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A Systematic literature review on a managerial strategy 'customer first' in software oriented organizations

Bachelor of Science Thesis in Software Engineering and Management program

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Abstract: **One of the main goals for software organizations is to satisfy the customers of the organization. This is one of the reasons why there exist certain managerial strategies, where the development process is customer centric. In this research, the authors performed a systematic literature review on identification of 'customer first' managerial strategies, where the main goal of such strategies is the satisfaction of the customers. Furthermore, the authors intended to find out what are the effects of customer involvement in a development process and what are the factors that affect customer satisfaction. The authors of this paper identified 6 customer oriented strategies within software oriented companies. The researchers also found out that customer involvement in a development process leads to positive impact, and a total of 40 factors that affect customer satisfaction. The results will be described in greater detail within this paper.**

Keywords – customer strategies, customer satisfaction, customer involvement, systematic literature review.

I.   INTRODUCTION

In software oriented organizations, customers and customers' satisfaction are of great significance Hoda et al. [21], Bhalerao & Ingle [23]. On the one hand, some companies, for instance, implement risk management tools that address customer complaints Dye & Schaaf [10]; in order to retain customers and increase the customers' satisfaction. On the other hand, some software organizations started to implement new strategies or approaches in order to fulfill the customer needs Kabedijk et al. [11], Hoda et al. [21], Aker et al. [22]. Upon this, within this study, the authors state that the definition of a '*customer first*' strategy is the combination of customer satisfaction, value and collaboration.

Customer collaboration during the development process can be seen as beneficial to an enterprise, for instance, *Agile* development methodologies, such as *Scrum* or *Extreme programming (XP)*, emphasize the involvement of a customer during the development of a product. Hence, by doing so, the development becomes customer-centric Martin et al. [1], Coram & Bohner [14], Akhtar et al. [16], Aker et al. [22], Delangizan et al. [24]. This means that collaboration with the customers can result in a product that will satisfy the customer's needs and requirements.

Several software oriented organizations had a product-centric approach, meaning that delivering a product was the main goal in a release or a project Wikstrom [4], Bao et al. [30], Jianchi & Xiaohong [32], whilst not taking into account the importance of customer value. However, by addressing the issue of customer value, the enterprises are able to provide a product that satisfies the customers' needs Bavani [19]. Hence, the researchers aimed at exploring what kind of '*customer first*' strategies are used in software oriented organizations, how they manage the customer involvement and customer value and identify influencing factors of customer satisfaction.

The researchers conducted a systematic literature review (SLR) Kitchenham [3], where the aim was to identify, analyze and assess '*customer first*' strategies within software oriented organizations. Furthermore, the authors aimed to find out how customer involvement affects the development process. Lastly, the researchers attempted to identify the factors that affect customer satisfaction within software oriented enterprises, or products, that have software basis.

It is essential for a company to care about their customers, ensure their satisfaction and respect them. Hence, by conducting this study, the authors aim to contribute and complement already existing knowledge by providing information regarding customer oriented strategies, customer involvement whilst developing a product and customer satisfaction.

The research paper is structured as follows. Section II presents the related work. Section III provides detailed description of the methodology. Section IV presents the results of this research. The results are discussed in Section V. Section VI concludes the research with indications on future work.

II. RELATED WORK

In this section the researchers present related work and the definitions that are used within this study.

A. Definitions

Customer satisfaction – Taha et al. [2] defined customer satisfaction as kind of pleasant or disappointed status, formed after customer compared the perceived result of the product with the expected one. Hu [33] stated that customer satisfaction is customer evaluation of a product or service with regard to their needs and expectations. Jun [5] described e-Satisfaction as customer's holistic perception of their e-commerce experience. Also, according to Jun [5], under the context of e-commerce the customer satisfaction is confirmation of customer's shopping experience with their expectations as well as level of satisfaction in terms of their emotional and personalized needs. Hence, the researchers, within the context of this study, will use the following definition for customer satisfaction. *Customer satisfaction* (CS) is fundamental value in software oriented organizations. It reflects the agreement between the customer expectation about a product and what the actual value of that product is and how well are the customers' needs satisfied.

'Customer First' strategy – is a strategy/approach consisting of a combination of customer satisfaction, value and collaboration.

B. Related Work

Taha et al. [2] in their study focused on antecedent factors of customer satisfaction in mobile commerce. They performed a *SLR* on published articles that are related to mobile commerce customer satisfaction models, in order to discover antecedent(s) of satisfaction in the time spectrum since 2005 to 2012. Taha et al. [2] in their study found 12 existing antecedent factors of customer satisfaction, for instance, *appearance, entertainment,* and *trust.* The findings of the research suggested that the customer satisfaction in mobile commerce services depends on the services, the target clients, and their operations.

