

Requirements Engineering in Small Software Companies

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Introduction

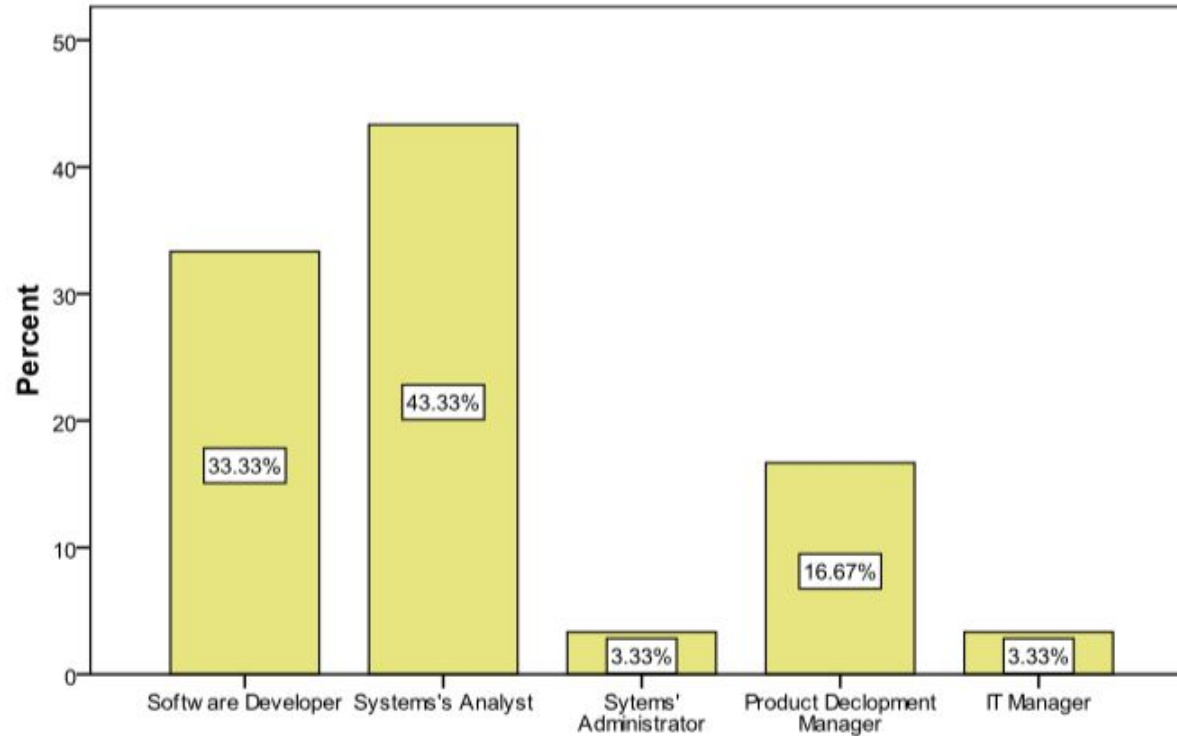
- In the US, Brazil, Canada, China, India, Finland, Ireland, Hungary, and many other countries, **small companies** make up to **85 percent** of all **software organizations** working [6];
- Due to their **small size**, lack of **resources** and other **limiting factors, challenges** faced by small companies are totally **different from large** scale organizations [6];
- **Small software firms** are extremely **vulnerable** to changes in technologies and markets [6];



Introduction

- The **requirement engineering** community has mostly **overlooked needs** and **characteristics** of small organizations [6];
- One of the biggest **challenges** faced by small companies is **selection** of **appropriate RE techniques** for any project [6];
- There are **many factors** which can **affect** the **selection** of appropriate **techniques**, like budget, time, resources etc [6];
- It's a very **difficult** task to **undertake RE process improvement** in small software companies [4].

Respondents Role in their organizations [4]



Current RE Processes and Practices [4]

RE Processes and Practices	Frequency	Percent
Elicitation	14	26.9
Elicitation, Analysis, specification, validation	5	9.6
Elicitation, Analysis, specification, Validation, Verification	3	5.8
Elicitation, Analysis, Specification	14	26.9
Elicitation & Analysis	11	21.2
Requirements Documentation	2	3.8
Requirements negotiation	3	5.8
Total	52	100.0

