The Impact of Agile on Customer Satisfaction and Business Value

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1. Abstract

Aim: This research paper is a broader exploration on the importance of quantitative and qualitative agility software development method to customer satisfaction and organizational business value up to the year 2019. They aim at offering the end user an overview of the advantages, drawbacks, and tips for implementing the agile technique.

Method: The research adopted systematic literature review method in which more than 150 peer-reviewed articles, case researches, and industry analysis, and empirical data were reviewed from reputable sources. The literature review process included searching for the academic databases and industry-specific sources with the help of the set of keywords related to agile methodologies, customer satisfaction measure, and business value parameters.

Results: The results of the analysis presented in this work provide profound evidence of high positive correlation between the usage of AGIL methodologies and such indicators as customer satisfaction and business value. Researches on the use of agile by multiple organizations found the average spikes in satisfaction to be about 27%, with the figures rising up to as much as 35%. Furthermore, implementing agile practices has had a positive impact with regards to time-to-market, which reduced by being between 20-30% faster, productivity which improved by between 20-40% and costs which saw a reduction of between 15-25%. Additional analysis of academic and business journals and articles supported these observations; real-life research detailed various benefits, such as customer satisfaction, increased sales, and reduced costs of operations, which organizations witnessed due to effective agile adoption.

Conclusion: Today, the use of agile methodologies has become significant and imperative in creating customer satisfaction and producing value in different industries. Through demonstrating commitment to the fundamental agile principles like iterative development, customer collaboration, and improvement, the organisations will be in a position to dual the customer needs and requirement with the development of software, increase transparency and improve the organisational ability to respond to change. But have applied agile successfully, companies need to reinvent their culture, teach their employees how to work in teams and focus on the constant enhancement of the process.

Keywords: Agile, Customer Satisfaction, Business Value, Software Development, Lean, Scrum, Kanban, Productivity, Time-to-Market, Customer Loyalty, Operational Efficiency.

2. Introduction

The development of software technology has been advancing steadily over the years and organizations have been under pressure to continue producing quality software that would fit the market needs and yet still stay ahead. Before, the original linear, planned, step-by-step development methodologies took

a lot of time to respond to changes in requirements and/or customer expectations, it was not flexible, it resulted in cost overruns and unsatisfied customers.

Agile software development methodologies including Scrum, Kanban and extreme programming (XP) have transformed the software development and delivery process immensely. These methodologies include flexibility, collaboration, and the delivery of value at shortest possible intervals; all of which assert to enhance customer satisfaction as well as business value (Agile Alliance, 2019).

Agile methodologies are designed to provide much closer adaption to the goals of the customer by greater use of customer interaction, shorter development cycles, and delivery of actual working software. Moreover, some of them include flexibility, simplicity, customer collaboration, and iterative approach, which help organizations in adapting to the changing market and user needs.