Sun & Han [28] presented a study about how to refine a customer satisfaction index (CSI) for the mobile phone service industry and what are the factors that affect customer satisfaction. Sun & Han [28] proposed a theoretical framework based on telecommunication customer satisfaction index. To obtain the results, they performed a questionnaire. The result of the study showed that adding perceived equity construct to the CSI model is valid. Furthermore, the influence of corporate image, perceived value, and perceived equity on customer satisfaction.

According to Taha et al. [2], and Sun & Han [28] the focus of their study was on identifying different factors that affect customer satisfaction, as well as different models and tools to measure customer satisfaction and to enhance these models. However, the authors of this paper explored different kinds of *'customer first'* strategies, that are used to manage and control the customer satisfaction in software oriented organizations, in order to achieve customer satisfaction, or what are different challenges that the organizations face during implementation of such strategies. That is the reasoning behind this research.

III. METHODOLOGY

The reason why the researchers had chosen to perform a *SLR* was because the aim of this research was to present all relevant studies regarding a particular research topic by using a trustworthy, rigorous, and auditable methodology Kitchenham [3]. According to Kitchenham [3], *SLR* is the identification, evaluation and interpretation of all available research relevant to a particular research question or topic area. Therefore, in order for the authors to find the answers for the research questions, a series of consecutive steps to gather information were performed. The steps are: *Research questions*; *Data sources; Search strategy; Study selection criteria; Study selection procedure; Data extraction and analysis, Validity threats and Quality assessment.*

A. Research questions

In order to fulfil the objectives of this research, three research questions were defined. The primary research question for this study is about *'customer first'* strategies, however, in order to fully grasp the concept behind such strategies, the information regarding the customer involvement in a development process and the need of knowledge behind customer satisfaction is required as well. Hence, the research questions are as follows:

- *RQ 1*. What type of 'customer first' strategies are used in software oriented companies?
- *RQ 2*. How does the customer involvement affect the development process?
- *RQ 3*. What are the factors that affect customer satisfaction?

B. Data sources

The primary sources of data collection were the three digital libraries, which are as follows: *IEEE Xplore, Inspec* and *Scopus.*

The reason why a well-known digital library *Springerlink* was excluded from this study is because it did not allow to perform a massive simultaneous download, only one article per download. The database provided a result of over 8,000 articles. Due to time constraints, the researchers could not afford such an outcome. This issue is discussed more detailed in section 3.E Study selection procedure.

The reason why *ACM digital library* was excludes is because whilst performing a quality check on the results

obtained from that digital library compared with the results obtained from the *Inspec*, *IEEE Xplore*, and *Scopus,* some of the studies in *ACM digital library* were covered by the three primary digital libraries.

C. Search Strategy

The authors conducted a search query, which consisted from a set of specifically selected words that reflected the aim of this study. The search string was constructed with the help of Boolean expressions "AND" and "OR". The search string was the following: (("customer satisfaction" OR "customer value" OR "managerial strategy" OR "customer collaboration") AND (software)). The researchers emphasize that the aforementioned search string is the final version. The researchers had performed trial searches with a set of different keywords, for instance, (("customer satisfaction" OR "customer value" OR "managerial strategy" OR "customer collaboration") AND (IT)). The results were around 71,000. However, after evaluating the results and realizing the limitations of the study, the search string was narrowed to the one that has been stated previously.

D. Study selection criteria

Defining the selection criteria is really vital. Hence, the inclusion criteria on the found literature were the following:

- The study should be about customers' satisfaction or customer value or customer involvement in a development process; customer first strategy or customer based or customer-centric method/approach within software context.
- The studies must contain empirical data.
- The studies must be written in English.
- The study must be a conference publication, a journal or a magazine.

The exclusion criteria were the following:

- Books and e-books were excluded (since they are not peer-reviewed).
- If the study did not meet all of the inclusion criteria's, it was excluded.

E. Study selection procedure

Within this section, the researchers provide an overview of the selection criteria and the amount of articles obtained from the digital libraries.

The process that is being described is reflected in *Figure 1*. First, the research questions were defined; after which the process of collecting articles began. The search string was entered into the digital libraries. Having done that, the authors extracted the articles from the digital libraries. Next, the researchers began analyzing the article titles. If the article title falls into the selection criteria, its abstract will be analyzed. Similarly, if the abstract falls under the selection criteria, the researchers will proceed on to reading the whole text.

