Design Pattern Impact on Reliability and Usability an SMS

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***Abstract*—Blah:**

***Index Terms*—**

1. Introduction

2. Background and Related Work

2.1. Design Patterns

2.2. Reliability

2.3. Usability

Usability is a quality attribute that can be verified or measured in a software product. Usability is defined in numerous classifications including ISO 9126, ISO 9241-11, and ISO/TR 16982:2002 [Analyzing the impact of usability on software design]. Usability as defined by ISO 9126 is "A set of attributes that bear on the effort needed for use, and on the individual assesment of such use, by a stated or implied set of users." [citation placeholder]. ISO 9241-11 goes on to define usability as "The extent to which a system, product, or service can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use." [citation placeholder].

2.3.1. Usability Inspection Methods. Usability inspection is a set of methods where an evaluator, usually an expert in the field, is brought in to inspect a user interface (UI) with the goal of identifying design issues as well as the associated severity of each issue. There are numerous inspection methods used in evaluating usability [1]:

1. Heuristic evaluation is a method for finding usability problems where a small set of evaluaters, usually one at a time, judge the UI based on its compliance with a set of predetermined usability principles known as heuristics [2][1].
2. Cognitive walkthroughs -
3. Formal usability inspections -
4. Pluralistic walkthroughs -
5. Feature inspections -
6. Consistency inspections -
7. Standards inspections -

2.3.2. Usability Testing Methods.

3. Systematic Mapping Approach

We followed the systematic mapping study approach defined by Kitchenham et al [X]. and refined by Peterson et al. [X].

3.1. Research Questions

- **RQ1:** What design pattern types do research study when considering usability and reliabiity?
- **RQ2:** What recomendations have been made regarding application of design patterns and in the context of usability and reliability?
- **RQ3:** How is the impact on usability and reliability from design patterns currently evaluated?
- **RQ4:** What type of projects or domains were studied?
- **RQ5:** Where are papers concerning design patterns and reliability and usability published?
- **RQ6:** What types of studies are conducted regarding design pattern impact on usability and reliability?
- **RQ7:** In what phase of development do proposed results apply?
- **RQ8:** What tools are utilized for the research and to which languages do they apply?

3.2. Data Sources

The data sources for this paper included IEEEXplore, ACM Digital Library, SpringerLink, Web of Science, and the Science Direct database. In order to provide a broad overview of the field and ensure relevant papers were selected we limited our search to the years between 2009-2019.

3.3. Search Queries

The search query used in this paper was created from keywords based on our research questions abd included: usability, reliability, design patterns, and pattern.

The specific search query used in this paper was: ((usability OR usable) AND (reliability or reliable) AND "design pattern" or pattern).

3.4. Inclusion Criteria

- Only papers whose main focus is on design patterns and their effect on usability or reliability were available for inclusion.
- For papers where multiple iterations of the same paper exist only the latest version was eligible for inclusion.
- Papers that included either reliability or usability and design pattern or pattern as keywords to identify the paper topics.

3.5. Exclusion Criteria

- Papers not written in the English language.
- Papers whose title or abstracts did not contain the selected keyword phrases.
- Papers which discussed the impacts of design patterns on quality attributes exclusing reliability or usability or their sub-characteristics.

3.6. Quality Criteria

3.7. Snowballing Approach

We utilized the snoballing approach defined by wohlin et al. [X] to dinf further sources overlooked by the initial search. Specifically, we utilized the following approach:

4. Threats to Validity

This is a blah

4.1. Conclusion Validity

4.2. Construct Validity

4.3. Internal Validity

4.4. Reliability

5. Results

6. Conclusion

7. Recommendations

References

[1] R. Mack and F. Montaniz, "Usability Inspection Methods," J. Nielsen and R. L. Mack, Eds. New York, NY, USA: John Wiley & Sons, Inc., 1994, pp. 295–339.

[2] J. Nielsen and R. Molich, "Heuristic evaluation of user interfaces," in *Proceedings of the SIGCHI conference on Human factors in computing systems Empowering people - CHI '90*, 1990, pp. 249–256.