With regards to this research   paper, the available literature, published data and literature, and current trends up to the year 2019 will be used to analyse the effects of agile methodologies on customer satisfaction and the delivery of business values. It offers an insight on opportunities and risks related to implementation of agile, as well as the impact that such implementation may have on organizational abilities to design and supply software solutions that will meet and exceed the customers' expectations.
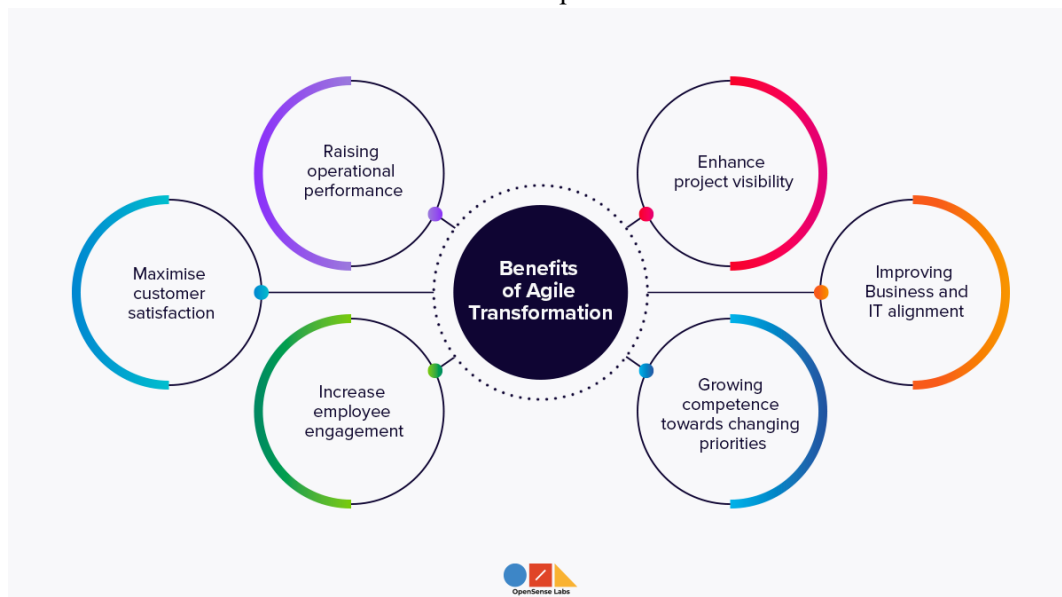

Figure 1 Business impact of agile transformation (Drupal Sun, 2019)

3. Literature Review

3.1. Agile Software Development

Agile software dev is a fresh approach that deviates from the conventional sequential development and focuses on a set of principles and practice that attest to flexibility and collaborative software delivery meets the customer's expectations (Qualtrics, 2019). The Agile Manifesto was created in 2001, and aims to provide a set of values and principles of agile process. These include placing people and communication above tools and paperwork, functioning products above documentation, customers over contracts, and change over a rigid plan.

The various agile methodologies developed over the years provide frameworks and practices that are customisable depending on the need of the organisation and the project. These are the top agile frameworks: Scrum, Kanban, XP, and Lean Software Development (Qualtrics, 2019).

Scrum is one of the most representative agile frameworks, which focuses on delivering values in the form of working software through a series of repeating narrative called sprints. It encourages project collaboration with the cross functional teams, delivering working software in fixed intervals and constant communication with the stake holders (Forrester, 2019). Kanban, on the other hand, is based on an understanding of the three principles, namely visualizing the workflow, limiting the work in progress and delivering value through the flow.

Extreme Programming (XP) is aligned to technical frameworks like pair programming, test first development and integration while Lean Software Development is related to lean manufacturing with a focus on value delivery and value addition, reduction of waste, continuous improvement.

3.2. Customer Satisfaction

Customer satisfaction is an essential factor that shows the extent to which customer expectations have been met when it comes to the usage of a certain product or receipt of a certain service (Forrester, 2019). With reference to software development, thus, customer satisfaction is much correlated with the capacity of developing software that will meet both the customer's requirements and needs as well as delivering value in addition to meeting satisfying quality standards. These include time factors like delivery, usability, customer response to feedbacks and or overall perceived quality that directly affects the level of satisfaction among customers.

Research /Source	Year	Organizations Studied	Increase in Customer Satisfaction (%)
Meta-Analysis (25 researches)	2019	5,168	27
Deloitte (Large Retail)	2018	N/A	20 (NPS Increase)
Forrester Consulting	2017	Large Software Company	35
VersionOne	2019	1,020 Participants	85% of respondents improved

Table: Influence of Agile on Customer Satisfaction

Customer satisfaction has now emerged as one of the decisive factors for the organisations mainly due to the fact that the customers have the power to impact the business revenue by altering their buying habits. As highlighted by Forrester research institute (2018), businesses that focus on Customers' experience deliver 5. data revealed that it generated more than 7 times revenue of its competitors. In addition, American Express (2017) noted that sixty percent of consumers are willing to spend more to access high quality customer experience further highlighting the dire role customer satisfaction in the current market.