Lastly, if the information in the article contains answers to at least one of the research questions, it is included for further data analysis. Regarding the 'exclude' stage, if either title, abstract or the full text does not fall under the selection criteria, the article shall be excluded.
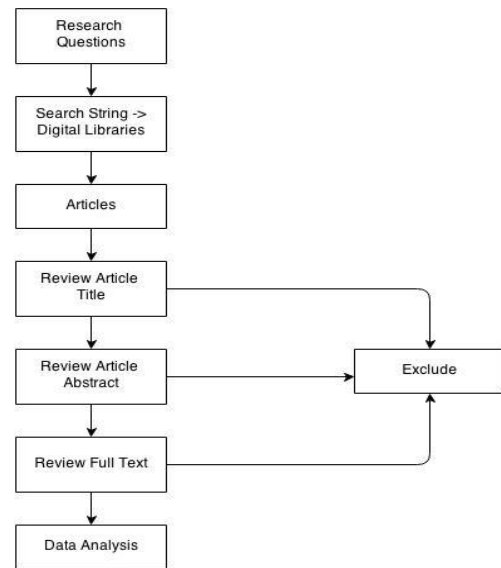

FIGURE 1. SELECTION PROCESS

The initial number of articles collected from the 3 digital libraries was 11731. *Figure 2* displays an overview of the amount of studies gathered from the selected digital databases.

Due to the high amount of publications retrieved, the researchers used a reference management system called *EndNote* [36], that allowed the researchers to synchronize the references. However, in the case of *Springerlink* digital library, the library did not support a massive simultaneous download in the required format. Hence, the researchers, due to time constraints, could not afford to check the titles and abstracts directly on the website. Moreover, since the publications could not have been retrieved in the appropriate format, it was impossible to deduce if the publications retrieved with the search string from *Springerlink* were not duplicate studies obtained in comparison with the three main digital libraries displayed in *Figure 2*.
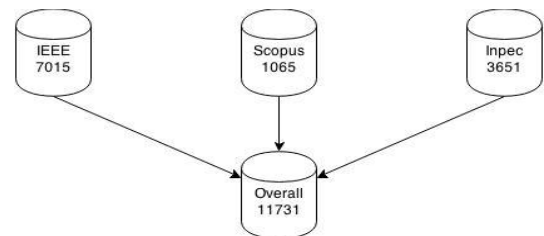

FIGURE 2. ARTICLES FROM DIGITAL DATABASES

The amount of gathered duplicates was 4676, hence, they were removed. The amount of articles, which were without authors was 466, hence, they were excluded.

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Therefore, the number of articles where the titles had to be analyzed was 6589. After analyzing article titles, by applying the inclusion/exclusion criteria, 599 articles were kept for further inspection. Next, after analyzing article abstracts by applying inclusion/exclusion criteria, 216 papers were selected for full text analysis. However, due to that 99 of these studies were not available; due to the fact that the copy of the text could not have been obtained, hence, the amount of studies to be read was 117. Finally, after filtering out all the irrelevant studies, the researchers ended up with a total number of 26 papers that had to be analyzed. For an overview, see *Table 1*.

TABLE 1. STUDY SELECTION

Step	Amount
Overall amount	11731
Duplicate studies	4676
Studies without an author	466
Title inspection	6589
Abstract inspection	599
Full text inspection	216
Papers unavailable	99
Full text	117
Included	26

F. Data extraction and analysis

In order for a study to be included in the results section, the researchers had to identify 5 main properties within a study: *context, methodology, strategy, customer involvement* and *influencing factors*.

a) *Context* – the research must have been done within the software context.
b) *Methodology* – the methodology must clearly state what kind of research method was performed, for instance, questionnaires, interviews or case studies.
c) *Strategy* – the strategy refers to *RQ1* only. The articles that were selected to answer *RQ1* must clearly state what kind of approach/method or a strategy was followed to insure customer satisfaction or address customers' needs within a software oriented enterprise.
d) *Customer involvement* – this property refers only to *RQ2*. The study must indicate how customer involvement affects the development process.
e) *Influencing factors* – this property was used for *RQ3*. The study must state what factor(s) affect customer satisfaction.

G. Validity threats

a) *Publication bias*

Publication bias refers to the problem that positive results are more likely to be published than negative results Kitchenham [3]. We assess this threat as minimal since the aim of this paper is threefold:

- to identify the types of customer first strategies used;
- is it beneficial or useful to have customers involved in a development process or does customer involvement lead to unfavourable outcomes;
- what are the factors the affect customer satisfaction.

