

Impact of Agile Management on Customer Satisfaction in Interior Design

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Abstract

Objective:

This study aims to examine the impact of agile management on client satisfaction in interior design projects, to understand how agile methodologies enhance project outcomes and stakeholder engagement.

Design:

The study used a theoretical approach, where the researcher conducted a comprehensive literature review to explore the relationship between agile management and customer satisfaction in interior design. Data collection involves obtaining relevant academic articles, industry reports, and case studies from reputable sources over the past decade. Thematic and comparative analyses were used to synthesize the findings and develop a conceptual framework.

Results:

The study identified significant correlations between agile management practices and customer satisfaction in interior design. Agile methodologies, such as Scrum and Kanban, promote flexibility, collaboration, and iterative development, enhancing project vision, adaptability, and responsiveness. Key factors influencing customer satisfaction include design quality, communication, adherence to budget and timelines, and flexibility to accommodate changes.

Conclusion:

Agile management methodologies offer promising solutions for improving customer satisfaction in interior design projects. By enhancing collaboration, communication, and adaptability, Agile practices contribute to more successful project outcomes, ultimately leading to higher levels of customer satisfaction. The study emphasizes the importance of adopting Agile principles and recommends strategies to promote Agile adoption and promote client-focused practices in the interior design industry.

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1- Introduction:

Interior design is the art and science of enhancing the interiors of a building to create a functional, aesthetically pleasing, and harmonious environment. It encompasses a wide range of activities, from space planning and material selection to color coordination, furniture arrangement, and lighting design. In an era where people spend a significant portion of their lives indoors, the importance of interior design has grown exponentially, impacting not only residential spaces but also commercial, corporate, and public environments.

The study of interior design extends beyond mere decoration. It involves understanding human behavior, ergonomics, sustainability, and safety to create environments that meet the diverse needs of users. This interdisciplinary approach blends creativity with technical expertise, allowing designers to transform spaces in ways that enhance well-being, promote productivity, and encourage interaction.

With the increasing demand for personalized and adaptable spaces, interior design has evolved to embrace flexibility and innovation. Agile methodologies, traditionally associated with software development and project management, are finding their place in interior design. These methodologies emphasize iterative processes, collaboration, and customer feedback, enabling designers to respond swiftly to changing requirements and client preferences.

This study explores the impact of agile management on customer satisfaction within the context of interior design projects. As the industry shifts towards more client-centric approaches, understanding the role of agility in meeting client expectations is crucial. Agile methods, in contrast, offer a more dynamic and responsive framework.

By examining the influence of agile practices on project outcomes, customer satisfaction, and stakeholder engagement, this study aims to provide valuable insights for interior designers, project managers, and industry stakeholders. It seeks to identify the challenges and benefits of implementing agile methodologies in interior design, contributing to a broader understanding of how these practices can transform the industry.

The goal of this study is to highlight the potential for agile management to improve customer satisfaction and project success in interior design, offering recommendations for best practices and further research to support the industry's ongoing evolution.

2- Methodology:

The methodology for this research consists of several key steps designed to gather, analyze, and synthesize information related to the impact of agile management on customer satisfaction in interior design. This section outlines the research design, data collection methods, and data analysis techniques used to achieve the study's objectives.

2.1- Research Design:

This research adopts a theoretical approach, focusing on a comprehensive literature review to examine the relationship between agile management and customer satisfaction in interior design projects. The study aims to identify and understand the principles of agile methodologies, explore how they are applied in the context of interior design, and evaluate their impact on customer satisfaction.

2.2- Data Collection:

The primary source of data for this research is existing literature. Data collection involves identifying and reviewing relevant academic articles, industry reports, case studies, and other secondary sources. The following criteria are used to guide the literature search:

Keywords and Search Terms: The research utilizes keywords such as "agile management," "interior design," "customer satisfaction," "project management," and "construction industry." These keywords are used to search databases and academic journals to gather relevant studies and publications.

Scope and Relevance: The scope and relevance of this study focus on publications from reputable sources, including MDPI Open Access Journals, IOP Conference Series: Materials Science and Engineering, PLOS ONE, Springer Link, RIThink, Sage Journals, and the Journal of Architecture, Arts, and Humanities. The search is confined to research from the past 10 years, ensuring the inclusion of contemporary and up-to-date findings. Selected literature must align with the study's objectives, concentrating on the application of agile methodologies in interior design and examining their impact on customer satisfaction. The objective is to ensure a robust and relevant dataset that provides valuable insights into agile practices in interior design and their role in enhancing customer satisfaction.