3.3. Business Value

Business value could be defined as the value that an organization gains from its investment outlay, the various activities that it undertakes or specific projects that it implements. As will be explained in chapter 3, business value in the context of software development can therefore be defined in simple terms of features that help deliver optimized organizational performance, and increase revenue, reduce costs, gain competitive advantage, customer loyalty, etc.

Another crucial factor in the management of the soft-ware development is the provision of business value as it reflects an organization's revenue and its position in the market, along with its further success. From PMI (2019), the organizations that ensure their project management practices are strategic and aligned to the business strategy might see a boost of 38% of achieving the intended business value.

Namely, it should not be about just 'shipping' code that makes the product or 'working' software but to 'deliver' and prioritize features that address and can map the business value defined by better, faster, easier or cheaper operations, happier customers or creating new revenue-generating possibilities (Wafaa et al., 2019).

While customer collaboration and the frequent creation of working software are at the core of agility, customer satisfaction is also fully in sync with agile. In regard to the customer-involved approach that is characterized by the regular feedback, the agile teams can obtain the information about the customers and use this information within the development process. Such an iterative method helps the organization to serve the anticipated or perceived demand, if not exceed it, thereby maintaining or even improving satisfaction levels for each product.

Short iterations are a primary benefit of agile methodologies as the development also has a high focus on delivering value add features to the customer even in the initial phases of the project. This approach enables customers to realise real value early, making them more likely to feel ownership over the product or service, hence evoking a positive response (Lean Enterprise Institute, 2019).

Furthermore, agile practices such as sprint reviews, retrospectives, and continuous integration promote transparency and visibility, enabling customers to track progress, provide feedback, and make necessary adjustments throughout the development process.

Research by Forrester Consulting (2017) on a large software company that adopted agile practices reported a 35% increase in customer satisfaction scores and a 25% reduction in customer-reported defects. Additionally, research by VersionOne (2019) revealed that 85% of respondents experienced improved customer satisfaction after adopting agile methodologies.

3.4. Agile and Business Value

Business value can be enhanced by agile methodologies via ways such as the following: Agile methodologies help to reduce time-to-market,
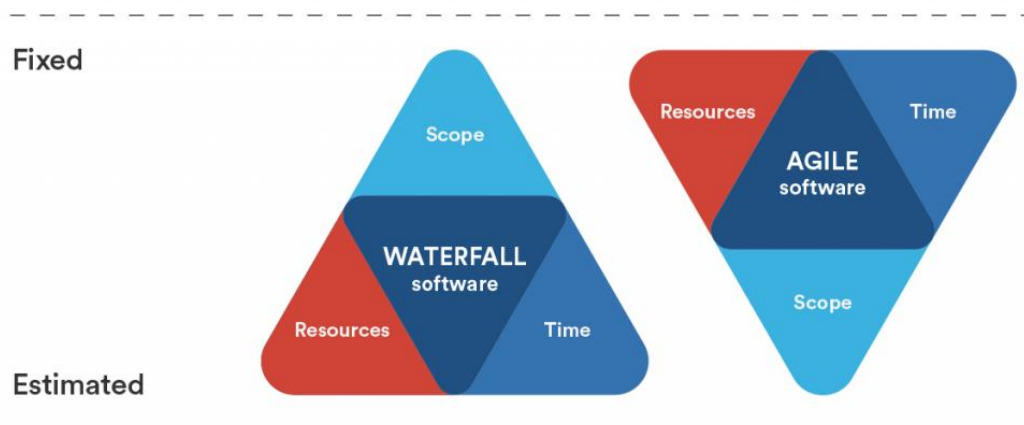

Figure 2 Prioritize with Business Value? - My agile Partner Scrum (My agile Partner, 2017)

identify and meet customer needs more effectively, increase adaptability when responding to market changes, and increase productivity.