Regardless of what kind of results we obtain and identify, negative or positive, they will be published.

b) *Threats to identification of primary studies.*

The threat that the conducted search string will miss out some of the relevant studies is insignificant. The search string was composed from a specifically selected word phrases, that enabled the researchers to obtain related and relevant information to the current research topic as much as possible. As a result, the researchers ended up with over 11,000 articles. However, the amount of duplicates was high. That is why we change our focus to the precision of the search string.

The amount of duplicate studies was 4676. Moreover, from the initial amount of articles where the titles had to be read and assessed (6589), only 26 articles were selected for a complete analysis. This can be interpreted as a fact of low precision. However, the issue of precision still possesses a certain threat to the validity of this *SLR*.

In order to make up for the aforementioned issues, the researchers consulted a supervisor, who is relatively experienced within this field, continuously throughout the research, e.g. after completing the process of reviewing the articles titles, the supervisor was given a 10% of the overall amount to check the agreement level between the researchers and the supervisor. The agreement level was 90%; therefore, the researchers were on the right path in identifying the related and relevant studies.

Furthermore, the fact that the copy of the original text of 99 studies was not available possesses a moderate threat to the validity of this study.

c) *Threats to selection and data extraction consistency*

Due to the massive amount of studies needed to be reviewed, the researchers needed to have a perfect mutual understanding of what should be included, and what should not. In order to do this, the researchers performed a trial test on 50 articles titles, where they had to either include or exclude an article. The researchers measured the agreement level with the help of Fleiss Kappa value Fleiss [9]. The value that was obtained was relatively high, 0.877. However, when it came to the data analysis part, there were differences regarding *RQ1*. For agreement level for data analysis performed on 11 articles, please check *Table 2*. The differences in opinions about if a certain strategy is exactly what the researchers are searching for were resolved quickly. Regarding the other properties, namely methodology,

industry, customer satisfaction factors and strategy impact, the researchers worked in complete unanimity.

TABLE 2. AGREEMENT LEVEL.

Variable/Section	Value
Methodology	1
Industry	1
Strategy/approach	0.62
CS factors	1
Strategy impact	1

H. Quality Assessment

The quality assessment of the gathered data was performed by fulfilling several criteria, which are expressed in a set of specific questions:

$Q1$: Do the authors clearly state the aim of the study?
$Q2$: Does the research provide clear explanation how the results were achieved?
$Q3$: Are the threats to validity stated explicitly?
$Q4$: Do the findings clearly reflect the objectives of the study?
$Q5$: Are the findings empirically validated?

For every single article included in the results section, these questions were answered and drawn for analysis. The statistics were based on the full list of references that are included in the study results section, 26. *Table 3* represents the full statistics of the quality assessment.

TABLE 3. CRITERIA COVERAGE LEVELS

Criteria	Yes	No
Q1	92 %	8 %
Q2	100 %	0 %
Q3	65 %	35 %
Q4	100 %	0 %
Q5	100 %	0 %

From the *Table 3* presented, the authors can conclude that most of the studies specified the aim and clearly explained how the results were achieved. However, some of the researchers, for instance Tikkanen et al. [6] and Quan [27] did not cover the validity criteria, despite that, more than half of the selected studies did cover the validity threats. The empirical validation and findings correspondence was 100% each.

IV. RESULTS

The researchers proposed three research questions, hence, the results will be presented in the following way. First, the strategies/approaches, with respect to RQ1, are presented. Second, the authors provide information regarding how does involvement of a customer in the development process affects its outcome. Lastly, the information regarding RQ4 is presented.

A. RQ1 Customer-centric methods/approaches.

Whilst performing this study, 6 empirically validated *'customer first'* approaches were identified. In the identified approaches, 5 approaches were case studies, performed by Kabbedijk et al. [11], Komssi et al. [17], Dye & Schaaf [10], Adam et al. [18], and Bavani [19], and 1 study was a research comprised of questionnaires by Chen et al. [20]. The identified methods are:

- CVC
- CIM and PDR
- VBRE
- eCRM
- E-Collaboration
- Prisma

The strategies/approaches are described in the following subsections.

a) Customer Value Creation (CVC).