2.3- Inclusion and Exclusion Criteria:

The inclusion criteria for the literature review include studies focusing on agile management within construction or design contexts. Exclusion criteria are studies that are unrelated to the topic or those that lack empirical evidence.

2.4- Data Analysis:

The data analysis process is broken down into several key steps:

2.4.1- Thematic Analysis:

The literature collected is analyzed thematically to identify significant patterns and recurring themes. This involves coding the data based on common concepts, practices, and outcomes related to agile management and customer satisfaction in interior design. The resulting themes form the groundwork for a conceptual framework that connects agile methodologies with customer satisfaction.

2.4.2- Comparative Analysis:

A comparative analysis is conducted to explore the differences and similarities across the studies. This approach helps to isolate common elements contributing to customer satisfaction and successful agile management. The analysis also investigates the potential challenges and barriers to implementing agile practices in interior design projects.

2.4.3- Synthesis and Interpretation:

The thematic and comparative analyses are synthesized to develop a coherent understanding of how agile management influences customer satisfaction. This synthesis highlights best practices, critical success factors, and opportunities for improvement in the application of agile methodologies to interior design projects.

2.5- Limitations and Considerations:

This research has certain limitations that should be acknowledged:

Scope of Literature: The study relies on existing literature, which may limit its scope to the perspectives and contexts covered by those publications.

Generalizability: The findings may not apply universally, as interior design projects differ in scale, scope, and client needs.

Evolving Practices: Trends in agile methodologies and customer satisfaction are dynamic, which may require ongoing monitoring and adjustments to maintain relevance.

3- Literature Review:

Interior design plays a critical role in shaping the customer experience in various settings, from residential spaces to commercial establishments such as restaurants. The design of a space can influence customer behavior, perceptions, and overall satisfaction. A key aspect of interior design is understanding which factors contribute most significantly to customer satisfaction and how these factors differ across various customer demographics.

Research in interior design encompasses a range of topics, including the impact of design elements on customer behavior, the role of aesthetics, and the cultural or regional variations in design preferences. By exploring these factors, researchers aim to uncover insights that can guide designers in creating spaces that meet the needs and expectations of diverse customer groups. The following literature review examines existing studies in this domain, focusing on the factors that influence customer behavior in interior design and highlighting the relevance of these factors in the context of restaurants and other public spaces.

One notable study by **Pecotić et al. (2014)** delves into the significance of interior design factors in restaurants and their effect on customer behavior. This study provides valuable insights into customer preferences and underscores the varying importance of specific design elements based on customer demographics and willingness to pay for enhanced design features. The findings from this study and others like it can help inform design strategies that align with customer expectations and drive customer satisfaction. As we explore the literature, we aim to identify key themes and trends that contribute to a deeper understanding of the relationship between interior design and customer behavior.

The research by **Gless et al. (2017)** explores innovative project management methods and collaborative practices designed to facilitate the integration of new digital tools in architectural design, focusing on computer-assisted and collaborative workflows. The study draws inspiration from agile methods, originally developed in the software engineering world, and aims to demonstrate how these approaches can be adapted to the architectural design process to enhance reactivity and collaboration. The paper examines the use of a collaborative matrix to help students working on a Building Information Modeling (BIM) project articulate their architectural intentions and refine design tasks. This process involves collaborative discussions among student groups to define and understand design tasks, followed by planning poker sessions to estimate the work duration in a BIM environment based on individual skills and experiences.

The experiments presented in the paper provide a structured process for students to collaborate on architectural design projects. By completing spreadsheets in a rational and objective way, participants can compare and measure their architectural intentions. This is followed by planning poker sessions to estimate task duration, leading to a more efficient project timeline in the BIM environment. The paper outlines two potential directions for future work. First, the authors aim to implement agile-BIM practices with an architectural firm transitioning to BIM, allowing them to test and refine these methods in a real-world setting. This involves translating agile methods to the architectural field and confronting them with professional workflows. Second, the authors plan a pedagogical experiment within a semester-long project studio to assess the applicability of agile methods to longer architectural projects.

The study of **(Recker, et al., 2017)** aimed to explore the impact of specific agile practices on software team responsiveness within the context of information systems development. While agile methods have gained popularity, it remains unclear which specific practices yield the best results. This study proposes three categories of agile practices—management, development, and standards—and examines how each affects the customer responsiveness of software teams. A field study was conducted within a large organization to test this theory.