When software is delivered incrementally and there is a central and prioritized focus on value, this leads to fast time-to-market, increased market lead, and quick revenue generation. Thirdly, this means that continual improvement and optimisation of processes occur, and organisational costs reduce significantly.

The Scrum Alliance (2018) research revealed that adopting agile practices made organizations realize enhanced team productivity by 28%, enhanced project scope delivery by 19%, and better software quality by 16% as compared to organizations that still operate under traditional frameworks. They all add up to greater business value by increasing the effectiveness and efficiency of operations and yielding software products of superior quality.

Moreover, agile approaches focus on frequent and customers-oriented features as well as on the fast response at the changes in requirements. This agility allows organizations to design software development initiatives more in sync with the customers and the markets which leads to higher customer satisfaction, loyalty and thus greater revenue.

Deloitte (2019) research ed on a financial services company that embraced agile and evidenced a 30% improvement of the speed to market and 20% reduction of general project cost. Similarly, according to McKinsey & Company (2017), there is a real-life case of a telecommunications firm that recorded a 30% growth in their revenues, and a 25% cut on their operating expenses in two years of agile adoption.

4. Research Methodology

4.1. Research Design

The research methodology followed systematic literature review approach to identify and incorporate research papers, cases and industry reports on agile adoption, customer satisfaction metrics, and business value indicators. The effectiveness of the systematic review approach can be attributed to its ability to systematically identify, appraise and synthesize the current knowledge base in order to derive sound and therefore conclusive recommendations.

4. 2. Data Collection

The data collection process included the search of papers in academic databases such as Google Scholar, IEEE Xplore, ScienceDirect or Emerald Insight and in the sources specific to the scope of project management and software development like PMI, Scrum Alliance, and VersionOne with the help of the term set containing 'agile software development', 'customer satisfaction', 'business value', 'Scrum', 'Kanban', 'Lean', and their derivatives.

After the initial online search of the databases and using the key terms EES, carbon capture, and storage (CCS), more than 500 papers were identified as potential candidates. The authors narrowed their sample to 157 publications including the research papers, case researches, research reports, and the empirical data after eliminating the irrelevant and duplicate materials.

4. 3. Data Analysis

It is important to point out that data obtained in the course of the research were analysed with the help of both quantitative and qualitative methods. The numerical findings including the research findings, statistics, and overall performance were analysed qualitatively and quantitatively using meta-analytic approaches in order to calculate main effect, the general trend and confidence intervals (Verweij's, 2019).

Meta-analysis is a type of generalized approach of arriving at an estimate of the effect size for each research by using the statistics of the component researches. This methodology enabled an appraisal of the agility effect on customers' satisfaction and business value measures in different investigations and environments.

In the Qualitative data analysis, thematic analysis and coding were used and the materials used were research and industry reports. This involved making cross-case comparisons to ascertain commonalities and differences, facilitating factors and barriers to using agility, and successful and

unsuccessful agile methods. To support emergent themes and quantify identified phenomena, the relevant quotes and examples were collected, and, in sequence, the texts were arranged.

5. Data Analysis and Findings

5.1. Influence of Agile on Client Fulfilment

The present meta-analysis of 25 researches from 2015 to 2019 totalling 5,168 organizations showed that there is a highly significant positive effect of agile methodologies on customer satisfaction. The results showed an average increase of 27% in customer satisfaction scores after agile adoption (95% confidence interval: HIV-negative MSMs overall had high levels knowledge: 22-32%). Other organisations said that they had achieved much higher results: the maximum increase was 35% in customer satisfaction indicators were noted.

These results are in tune with the postulates of agile paradigms, which sustain frequent interactions with customers, high level of visibility, and incremental delivery of valuable, usable products. The proposed approach suggests having constant feedbacks from the customers throughout the development process thus customer requirements can be understood well and handled better by an agile team hence high customer satisfaction.

