Experience based factory model for software development process: item construct validation on questionnaire design

ABSTRACT

Software development is a highly intensive knowledge process. Information, data, knowledge and experiences are accumulated daily and it is crucial that they are managed appropriately for the purpose of sharing and future reuse. Today, software development has spread across geographical boundaries; therefore, the need for knowledge retention has risen, and the need for collaboration among the community of practice has been further in demand. Based on this motivation, we posit a model of managing the experiences of software development process by using experience based factory approach. An initial conceptual model has been constructed based on relevant theoretical frameworks which include knowledge management, experience factory, software development process, community of practice, technology and infrastructure, and influences from managerial and organizational levels. Based on the literature review, questionnaire items have been designed to form the identified latent constructs. A pilot survey has been conducted to verify the questionnaire items and the results are tested against Rasch measurement analysis. By using Rash logit measures, the items quality is ensured. Findings indicate that the item fitness is good (0.73), outfit and infit mean square values are very much close to 1, and Z-standardized value is within the expected range. Unidimensionality shows that there is no visible secondary dimension even though the scale category structure is rather high. Nonetheless, there are several misfitting items which are further calibrated and revised for future study. The initial model will be the basis of the future model development.

Keyword: Experience factory; Knowledge management; Software development process; Questionnaire design; Rasch analysis