

# **How do Colombian software companies evaluate software product quality?**

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the degree of

**Doctor of Philosophy**

under the supervision of Associate Professor Julia Prior and  
Adjunct Professor John Leaney

University of Technology Sydney  
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## AUTHOR'S DECLARATION

I, *Wilder Perdomo-Charry* declare that this thesis, is submitted in fulfilment of the requirements for the award of Doctor of Philosophy, in the *School of Computer Science, Faculty of Engineering and Information Technology* at the University of Technology Sydney.

This thesis is wholly my own work unless otherwise referenced or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

This document has not been submitted for qualifications at any other academic institution.

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## ABSTRACT

Software developers confuse product quality with process quality, leading them to think they are measuring product quality when they are not. This is the main finding of this study of software developers in young small to medium companies in Colombia.

Software product quality reflects two perspectives: conformance to specifications, and satisfying expectations when it is used under specified conditions. Measuring product quality still remains a problem for software development companies in relation to factors such as cost, effort, time and competitiveness. There are few studies that show the current state of software product quality in companies, how companies evaluate product quality, and which measures they use to develop and launch products that meet high-quality criteria.

This research presents a study of software product quality in seven young software development companies in a developing country. The candidate used a qualitative research approach to understand, through their experiences and knowledge, how 20 employees—developers, testers, and project managers—and their companies evaluate software product quality, and which measures they apply in their companies.

The results demonstrate that software process quality is better understood, and applied, by these software companies than software product quality. A greater difficulty is that most study participants ‘overlaid’ the idea of product quality with process quality, i.e. they talked about product quality as if it were process quality. This confusion leads them to think that they are measuring product quality when they are not.

These findings have implications for companies that wish to increase competitiveness and productivity as they must develop a working knowledge of software product quality that is not confused with software process quality. It also has implications for educators, to ensure that the distinction between process and product quality is explicitly taught.



## DEDICATION

*To God who is present in every place, moment and circumstance, and who always accompanies me on the path of life. To my mother, my father (rife), and Maria my wife, who are proof of love, persistence, and family union. Fundamental criteria to achieve a goal.*

*Wilder Perdomo...*





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the clear cohesion of my problem with the research method, data analysis, and findings.

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## LIST OF PUBLICATIONS

### RELATED TO THE THESIS :

1. Perdomo, W., Prior, J., Leaney, J. (2019), 'Software product quality (SPQ) evaluation at young software companies from a developing country.' In: *School of Computer Science HDR Student Research Showcase 2019*.
2. Perdomo, W., Prior, J. Leaney, J. (2020), *How do Colombian software companies evaluate software product quality?*, in Proceedings of the 30th international Workshop on Software Measurement (IWSM) and the 15th international Conference on Software Process and Product Measurement (MENSURA), CEUR-WS, Mexico City, pp. 1-16.
3. Perdomo, W., Prior, J., Leaney, J. (2020), 'Evaluation and measurement of software product quality in the new Colombian software companies —A Systematic Literature Review', *Ingeniare X(XX)*, *In review*.



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