quantity of clothes more than diamonds. Besides, the previous prediction method only considers the prediction results of the final behavior of each frequent sequential pattern. If one does not consider these issues, the prediction results will be inaccurate. To overcome this problem, this research proposes a framework, called high-utility mobile commerce behavior prediction system (HU-MCBPS). The proposed system consists of four major components: a mobile transaction database, similarity inference method (SIM), high-utility mobile sequential pattern mining by level-wised algorithm, and high-utility mobile commerce behavior predictor. A mobile transaction database records the transaction behaviors of all users. Similarity inference method (SIM) includes store-item-quantity database, item-store-quantity database and similarity evaluation and inference method. The similarity evaluation and inference method measures the similarities among stores and items according to SIQD and ISQD database. High-utility mobile sequential pattern mining by level-wised method, called UMSPL algorithm, includes two Phases. Phase I generates weighted utilization mobile sequential patterns (WUMSPS), while phase II finds high-utility mobile sequential pattern (HUMSPS) within WUMSPS. High-utility mobile commerce behavior predictor (HU-MCBP) predicts possible mobile behaviors of a user. When users enter the locations of stores and purchased items, HU-MCBP can predict the next possible user purchasing behavior.

Keyword: Utility mining · Mobile commerce · Mobile pattern mining · Mobile behavior prediction