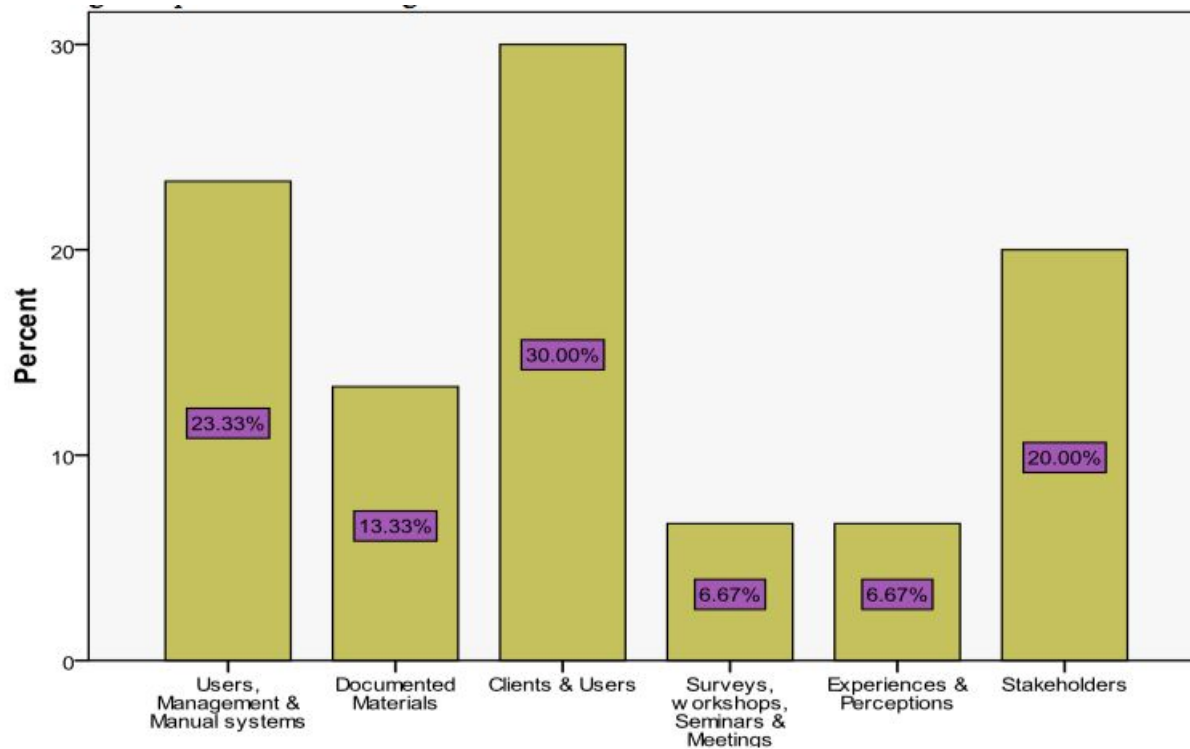
Defined RE Process Improvement Approach [4]

Approach	Frequency	Percent
Yes (Defined Approach)	17	32.7
No (Not defined Approach)	35	67.3
Total	52	100.0

Requirements Elicitation Methods in SME software companies [4]

Elicitation Methods	Frequency	Percentage
Brainstorming, Interviews	6	11.5
Brainstorming, Observations & Benchmarking	2	3.8
Brainstorming & Use cases	2	3.8
Brainstorming & observation	26	50.0
Observation, interviews, Questionnaire	3	5.8
Questionnaire & Focus groups	3	5.8
Interviews	3	5.8
Observation & interviews	5	9.6
Workshops & discussions	2	3.8
Total	52	100.0

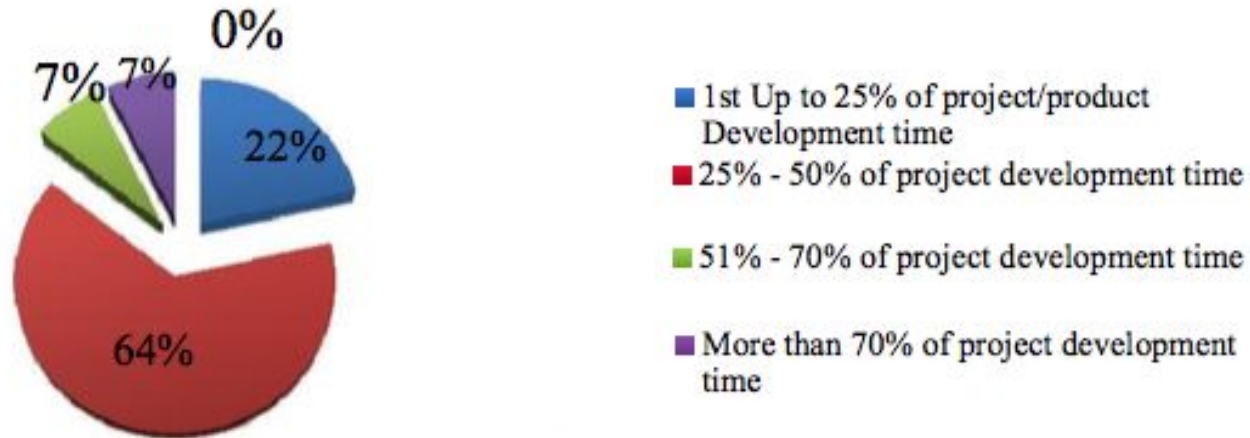
Requirements sources in small software companies [4]