In order to fully grasp the concept of Customer Value Creation (CVC) approach proposed by Bavani [19], information regarding in what context it is used is in order. The realization of software engineering projects with the help of teams, where people are from diverse cultures and different time zones involves Global Software Engineering (GSE) Bavani [19]. The engineers do not have the possibility to work directly with the customers, hence, the author emphasized the Customer Value Creation (CVC) approach. The basis behind it is to identify initiatives that can add value to the customer (for example, suggestions on new features or monthly dashboards), followed up by filtering out the initiatives that are problematic or impractical to implement; implement the ones that are feasible and afterwards evaluate them. This approach is useful if the aim of the enterprise is two-fold: 1) to improve customer satisfaction and 2) to retain the customers.

Implementation of such a strategy in a project resulted in increase of benefits (efforts saved) Bavani [19].

b) Customer Involvement Methods (CIM) and Process Development Requests (PDR'S)

In order to develop a product, several Customer Involvement Methods (CIM's) are practiced in the company Kabbedijk et al. [11]. These methods are used in order to gather the requirements for product development, for instance, propose a feature or a requirement which is preferred to be changed or implemented in the next release. Upon this, different product development requests (PDRs) are made.

The methods that are used to gather the requirements, as well as listen to the 'voice of customers' are as follows:

- *Involvement through incident reports* - when there is a problem with the software release from a customers' perspective.
- *Involvement through idea feedback* - a session is created where the ideas/requirements for the next release are proposed, and the customers are asked to prioritize them. A personal level of support.
- *Involvement through suggestions* - in the same session, the ideas/requirements for the next release are proposed by the customers themselves.

By applying this approach, it can result in benefit for a software vendor's requirements management process, as well as it can significantly increase customer loyalty Kebbedijk et al. [11].

c) Value Based Requirements Engineering (VBRE)

This approach is similar to the one identified by Bavani [19], however, there are certain differences. This approach is mostly focused at resolving problems by sharing knowledge about the customers between cross functional teams, however, one of its main foundations is comprehension of customer perceived value creation.

In order to solve road mapping problems, that are recognized as a combination of a business strategy and release planning, the authors Komssi et al. [17] proposed to introduce a value based requirements engineering approach. This approach was used to stress the importance of customer value creation. In this specific context, value of the customer is seen as the perceived value of the customer.

The value creation consisted of six steps: form a cross functional team; exam the business strategy; select a customer segment; identify the customers activities; analyze the customer's activities; and linking business potential of customer activities into road mapping Komssi et al. [17]. Hence, by addressing these issues, the company is able not only to create customer value, but to create a product that will fulfil the customers' needs Komssi et al. [17].

The use of this value-creation logic, as well as an applied approach in consecutive workshops resulted in solution planning and roadmapping with prioritized development targets Komssi et al. [17].

d) (eCRM) electronic Customer Relationship Management

A rather different approach was identified by Chen et al. [20], where the authors proposed eCRM strategy on electronic management organizations. The eCRM is a process of integrating businesses procedures and information technology, in order to gain multiple dimensions of customers' information and requirements Chen et al. [20]. This management strategy helps to resolve issues in relationships between the customers and the industry. Chen et al. [20] explained the importance of customer relationship as a critical role in the companies during the development to achieve customers' satisfaction. Hence, by successfully

achieving customer satisfaction, it ensures the company a possibility of having long term goals in a competitive market.

The research performed by Chen et al. [20] showed that eCRM effectively helps manufacturers master information management. Moreover, eCRM provides communication with the customers via internet. Furthermore, implementing eCRM strategy helps companies to collect customer information, understand customer preferences, predict customer needs, establish effective interaction, and enhance customer satisfaction Chen et al. [20].

e) E-Collaboration

Adam et al. [18] in their study presented E-Collaboration architecture, which represents the implementation and control interaction between enterprises and customer-driven processes in a value-added network.

According to Adam et al. [18], the Electronic Collaboration Architecture consists of three-tier framework connected through control loops. The first layer focuses on the E-Collaboration strategy, the second layer is the "E-Collaboration Process Engineering", while the third layer is the "E-Collaboration Process Execution". Moreover, the authors of the study proposed an additional E-collaboration life-cycle-model, which is consistent with the initially proposed architecture for E-Collaboration Adam et al. [18]. The aim of this addition is to support E-Collaboration through the use of IT, whilst at the same time, improving inter-organizational and customer-driven processes Adam et al. [18].

Applying such a concept in practice can result in the production of goods and services for a market of considerable size, with the idea of addressing individual needs of every single customer.

f) PRISMA

The study was composed in a telecommunications environment. The authors Dye & Schaaf [10] highlighted a risk management tool called PRISMA (Prevention and Recovery Information System Monitoring and Analysis). It was developed by the Eindhoven University of Technology. PRISMA is comprised of seven functional components: detection, selection, description, classification, computation, interpretation and implementation, and lastly, evaluation Dye & Schaaf [10].

