

Factors Affecting Software Development Productivity: An empirical study

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Figure 1 synthesizes the results obtained during data collection.

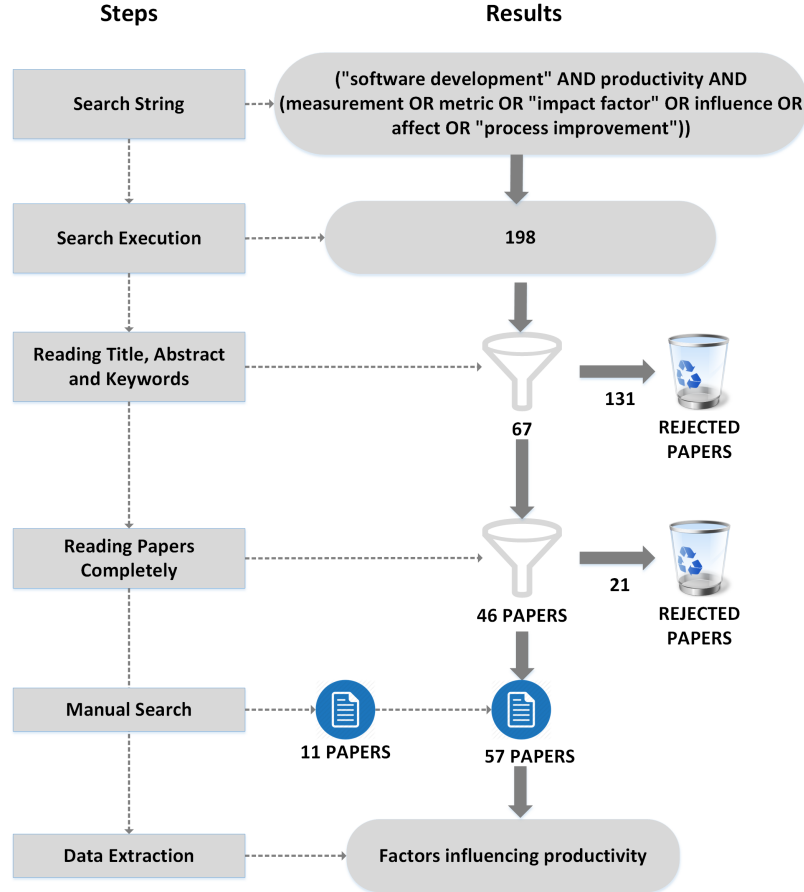


Figure 1: Articles selected Systematic Literature Review

Table 1 presents the list of articles selected.

Table 1: Selected Papers SLR

ID	Paper Title	Reference
S1	Interpretative case studies on agile team productivity and management	[28]
S2	Towards understanding how developers spend their effort during maintenance activities	[45]
S3	A Review of Productivity Factors and Strategies on Software Development	[11]
S4	A model for analyzing estimation, productivity, and quality performance in the personal software process	[42]
S5	Benchmarking software development productivity	[27]
S6	Software Project Managers' Perceptions of Productivity Factors: Findings from a Qualitative Study	[36]
S7	The increase of productivity over time - an industrial case study	[49]
S8	Effective Social Productivity Measurements during Software Development – An Empirical Study	[56]
S9	Deployment of integrated design for the reduction of software complexity	[57]
S10	A survey on project factors that motivate Finnish software engineers	[30]
S11	Factors that motivate software engineering teams: A four country empirical study	[53]