The results indicate that agile practices can enhance either response effectiveness or response efficiency, but not both simultaneously. Interestingly, agile standards, despite not improving response mechanisms, were found to be crucial for successful information systems development.

The study of **(Hamed, 2019)** aimed to explore the significance of the concept and philosophy of flexibility in the field of interior design, emphasizing its importance in addressing future developments and providing a basis for meeting both functional and aesthetic requirements through adaptability, transformation, addition, and deletion. The study suggests that achieving flexibility can be accomplished through traditional, technological, or virtual means, thereby allowing interior spaces to adapt to the changing needs of humans, driven by rapid technological advances or various social changes.

The study also underscores the necessity of integrating the work of architects and interior designers when developing design plans to ensure flexibility in the designs, thereby enabling them to meet any future requirements within a structure. The research discusses the following key elements: definitions of flexibility; historical and contemporary philosophies of flexibility; sources of flexibility; flexibility in design; flexibility in interior design and its implementation; and the concept of flexibility in furniture design, including multi-functional furniture. The study also presents an analytical examination of certain furniture pieces to identify the key principles and standards that should be applied when incorporating flexibility into interior design. The findings, based on the study, confirm that the concept of flexibility is crucial in the field of interior design and furniture design due to its ability to accommodate rapid technological changes and evolving social requirements. The study also emphasizes the need for collaborative studies between architects and interior designers to ensure that interior spaces can meet future demands.

This study by **Moloto et al. (2020)** examines the impact of agile methodologies on project success in organizations through a systematic literature review. The goal is to assess recent evidence on the influence of agile practices on project outcomes. The research involves a keyword search of studies published between 2008 and 2019, yielding 1,507 papers, from which 30 primary studies were selected for detailed analysis.

The results suggest that when agile methodologies are correctly implemented, they have a positive impact on project success, contributing to enhanced customer satisfaction. This is supported by qualitative data from case studies that highlight the benefits agile practices bring to organizations. The 30 studies were analyzed using a contextual coding framework, with the majority being case studies or survey-based research, indicating a consistent trend of positive outcomes when agile practices are adopted.

The findings reveal that the correct use of agile methods can significantly benefit organizations, improving project success rates and contributing to customer satisfaction. However, the specific factors that drive this success and the objective measures of these benefits remain areas for further investigation.

The study by **Wang and Perng (2019)** developed a comprehensive set of indicators for evaluating customer satisfaction in interior design. To identify potential factors, the researchers conducted a literature review and in-depth interviews with industry experts. They then used the Modified Delphi method to establish an analytic hierarchy process (AHP) framework, allowing them to refine and prioritize key indicators.

The study established a set of indicators to evaluate customer satisfaction in interior design, comprising four dimensions and 15 factors. The dimensions are Economic Advantages, Designer Characteristics, Value Creation, and Environmental Consciousness. The 15 factors, in order of importance, are Budget Effectiveness, Easy Maintenance, Designer Reputation & Word of Mouth, Green Material, Schedule Control, Social Status Symbol, Energy Saving, Service Accessibility, Low Operation Cost, Water Saving, Customer Participating Experience, Impressive Presentation, Cultural and Folk Beliefs, Regulation Compliance, and Identity Representation. The research revealed that among these dimensions, Economic Advantages carried the most weight (0.397), with Budget Effectiveness identified as the most critical factor, with a weight of 0.169, highlighting cost as a primary concern for customers. Additionally, Designer Reputation & Word of Mouth and Green Material were also found to be significant, indicating the importance of quality assurance and environmental sustainability in interior design.

The study of **(Bambauer-Sachse, & Helbling, 2021)** aimed to analyze the impact of agile (as compared to plan-driven) methods on customer satisfaction in the context of knowledge-intensive business services. This study uses a survey examining the experiences of 361 customers with different outsourced software projects in Switzerland and a regression-based model to test the hypotheses.

The findings show that agile approaches can lead to higher customer satisfaction than plan-driven approaches, but the impact size is not as substantial as expected. The effect does not depend on the number

of specification changes.

Muhammad et al. (2021) explored how agile management practices affect project performance, considering both direct impacts and the mediation by project complexity. The study also investigated whether leadership competencies play a moderating role in this mediation. Data for the research were gathered via a survey conducted among IT firms in major Pakistani cities, including Peshawar, Islamabad, Lahore, Sialkot, Faisalabad, Hyderabad, Sukkur, and Karachi. The study analyzed 176 responses for statistical evaluation.