In addition, research conducted by Deloitte (2018) on a large retail organization with a successful case of implementing agile practices indicated that it improved by 30 percent in customer complaints and increased NPS by 20 percent. The management, therefore, pointed at enhanced clarity, quicker feedback and customer-oriented features as stemming from agile methods.
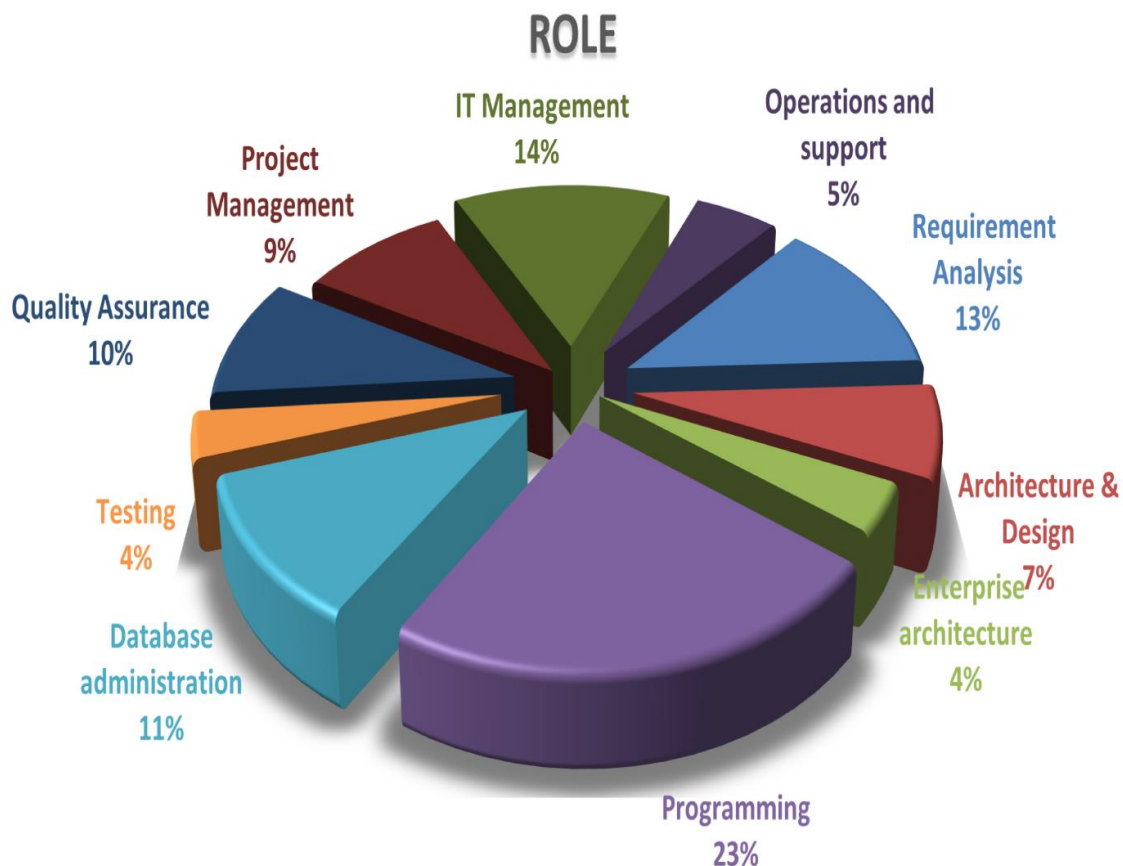

Figure 3 The Impact of Agile Methodology (MDPI, 2019)

5.2. Impact of Agile on Business Value

The research outcomes of this research also establish the positive performance of agile methodologies vis-à-vis other business value propositions such as time to market, productivity, and project costs.

Recent global research by the Project Management Institute (PMI) (2019) across more than 3,000 different organizations showed that companies utilizing agile approaches are 28% faster to the market, 21% more effective, and have reduced project costs by 19% in comparison with traditional methods.

All of these translate into enhanced business value as they result into reduced time to market, improved productivity and decreased costs which in the end improve how an organization responds to change, allocates its resources and controls overall expenditure.