The participants within the study of Dye & Schaaf [10] were six Network Service Managers, whose responsibilities incorporated tasks such as responding to customer complaints and managing customer perception. The main purpose behind such a tool was to address the issues of customers' dissatisfactions in a telecommunications company.

The results of applying such an approach will allow to meet the management's needs, and in the case of Dye & Schaaf [10], the need was to address the dissatisfaction in the company, thereby ensuring customer satisfaction.

B. RQ2 - Effects of customer involvement

The importance of customer involvement in a development process, as well as the effects of such actions, had been highlighted by Kabbedijk et al. [11], Adam et al. [18], Hoda et al. [21], Bhalerao & Ingle [23] and Bakalova & Daneva [34], which, in turn, can lead to customer satisfaction. *Table 4* summarizes the results.

TABLE 4. THE EFFECTS OF CUSTOMER INVOLVEMENT

Customer Involvement Effects	Author(s)
Increase customer satisfaction & Enhance the level of trust	[23], [34]
Improve design & quality of software	[18], [23]
Increase understanding & clarity of requirements	[23]
Increase in product development requests & feature suggestions	[11]
Great feeling of "personal touch"	[34]
Influence in which product, at which time, which price	[18]

The results for this research question revealed that, for instance, clients are responsible for providing requirements during the development process, which helps the developers to mould the application according to these requirements without putting extra effort or resources Bakalova & Daneva [34]; this leads to higher customer satisfaction Bakalova & Daneva [34]. Furthermore, Bakalova & Daneva [34] concluded that participation of the customer during the development process will positively affect the development process in the form of: a) *increasing customers' satisfaction;* b) *enhancing the level of trust between the parties;* and c) *a great feeling of "personal touch".*

Kabbedijk et al. [11] emphasized a similar effect of customer involvement, where they deemed the importance of customer involvement in selecting requirements during the development process by listening to the "voice of the customer"; conducting special sessions where customers can give suggestions on what features should be implemented for the next release. In turn, these requests get transformed into product development requests Kabbedijk et al. [11].

Similarly, Bhalerao & Ingle [23] discussed the importance of communication with customers and its positive effect at various levels (*Primary level, Mid level*, and *End level*) during the development process. The authors in their study showed that active participation of customers is necessary for: d) *building trust among parties;* e) *achieving the highest customer satisfaction;* f) *improving design and quality of software*; and lastly, communication at *Primary* and *End* levels g) *increases the understanding and clarity of requirements* Bhalerao & Ingle [23].

Adam et al. [18] in their study talked about the importance of customer involvement in business processes and their influence on time, price and quality of the produced product.

In contrast, Hoda el al. [21] in their study described the consequences of lack of customer involvement in software development process; these are: h) *problem in gathering and clarifying requirements;* i) *problem in prioritizing requirements;* j) *problem in securing feedback;* k) *loss of productivity;* and l) *business loss.*

C. RQ3 Factors affecting customer satisfaction

The researchers were able to identify a total of 40 factors that influence customer satisfaction within the context of E-services, Software companies and Mobile commerce. *Table 5* represents the identified factors.

The field 'Software Companies' within *Table 5* refers to studies that do not specify explicitly to which field within the software domain they relate to; for instance, the study by Tikkanen et al. [6] refers to software industry, whilst study by Kekre et al. [26] refers to software products used within a software company called IBM Canada. Hence, these studies were grouped under the field of 'Software Companies'.

The field 'E-services' includes studies about, for instance, online library systems Borbely [13], government portal websites Jia et al. [25], internet banking Quan [27], online e-services Jun [5], online e-shopping Yang [8], B2C e-commerce Hu [33].

The field 'Mobile commerce' stands for studies performed within mobile commerce Sun & Han [28].