The findings indicate that while project complexity has a negative impact on project performance, agile management practices help compensate for this adverse effect. Furthermore, the study found that leadership competencies play a crucial role in mitigating project complexity when implementing agile management practices, leading to enhanced project performance.

The study by **Santos and de Carvalho (2022)** explores the primary challenges and advantages associated with scaling agile methodologies for large-scale projects. Using a literature review, the authors applied bibliometrics and content analysis, leveraging the Bibliometrix and UCINET software packages. They sourced data from the Web of Science and Scopus databases, thoroughly analyzing 76 articles.

The findings revealed 53 barriers to scaling agile, organized into six key categories: organizational challenges, management-related issues, obstacles specific to agile methodologies, product and process problems, customer-related hurdles, and team-related difficulties. Additionally, 32 benefits were identified, falling into three major groups: business outcomes, project-level gains, and team-oriented advantages. Requirement management emerged as a central theme that influences both the barriers and benefits of scaling agile project management. The study also found a significant correlation between the identified barriers and benefits, suggesting that addressing one can impact the other.

The study by **Chathuranga et al. (2023)** aims to identify practices that facilitate the adoption of agile project management methodologies in the design stage of building construction projects that use building information modelling (BIM) solutions. While agile project management has gained attention for its benefits in various industries, the construction sector has largely remained reliant on the waterfall approach. However, the emergence of BIM software has opened the door to agile methodologies in building design, as the design process can increasingly resemble software development. This study explores how an architectural consultancy firm has successfully implemented agile methodologies in the design stage, leveraging a systematic literature review to identify 10 practices that can drive agile adoption in construction design. The firm selected for the study was already using a BIM solution and had integrated agile practices into their workflow.

Key practices that contributed to the successful adoption of agile methods included maintaining a backlog, running sprints, engaging a cross-functional team, continuous integration, and iterative/incremental development. These findings indicate that adopting agile methodologies can enhance flexibility and responsiveness during the design stage of construction projects. The study provides both practical and theoretical implications, offering insights into how agile practices can be effectively integrated into building design processes. It suggests that construction firms can benefit from adopting agile methodologies, particularly when leveraging BIM solutions. The study also discusses limitations and provides suggestions for future research, highlighting areas where additional investigation could further elucidate the benefits and challenges of agile adoption in the construction industry. Concluding remarks are included in the final section of the paper.

The paper by **Ng et al. (2023)** provides an extensive literature review to investigate the use of agile methodologies in building adaptation projects. The authors introduce the Agile Building Adaptation (AgiBuild) framework, which encompasses key components and a potential implementation process. Successful adoption of this framework depends on several critical factors, including strong leadership and comprehensive training. The AgiBuild framework aims to transform the building adaptation industry into

an innovative and user-centered sector, ultimately improving productivity and performance within the broader construction domain. By adhering to the framework's principles, the industry can foster a culture of adaptability and collaboration, enabling sustainable and customer-focused building adaptation projects that meet the changing demands of the built environment.

The construction and built environment sector are crucial for societal progress but faces challenges such as limited growth, innovation, and frequent inefficiencies, particularly in building adaptation projects where coordination is often lacking. Agile methodologies, originating from the software industry, offer a flexible and responsive approach to managing these issues, especially when dealing with fragmented activities and changes. The paper identifies a connection between agile project management and building adaptation project management through a literature review, leading to the development and validation of the AgiBuild framework. While some construction projects have partially implemented agile practices, the application of agile approaches in building adaptation is still in its early stages. Future implementation of the AgiBuild framework will require collaboration between academic institutions and industry partners to ensure the workforce is adequately prepared for the adoption of agile methodologies.

The study by **Tang et al. (2023)** investigated the impact of aesthetics, ease of use, and information quality in digital marketing on consumer satisfaction. Data were collected from 120 respondents through online surveys.

Using structural equation modelling, the study found that all three factors positively influence customer satisfaction with digital platforms that incorporate interactive virtual reality (IVR) for interior design. Among the three factors, information quality had the most significant influence on consumer satisfaction. Despite extensive research on digital marketing, a gap remains in examining which factors most impact consumer satisfaction from the consumer's perspective, particularly in the context of virtual interior design and its interactive elements. To address this gap, the study proposes a theoretical model for digital marketing that incorporates interactive virtual interior design features. This research contributes to the understanding of customer perceptions in digital marketing and provides insights into the elements that drive satisfaction in platforms with virtual design capabilities.