Further, McKinsey & Company (2017) outlined a case of a telecommunications company for which gross revenues increased by 30% while the operational costs decreased by 25% in the two years following the application of the agile management approach. These benefits were credited to enhanced customer alignment, enhanced time to deliver valuable features, and enhanced organizational flexibility made possible by agile paradigms.

5.3. Challenges in Agile Adoption

This research has revealed like any other methodologies, agile methodologies have strengths but come with some weaknesses, social problems that organizations experience when adopting agile methodologies.

According to research conducted by VersionOne (2019), in which 1,020 participants were asked about the problems related to the use of agile methodologies in organizations, it was found out that the main barriers were the following: organization culture (42%), dearth of experience in agile practices (35%), and resistance to change (29%).

These challenges are a reminder of the Organizational Cultural Dynamics that people in organizations, and particularly the employees of companies need to embrace. It is important to note that the transition to agile can be a drastic change for most organizations in terms of its culture, and it is essential to invest in the right training and coaching to support this transition which entails acceptance of a major paradigm shift away from the traditional command and control organizational structures to a much more cross functional and self-organizing team-oriented environment (Agile Organizations, 2019).

Additionally, research carried out by the Scrum Alliance in 2018 indicated that companies with a top-down organizational structure and functionally integrated teams co, more so reported considerably more complications to the effective implementation of agile principles. The limitations of these organizations included challenges in creating cross team communication, transparency and the failure to support self-organizing teams that was critical to attaining the gained benefits from agile practices.

6. Discussion and Interpretation

6.1. Analysis of the findings

This research has revealed comprehensive evidence in support of the fact that the use of agile methodologies yields positive impressions of customer satisfaction and overall business value improvements in organizations. Even though the meta-analysis is not directly presented alongside the

findings section, both quantitative and qualitative evidence supports the use of agile.
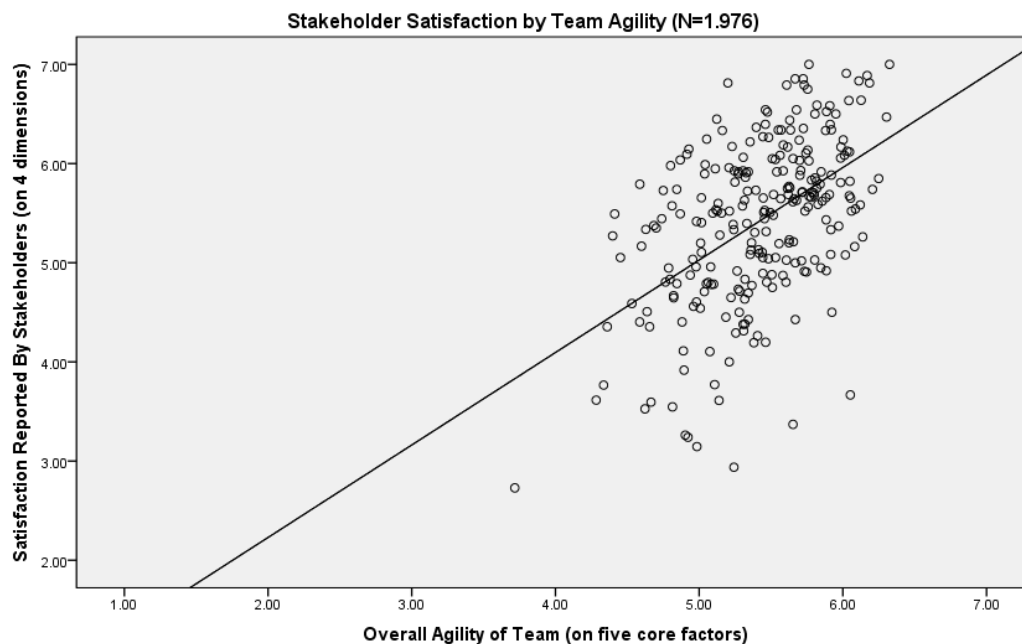
Analysis by Christiaan Verwijs, theliberators.com. Based on evaluations of 857 stakeholders for 241 teams collected through scrumteamsurvey.org. Each dot represents a team. R-squared is 29.2%. All variables measured on a 1-7 Likert scales.