TABLE 5. FACTORS OVERVIEW

Field	Factors that affect Customer Satisfaction	Author(s)
Software Companies	Tensions and Disagreements in the Project Meetings, Conflicts Between Project Managers, Lack of Consultants, Dissatisfaction with the Pilot Version of the Product	[6]
	Supplier Integration, Business performance	[35]
	ISO Software Quality Standards	[29]
	Capability, Usability, Performance, Reliability, Installability, Maintainability, Documentation	[26]
E-services	Service Result Quality	[8], [25], [27], [33]
	Transaction Security, Website Design	[15], [31], [32]
	Information Quality	[8], [27], [32]
	Service Process Quality	[25], [27]
	Customer Support	[12], [15]
	Product Information, Service Integrity, Marketing Plan	[31]
	Website Intelligence	[32]
	Information, Aesthetics, Ease of Use, Personalization, Navigation, Return Ability, Reliability	[15]
	Confidence Benefits, Special Treatment Benefits	[5]
	Information Satisfaction	[12]
	Completeness, Task Time , Efficiency of Task Solutions	[13]
Mobile commerce	Corporate Image, Perceived Value, Perceived Equity	[28]

From the presented *Table 5*, the researchers derived that there are several common factors that affect the E-services, for example: *Service Result Quality,* determined by Yang [8], Jia et al. [25], Quan [27] and Hu [33]*; Transaction Security* and *Website Design,*

found by Hosseini et al. [15], Jianchi & Xiaohong [32], Dong [31]; and *Information Quality,* identified by Yang [8], Quan [27], Jianchi & Xiaohong [32].

Tikkanen et al. [6] highlighted the factors that affect the software companies, such as: *conflicts between Project Managers* and *lack of consultants.* Similarly, Hashmi et al. [29] identified *ISO Software quality standards* as factors that affect the customer satisfaction in software companies. Additionally, Kekre et al. [26] identified the factors that affect the customer satisfaction in software companies as well; which are: *capability, usability, performance, reliability, installability, maintainability and documentation.*

Lastly the factors that affect the customer satisfaction in a mobile commerce identified by Sun & Han [28] are: *Corporate image, perceived value,* and *perceived equity.*

V.   DISCUSSIONS

A.   RQ1 Customer-centric methods/approaches

The strategies identified within this paper all have one thing in common - they are all customer centric, aimed at achieving customer satisfaction; however, each company uses it own unique way in how to go about this customer-centric strategy/approach.

During this study, the researchers have identified that Kabbedijk et al [11], Komssi et al. [17] and Bavani [19] highlighted strategies within software companies, while Adam et al. [18] and Chen et al. [20] used their strategies within the context of e-business and electronics, and lastly, Dye & Schaaf [10] present their study within the telecommunications companies.

The researchers derived that Kabbedijk et al [11], Komssi et al. [17] and Bavani [19] create a value for the customer, take their contributions seriously and that is their approach in order to ensure customer satisfaction. The approach used by Chen et al. [20] emphasizes the creation of customer value in order to achieve customer satisfaction, which is similar to Kabbedijk et al. [11], Komssi et al. [17] and Bavani [19]. However, the strategy used by Adam et al. [18] emphasizes the use of customer oriented goals to ensure the fulfilment of customer needs and preferences with the help of E-collaboration model. Lastly, Dye & Schaaf [10] use a risk management tool to address the issues of customer dissatisfaction. Upon this, we state that by addressing the issues of customer dissatisfaction, the company aimed at fulfilling these tasks to resolve inconveniences with the customer, address their needs, and by that, ensure customer satisfaction.

B.   RQ2 Effects of customer involvement

The authors of this paper have derived that customer participation in the development process was identified as a positive factor by Kabbedijk et al. [11], Adam et al. [18], Bhalerao & Ingle [23], Bakalova & Daneva [34]. In contrast, Hoda et al. [21] described the effect of lack of customer involvement and the devastating results of such actions.

Bhalerao & Ingle [23], Bakalova & Daneva [34], and Adam et al. [18], these three studies focused on the importance of customer involvement during the development process; whilst Kabbedijk et al. [11] talked about the importance of customer involvement during the requirements management process. By taking into consideration the aforementioned, the researchers conclude that having a customer on-site will prove to be beneficial to an enterprise. One such reason is that a customer can provide an insight on how the end product should look like or what should it do.

The involvement of a customer during the development process can be summarized as follows: a) achieving high customer satisfaction; b) achieving high level of trust between parties (company and customer); c) achieve good software quality and design; d) achieve full understanding of requirements and create a good feeling of customer involvement; and e) decrease the time and cost of developing new products.

C.   RQ3 Factors affecting customer satisfaction

By conducting this SLR the researchers have identified 40 factors that were distributed among three fields, namely software companies, e-services and mobile commerce.

The researchers have determined that the conducted studies are focused more within the E-services field. Two reasons were identified for this tendency, which are: *1) to have a competitive advantage* Hosseini et al. [15], Jianchi & Xiaohong [32]; and *2) increase in online competition* Jun [5], Fengtao & Dengbai [12].

The researchers have deducted that several factors, represented in *Table 6* have a positive impact on customer satisfaction.