3.1- Comments on Studies:

The studies offer insights into agile methodologies, interior design, customer satisfaction, and digital marketing. However, they also reveal research gaps. Muhammad et al. (2021) show that agile practices can mitigate project complexity, but their focus on IT firms in Pakistan limits generalizability. Moloto et al. (2020) suggest a positive link between agile methods and project success yet require further exploration into the driving factors. Bambauer-Sachse and Helbling (2021) found agile can increase customer satisfaction in knowledge-intensive business services, but the effect size is smaller than expected. Recker et al. (2017) reveal agile practices can improve either response effectiveness or efficiency, but not both, indicating a need for balance. Hamed (2019) discusses flexibility in interior design but doesn't connect it with agile methodologies. Ng et al. (2023) introduce an agile framework for building adaptation but note its application is in early stages. Chathuranga et al. (2023) explores agile in building construction but raise concerns about long-term sustainability. Santos and de Carvalho (2022) identify barriers and benefits in scaling agile but lack strategies for overcoming barriers. Pecotić et al. (2014) explore customer behavior in restaurants, but without broader implications for agile methods. Wang and Perng (2019) develop customer satisfaction indicators for interior design but don't align them with agile practices. Tang et al. (2023) examines factors affecting consumer satisfaction in digital marketing, focusing on information quality, yet more exploration is needed. These gaps suggest further research is required to fully understand agile methodologies and their broader implications.

3.2- Research Gap:

The studies collectively offer valuable insights into the application of agile methodologies in various contexts, yet significant research gaps persist. For example, agile's impact on interior design remains underexplored, with limited understanding of how agile practices can be effectively integrated into design projects. Moreover, while agile methodologies are often associated with improved project success and customer satisfaction, the specific factors contributing to these outcomes are not well-defined, suggesting a need for further investigation. Studies like Santos and de Carvalho (2022) have identified barriers to agile adoption, but more research is required to develop strategies for overcoming these challenges. Additionally, the relationship between agile practices and flexibility in interior design, as discussed by Hamed (2019), needs deeper examination. Addressing these gaps could advance our knowledge of agile's effectiveness across different industries and offer practical solutions for successful agile implementation.

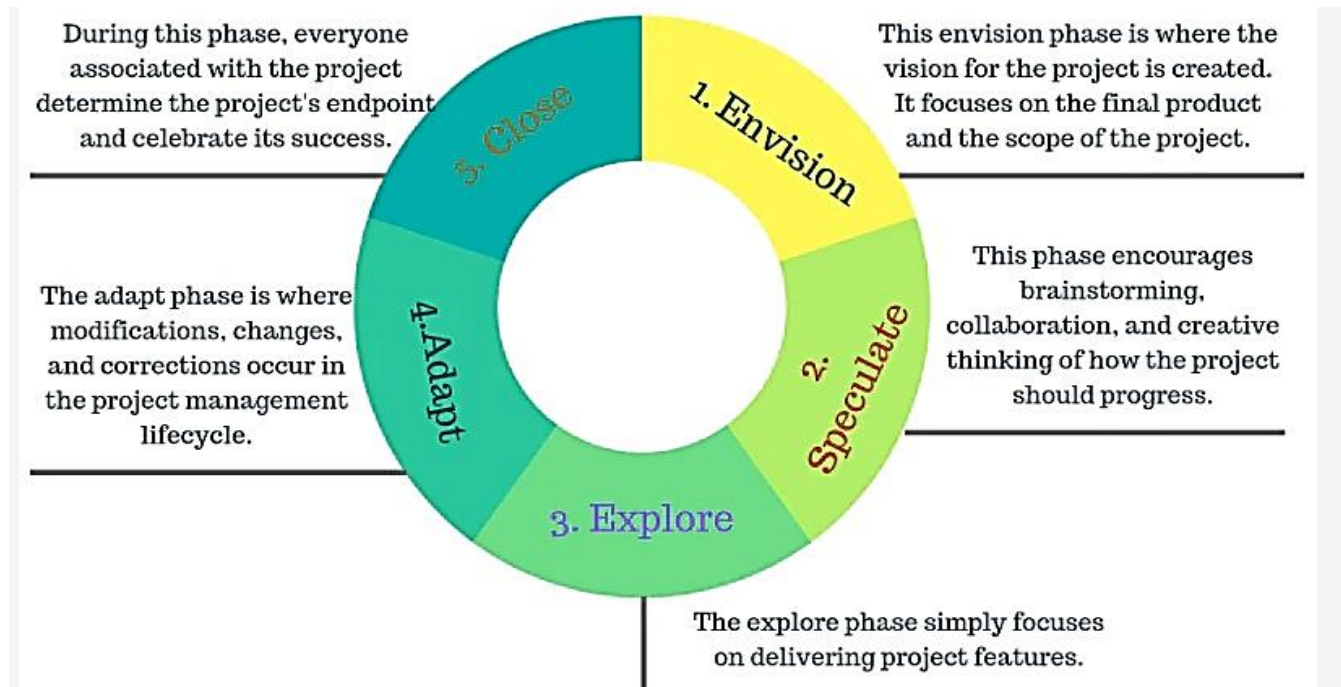
4- Conceptual Framework:

