Identifikasi, Pemeringkatan, dan Rekomendasi Kompetensi Software Engineer dalam Global Software Development (GSD) berbasis knowledge, skill, & attitude (KSA) = Identification, Ranking, and Recommendation of Software Engineer Competencies in Global Software Development (GSD) Based on knowledge, skill, & attitude (KSA)

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Abstrak

Global Software Development (GSD) adalah metode pengembangan perangkat lunak dengan tim yang tersebar secara geografis di seluruh dunia. GSD merupakan fenomena yang tidak bisa dihindari, karena perkembangan teknologi dan perangkat lunak yang semakin meluas. Persentase tenaga kerja Indonesia yang terlibat dalam GSD hanya 0.2%. Berdasarkan masalah tersebut, tujuan dari penelitian ini adalah mengidentifikasi kompetensi software engineer GSD berbasis KSA (knowledge, skill, & attitude). Penelitian ini mengumpulkan daftar kompetensi KSA menggunakan teknik Systematic Literature Review (SLR), kemudian dilakukan validasi pakar melalui Focus Group Discussion menggunakan kuesioner. Kuesioner kemudian diolah menggunakan Fuzzy Delphi Method untuk mengetahui kompetensi mana saja yang disepakati para pakar. Berdasarkan hasil konsensus pakar, terdapat sepuluh kompetensi GSD yang terdiri dari empat knowledge, empat skill, dan dua attitude. Keempat kompetensi knowledge yang diterima dan diurutkan berdasarkan peringkat tertinggi, yaitu virtual team management, software distribution method, project management, dan information security. Selain itu, keempat kompetensi skill yang diterima dan diurutkan berdasarkan peringkat tertinggi, yaitu collaboration & coordination, programming skill, foreign language skill, dan intercultural communication. Kemudian kedua kompetensi attitude yang diterima, yaitu trust dan cultural sensitivity/awareness. Kompetensi yang telah mencapai konsensus, selanjutnya dicari hubungan keterkaitannya menggunakan fitur cluster analysis pada NVIVO 12 Plus. Berdasarkan analisis, relasi terkuat merupakan kompetensi skill, yaitu intercultural communication (skill) dan collaboration & coordination (skill) dengan nilai Jaccard’s coefficient 0,9. Kemudian relasi terkuat kedua merupakan kompetensi knowledge, yaitu project management (knowledge) dan foreign language skill (knowledge) dengan nilai Jaccard’s coefficient 0,714. Sedangkan kompetensi attitude berada di peringkat ketiga, yaitu relasi antara trust (attitude) dan virtual team management (knowledge) dengan nilai Jaccard’s coefficient 0,714. Langkah terakhir yaitu menyusun rekomendasi menggunakan SLR dan analisis tematik. Penelitian ini menghasilkan rekomendasi untuk meningkatkan dua kompetensi teratas dari knowledge, yaitu virtual team management dan software distribution method; kompetensi teratas dari skill, yaitu collaboration & coordination; dan kompetensi teratas dari attitude, yaitu trust. Selain itu, rekomendasi juga diberikan untuk meningkatkan dua kompetensi yang memiliki relasi tertinggi, yaitu intercultural communication dan collaboration & coordination.

.....Software Development (GSD) is a software development method with teams that are spread geographically across the world. GSD is a phenomenon that cannot be avoided, because of the development of technology and software that is increasingly widespread. The percentage of Indonesian workers involved in GSD is only 0.2%. Based on these problems, the purpose of this study is to identify the competency of

GSD software engineer based on knowledge, skill, and attitude. This study compiled a list of KSA competencies using the Systematic Literature Review (SLR) technique, then expert validation was conducted through Focus Group Discussion using a questionnaire. The questionnaire is then processed using the Fuzzy Delphi Method to find out which competencies are agreed upon by the experts. Based on the expert consensus, there are ten GSD competencies consisting of four knowledges, four skills, and two attitudes. The four competencies of knowledge sorted by the highest rank, are virtual team management, software distribution methods, project management, and information security. In addition, the four competencies of skill sorted by the highest rank, are collaboration & coordination, programming skills, foreign language skills, and intercultural communication. Then the two competencies of skill sorted by the highest rank, are trust and cultural sensitivity/awareness. The ten competencies then searched for relationship using cluster analysis feature of NVIVO 12 Plus. Based on the analysis, the strongest relation is a skill competency, namely intercultural communication (skill) and collaboration & coordination (skill) with Jaccard's coefficient value of 0.9. Then the second strongest relation is knowledge competency, namely project management (knowledge) and foreign language skills (knowledge) with Jaccard's coefficient value of 0.714. While attitude competency is ranked third, namely the relationship between trust (attitude) and virtual team management (knowledge) with Jaccard’s coefficient value of 0.714. This research produces recommendations to improve the two top competencies of knowledge, namely virtual team management and software distribution method; top competency of skills, namely collaboration & coordination; and the top competency for attitude, namely trust. In addition, recommendations are also given to improve two competencies that have the highest relations, namely intercultural communication and collaboration & coordination.