Identification of Skills to Improve Software Developer Productivity

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DECLARATION

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R. L. Wanniarachchi.

(Signature of the candidate) Date:

The above candidate has carried out research for the Masters thesis under my supervision.

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Dr. Shantha Fernando Date

Signature of the Supervisor

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ABSTRACT

Software Engineering has become one of the essential requirements for today's business, and software development has become one of the trending employments today. Due to the business's technical advancement and competition, the IT industry's expectation of software development skill level increases. Therefore, the industry is looking for more qualified software developers even though software developers are available. Some companies arrange technical improvement training or/and soft skill improvement training to improve software developers' skills. These training programs improve the software developer's skills to a level required at the moment, and some training programs are too late to initiate. As a lesson learned from that when hiring fresh graduates, some companies provide training before employment. Therefore, this research aims to find out the skill gap of the software developers in Sri Lanka and determine which skills impact the software developer's productivity, and find out how to improve the software developer's productivity. A survey was carried out among a sample of software developers. A series of interviews were conducted with industrial experts to determine the aspects influencing the software developer's productivity and present significant factors. Based on the analysis undertaken to the collected data, the results revalidate that the software developer has to strengthen soft skills such as Team Working, Problem-solving, Communication Skills, and improving programming skills to improve the software developer's productivity. The results revalidate that even though programming skills are considered the key skill for a software developer, the software developer should improve soft skills to benefit programming skills. Industrial experts suggest several approaches to improve these skills. Based on the survey result and expert feedback, sharing knowledge in platforms, taking online courses, and trying out new technologies can improve software developers' productivity by improving technical skills.

Further, the findings show that training such as leadership and team working training and business communication training should improve soft skills. This training was suggested to be arranged by the employer based on the business requirement. Employers should encourage the employees to do self-learning and try out new technologies. Education institutes should also provide training that focuses on soft skills such as teamwork and communication to improve software developer's soft skills. Also, expert feedback suggested that the education institutes should encourage students to take online courses to match the IT industry's expectations.

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LIST OF ABBREVIATIONS

AI – Artificial Intelligence

ANOVA - Analysis of variance

IT – Information technology

PMI – Project Management Institute

PMP - Project Management Professional

Q4 – Fourth quarter of the year

ROI – Return of Investment

SDLC – Software Development Life Cycle

UML - Unified Modeling Language

US – United States