TABLE 6. POSITIVE INFLUENCE FACTORS

Factors	Author(s)
Service result quality	Quan [27], Hu [33]
Transaction security	Hosseini et al. [15]
Customer support	Fengtao & Dengbai [12]
Special treatment benefits	Jun [5]

Similarly, Yang [8] identified factors *confidence benefits* and *service result quality* that have a strong effect on customer satisfaction.

Based on the common factors that have been previously stated within the Results section for RQ3, the researchers argue that *Service Result Quality, Transaction Security, Customer Support, Website Design, Information Quality, and Confidence Benefits* are the common factors that have effect on customer satisfaction in E-services. However, other factors that

affect customer satisfaction in other software industry fields should be taken into consideration as well.

The researchers emphasize that the factors identified by Hosseini et al. [15], namely: *transaction security*, *personalization*, *navigation* and *ease of use* complement/ confirm the findings of Taha et al. [2]; that these factors indeed affect customer satisfaction. Moreover, one other factor, that affects customer satisfaction, *usability*, identified by Taha et al [2], was identified by Kekre et al. [26] as well. This confirmation of results further strengthens the validity of the identified factors.

The researchers also discuss the interrelation of the findings with the ISO software quality standards. According to Borbely [13], ISO/IEC 9126-1 internal and external software quality characteristics are defined as *functionality, reliability, usability, efficiency, maintainability* and *portability*. On the one hand, some of these characteristics are reflected as the influencing factors for customer satisfaction and were covered by, for instance, Quan [27], who identified *efficiency* and *availability* as factors that affect customer satisfaction, however, in the authors study, they were generalized under service results quality in addition with two other factors. Moreover, Kekre et al. [26] covered three of the characteristics that affect customer satisfaction, mentioned by Borbely [13] in the ISO/IEC 9126-1, namely *usability, reliability, maintainability*. Similarly, Yang [8] covered two factors from the ISO/IEC 9126-1, which are *efficiency* and *system availability*, that affect customer satisfaction. However, similarly to Quan [27], within the authors study, these factors were grouped under the term *service quality*.

On the other hand, why ISO/IEC 9126-1 characteristics were not covered by other authors is because the focus of the study was directed exactly at the cause of customer satisfaction or at something specific that affects customer satisfaction, not the characteristics of the used product, for instance, Fengtao & Dengbai [12] identified that *information* and *information system satisfaction* have effect on customer satisfaction and Jun [5] identified that *customer benefits* have effect on customer satisfaction.

VI. CONCLUSION

By conducting this SLR, the researchers presented different *'customer first'* strategies to manage customer involvement in software organizations; the effects of customer involvement in a development process, as well as what are the different factors that affect customer satisfaction.

Regarding *RQ1*, the researchers found that *Customer Value Creation (CVC), Customer Involvement Methods (CIM)* and *Process Development Requests (PDR'S), Value Based Requirements Engineering (VBRE), electronic Customer Relationship Management (eCRM), E-Collaboration*, and *Prevention and Recovery*

Information System Monitoring and Analysis (PRISMA) are the identified strategies within software oriented companies.

Regarding *RQ2*, the involvement of customers during the development process helps the organizations to: *achieve higher customer satisfaction and higher level of trust between parties*; *better software quality and design*; and *full understanding of the requirements*. Furthermore, customer involvement decreases the time and cost of developing new products.

Regarding *RQ3*, the researchers conclude that the *service result quality, transaction security, customer support, website design, information quality*, and *confidence benefits* are the most common factors that have effect on customer satisfaction in E-services. Likewise, other factors such as *capability, ISO software quality standards, supplier integration*, and *conflicts between project managers* have effect on customer satisfaction in software and electronics companies.

The implication of this study indicate how software organizations can manage their customers and decrease the possibilities of customer dissatisfaction, for instance, if the company has online services, it can use eCRM or E-collaboration strategies to manage the customer or it can use the PRISMA tool to address the issues of customer dissatisfaction. Also, by taking into consideration the influence of customer involvement during the development process, this will help the organization to successfully meet their customer needs. Lastly, by taking into consideration the factors that affect customer satisfaction, the company can use this knowledge to address specific needs of the customers.

For future work, the aspects of this study should be explored even further. A good start would be to perform actual interviews with a company who implements a *'customer first'* strategy and attempt to capture the required information. Furthermore, provide an even deeper knowledge about different strategies that can be used in order to manage customer involvement during the development process.

VII. ACKNOWLEDGEMENT

VIII. REFERENCES:

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