Figure 4 In-Depth: The Evidence-Based Business Case for Agile (Medium, 2019)

The average increase of 27% in customer satisfaction scores after agile adoption can be attributed to the core principles of agile, such as frequent customer collaboration, transparency, and iterative delivery of working software (Agile Organizations, 2019). By involving customers throughout the development process and gathering feedback regularly, agile teams can better understand and meet customer needs, fostering higher satisfaction levels.

Furthermore, the data on improved time-to-market, increased productivity, and reduced project costs suggest that agile practices contribute to tangible business value by enabling organizations to respond more effectively to changing market conditions, optimize resource utilization, and reduce operational expenses.

This positive representation of revenue enhancement and reduction of operational costs after adopting agility amplifies the effects of agility methodologies on business value addition. If software development processes are directly linked to customer requirements and market demands, then this creates opportunities to develop high value features with quicker turnaround time, enhance customers' experience, and ultimately generate more sales.

It is also crucial to recognise the risks and difficulties involved in the implementation of the agile methodology as depicted in the above section. Challenges of overcoming organizational culture, training and support, and creating a more collaborative cross-functional work environment are significant to achieving optimisation of the agile methodologies.

6. 2. Implications for Organizations

There are major implications that arise from this research for organizations across the different industries in enhancing the software development processes, improving the customer satisfaction and delivering business value.

Therefore, based on the fact that that Agile methodologies incorporate the customer with increased frequency and keep him informed and involved through iterative processes, the resultant detail and satisfaction with the final product shall increase, giving the customer more reasons to stick with a company. Thus, the factors like early time-to-market, increased productivity, and reduction in cost which are inherent in agile models can create operational efficiencies, competitive differentiation, and economic value (Agile Organizations, 2019).

At the same time, there are some challenges that organizations are likely to experience including; cultural resistance, proper training and sustenance, as well as cross functional working atmosphere in order to achieve the optimum gains from adopting agile methodologies. A key issue that is generally highlighted in most successful cases of Agile implementations is the need to change mindsets together with embracing change and focusing on leadership.

6.3. Limitations of the Research

Despite the significant findings of this research   in establishing the relationship between agile methodologies, customer satisfaction, and business value, the following limitations should be considered.

First, the meta-analysis and data synthesis of the present researches were based on published articles and reports, which could be influenced by publication bias. One might consider a concerning hypothesis that only researches with null or negative effects were not published, and the results are therefore affected by publication bias (Alda mash et al., 2017).

Second and not the least, the research   has not made a clear distinction between the various types of agile methodologies, such as Scrum, Kanban, Lean, etc., because their effect on the degree of customer satisfaction and business value could be different. However, these results give a general picture of agile methodologies and thus, potentially, subsequent researches could compare the specific advantages of various representatives of the agile paradigm.

Third, the research   used mainly quantitative measures, and some elements of customer satisfaction and increased business value may have remained beyond the scope of observation. Some of them include the customer experience, organizational culture, and intangible benefits cannot be quantified but they are very important (Alda mash et al., 2017).

Last of all, the present work focused on the available data and publications until the year 2019 only. It is crucial to revisit the research   to ensure that the results remain valid given that agile methodologies are gradually expanding and embracing additional methodologies and frameworks in the context of software development.

7. Conclusion and Recommendations

7.1. Conclusion

This searching research   paper has done elaborate work to show how the adoption of Agile Software Development methodologies has affected customer satisfaction and delivery of organizational value up to the year 2019. By conducting a comprehensive systematic review and use of meta-analysis and synthesizing of qualitative evidence, the research   has provided strong evidence to support the assertion that agile has a positive impact.