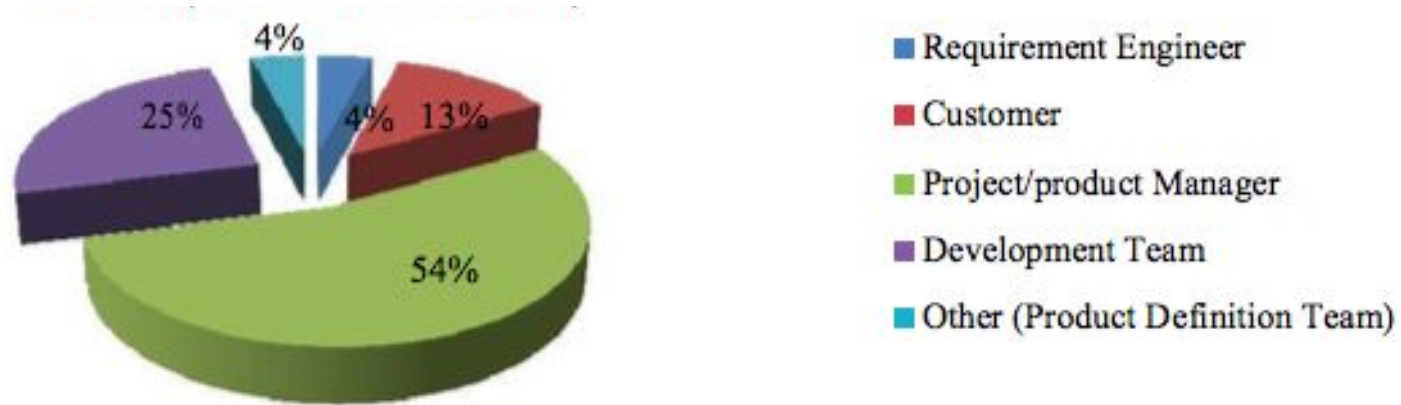
Requirements Management Tools used [4]

Requirements Management Tools	Frequency	Percent
Word Processor and Spreadsheet	3	5.8
CASE Tools	3	5.8
Requirements Database	5	9.6
Customized Solution	5	9.6
Note Book	3	5.8
Requirements Database & Word processor	15	28.8
Spreadsheet	5	9.6
No Tool used	8	15.4
Word Processor	5	9.6
Total	52	100.0

Average Time Duration for RE Process [3]



Requirements Analysis Staff [3]



Challenges to RE Process Improvement in Small Software companies [7]

Challenges	Freq	Percent
Lack of User's Involvement	9	17.3
Lack of management support	9	17.3
Lack of Skills	3	5.8
Changing Requirements	2	3.8
Resistance to change	2	3.8
Ambiguous Requirements	16	30.8
Lack of proper Documentation	3	5.8
Measurement of RE benefits	3	5.8
Expensive	5	9.6
Total	52	100.0

Recommendations to REPI Challenges in Small Software companies [7]

Recommendations	Freq	Percent
RE process Documentation	3	5.8
Training and workshops	20	38.5
Management Support	3	5.8
User involvement	9	17.3
Project Management Skills & planning	7	13.5
RE improvement strategy	3	5.8
Management of changing requirement	7	13.5
Total	52	100.0

Conclusion

- **Improve** their RE process is a **challenging** undertaking and a **complex phenomenon** due to budget and time constraints [7];
- RE **activities differ** from businesses to businesses and organization to organization. The **cultural and geographical** aspects also affect these activities [3];
- Small organizations **practice** the **main RE activities** like feasibility study, requirements analysis and prioritization [3];
- But they **usually ignore** the more subtle **activities** like conflict resolution, requirement inspections and risk analysis [3];

Conclusion

- This **leads** to sometimes **poor product requirements** which cause **amendments** not only in requirement specifications but involve re-implementing, re-designing and retesting for entire software [3].
- There is **need** for Small Software Companies to **train and sensitize their personnel that are involved in the RE process** improvement. This can help to create more awareness of RE process improvement [4];
- **RE process** is getting more and **more mature** with the passage of time and during last half decade all the **stakeholders are putting great emphasis** on this **important phase** of software development life cycle [3];
- RE process improvement is **gradual and not an event** [7];

QUESTIONS?

References

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