S12	Understanding relationships among teleworkers' e-mail usage, e-mail richness perceptions, and e-mail productivity perceptions under a software engineering environment	[19]
S13	Key Software Metrics and its Impact on each other for Software Development Projects	[2]
S14	Software development productivity and cycle time reduction	[8]
S15	Measuring and predicting software productivity: A systematic map and review	[39]
S16	A Systematic Review of Productivity Factors in Software Development	[54]
S17	Benchmarking software development productivity of CMMI level 5 projects	[38]
S18	Understanding software productivity: a comparative empirical review	[43]
S19	Software productivity: a framework of study and An approach to reusable components	[35]
S20	Empirical Evidence of Factors Influencing Project Context in Distributed Software Projects	[24]
S20	Methods for monitoring productivity in applicative software development	[7]
S21	Managing software development for speed and productivity through concurrent software engineering	[3]
S22	An Empirical Analysis of Software Productivity over Time	[40]
S23	An empirical research agenda for understanding formal methods productivity	[21]
S24	An Empirical Study of the Complex Relationships between Requirements Engineering Processes and Other Processes that Lead to Payoffs in Productivity, Quality, and Risk Management	[10]
S25	Constraint-based human resource allocation in software projects	[22]
S26	Experimental investigation of the quality and productivity of software factories based development	[23]
S27	Scrum and CMMI level 5: The magic potion for code warriors	[48]
S28	Agile software development: Impact on productivity and quality	[1]
S29	Modern DevOps: Optimizing software development through effective system interactions	[9]
S30	Software cost estimation with Cocomo II with Cdrom	[4]
S31	Significance of depth of inspection and inspection performance metrics for consistent defect management in software industry	[34]
S32	A Comparative Analysis of the Agile and Traditional Software Development Processes Productivity	[13]
S33	PaaS Characteristics for Productive Software Development: An Evaluation Framework	[15]
S34	An empirically validated simulation for understanding the relationship between process conformance and technology skills	[26]
S35	Modern DevOps: Optimizing software development through effective system interactions	[9]
S36	Quality and productivity outcomes relating to continuous integration in GitHub	[52]
S37	Characterizing Software Developers by Perceptions of Productivity	[29]
S38	User participation in software development projects	[47]
S39	Open Source Software and Firm Productivity	[33]
S40	Overcoming Social Barriers When Contributing to Open Source Software Projects	[46]
S41	How practitioners perceive coding proficiency	[55]
S42	The Impact of Process Effectiveness on User Interest in Contributing to the Open Source Software Projects	[16]
S43	Community Engagement with Free and Open Source Software	[32]
S44	A Contribution Management Framework for Firms Engaged in Open Source Software Ecosystems - A Research Preview	[25]
S45	Gender and Tenure Diversity in GitHub Teams	[51]
S46	Gender diversity and women in software teams: how do they affect community smells?	[6]
S47	Investigating the effects of gender bias on GitHub	[20]
S48	Influence Factors in Software Productivity - A Tertiary Literature Review	[37]
S49	Factors Influencing Productivity of Agile Software Development Teamwork: A Qualitative System Dynamics Approach	[14]
S50	Factors Influencing Software Development Productivity - State-of-the-Art and Industrial Experiences	[50]
S51	Software Engineering Job Productivity - a Systematic Review	[18]
S52	From Aristotle to Ringelmann: a large-scale analysis of team productivity and coordination in Open Source Software projects	[44]
S53	Team Maturity in Agile Software Development: The Impact on Productivity	[41]
S54	The Links Between Agile Practices, Interpersonal Conflict, and Perceived Productivity	[17]
S55	Methods and Metrics for Estimating and Planning Agile Software Projects	[5]
S56	A review of productivity factors and strategies on software development	[12]
S57	A procedure for assessing the influence of problem domain on effort estimation consistency	[31]

Survey questions (Q1 to Q8 and Q9 (open-ended question)) answered by all 49 participants are presented in Table 2.

Table 2: Survey Questions

ID	Question
Q1	In my current team, often a specific person decides on how to evaluate the quality of the code, only a person decides how to make that assessment.
Q2	In the organization there is an efficient Knowledge Management
Q3	In the organization there is a historical measurements backgrounds
Q4	The organization offers a friendly work environment
Q5	The software development team participates in the planning of the software project
Q6	There is in the organization a process of standardized software development
Q7	The team participates in the choice of Programming language and of the Technology Platform
Q8	In my current team, goals and task allocation are often determined by supervisors.
Q9	What is the essential skill of a development team member?

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