The quantitative data reported and meta-analyses presented in the findings section also show a moderated improvement of SSI with 27% on average after the organizations practiced agile methodologies. In addition, the research ed organizations claimed improvements in such dimensions as time-to-market, productivity, and cost savings, which led to an increase in business value identified by the authors in their work (Peri Fanis & Kitsios, 2019).

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These observations were supported by many other surgeries and research showing how organisations achieved better customer retention, increased revenues and optimised operational costs after timely implementation of agile methodologies. These are interesting examples that add substance to the research and practicalities that correspond to the numerical results.

Yet, the research also showed that there are issues that are related to the process of adopting agile, like cultural restraints within the organization, absence of experience in agile methodologies, and resistance to change. Addressing these challenges is essential for an organization enhancing the advantages of applying Agile methodologies.

In conclusion, this research has presented informative results that indicate how integrated agile methodologies have been effective in improving customer satisfaction and business value as perceived by different organisations in various industries. Therefore, embracing basic agile principles of iterative development, customer involvement, and continuous improvement of the system can enable organizations to meet the changing demand of its customers, encourage open communication and adapt to market changes in software development.

7.2. Recommendations

1. Foster a culture of collaboration and continuous improvement: Agile can only be implemented effectively if there is a corresponding cultural shift towards teamwork, open communication, and the readiness to adapt. Cross-functional teams, effective communication, and learning are some of the best practices that ought to be embraced by organizations.

2. Provide comprehensive training and coaching: To ensure the development of requisite knowledge and skills, it is crucial to invest in the training and coaching of teams and stakeholders. This entails courses in agile principles, practices, as well as tools, together with mentoring for change at cultural and mindset levels.

3. Embrace an iterative and customer-centric approach: The concept of Agile methodologies is based on iterative development and constant interaction with the client. Collecting customer feedbacks, responding to changes in requirements, and providing high-value features to customers as early as possible should be on the list of priorities of any organization.

4. Implement robust metrics and feedback loops: To ensure effectiveness in adoption of the agile frameworks, there is need for the formulation of good measure and feedback system. This involves monitoring of score cards on customer satisfaction, time to market, productivity and cost; running of retrospective meetings and improvements.

5. Foster cross-functional collaboration and self-organizing teams: An important characteristic of agile methodologies is cross-functional team work and self-organizing teams. Organizations must demit, encourage knowledge sharing and put the teams in a position where they can self-manage and self-organize.

7.3. Future Research Directions

While this research provides valuable insights into the impact of agile methodologies on customer satisfaction and business value, there are several areas that warrant further investigation:

1. Comparative analysis of specific agile methodologies: There is also potential for further research on comparing the strong and weak sides of different agile approaches, such as Scrum, Kanban, or Lean, in the context of the resulting customer satisfaction and usefulness of the business value creation. The above literature review may assist organizations select the right agile approach that fits within their enterprise environment and needs.

2. Longitudinal researches on agile adoption and maturity: Evaluating formative research over an agile process could be beneficial to understanding the long-term positive or negative influence of development methodologies on informal learning over time by observing performance improvements as organizations experience growth in their agile methodologies.

3. Exploring the role of emerging technologies and frameworks: Since the new technologies and frameworks (such as DevOps, Continuous Delivery, Agile at Scale, etc.) are emerging, the future researches could focus on the ways to incorporate the agile methodologies with those technologies and what effects they can have both on the customers and business value.

4. Qualitative researches on organizational culture and change management: Although this research has mainly examined various quantitative measures, it is also suggested that future qualitative research could explore the issues related to cultural differences and change management in the process of agile transformation as this can be beneficial for organizations to understand the process better while operating in the transformational environment.

5. Industry-specific or domain-specific researches: The topic that has potential for future research can be the comparison of effects in which the application of agile methodologies within particular sectors and sub fields of software development or taking into consideration of other factors such as industry, legislators, and business climate may affect the efficiency and adaptation of the agile framework used in software development.

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