A conceptual framework serves as a structured guide for understanding the relationships among key concepts, providing a visual representation of how various factors interact and affect each other. In the context of interior design and agile methodologies, a conceptual framework is crucial for examining how agile practices influence customer satisfaction and project success. This framework illustrates the connections between agile methodologies and their impact on the interior design process, focusing on elements like adaptability, customer engagement, and collaborative project management. It also explores mediating factors, such as project complexity and leadership competencies, that can affect these relationships. By detailing these components and their interactions, the framework sheds light on how agile methodologies contribute to customer satisfaction and successful project outcomes. This approach offers a comprehensive view of the role agile practices play in improving flexibility and communication in interior design, providing valuable insights for both academic research and practical application:

4.1- Application of Agile Methodologies in Interior Design:

Agile methodologies in interior design focus on adaptability and flexibility, creating a people-oriented management system that responds to changing project needs. According to Rietze and Zacher (2022), Agile is designed to make teams more adaptable by iterating on the product, enabling them to address critical issues with each cycle through continuous communication and stakeholder feedback. This iterative approach allows teams to refine their designs in real time, ensuring they meet evolving requirements. McKinsey & Company (2023) describes Agile as a way of working that enhances task management by breaking down large tasks into smaller, manageable pieces, allowing teams to prioritize and track their work using tools like Kanban boards. This leads to improved project visibility, accountability, and effective workflows. Agile's focus on adaptability, customer collaboration, iterative development, and flexibility creates a culture of continuous improvement, enhancing product quality and project efficiency. Agile principles in interior design promote ongoing adjustments based on client feedback and evolving project conditions (Strode et al., 2022). By fostering customer collaboration and iterative development, Agile enables a flexible approach to design projects, allowing for changes to timelines, budgets, and design elements (Magistretti & Trabucchi, 2024; Jalali Sohi et al., 2020). Common agile practices like Scrum, with its sprints and daily stand-up meetings, promote efficient teamwork and quick responses to changes (Al-Dalal, 2019). Kanban boards provide a visual representation of the design workflow, allowing teams to identify bottlenecks and optimize task management (Ibrahim, 2019). Continuous integration ensures that design elements are reviewed and integrated throughout the project, reducing delays and ensuring cohesion (Colenberg & Jylhä, 2022). By embracing these principles and practices, Agile offers a promising approach to interior design that can lead to enhanced adaptability, improved communication, and higher customer satisfaction.

4.1.2 Agile project management



Source: (Kashyap, 2024)

Agile project management is an amazing phenomenon that occurs in five major phases:

➤ **Phase 1: Envision**

This envision phase is where the vision for the agile project is created. It covers *What, Who, When, and How* getting the project delivered is concerned. The phase focuses on the final product and the [scope of the project](#).

➤ **Phase 2: Speculate**

The next phase is speculation. This phase encourages brainstorming, collaboration, and creative thinking of how the agile project should progress. This is where people involved in the project discuss what's possible to achieve and what's out of reach—while also allowing enough flexibility to CHANGE if necessary.

➤ **Phase 3: Explore**

The explore phase simply focuses on delivering project features.

In this phase, there are three crucial steps included:

- *Managing the workload using the proper technical practices and risk management strategies to deliver what's planned.*
- Creating a self-organizing and collaborative community that shares responsibility facilitated by the project manager.

- Managing how team members interact with each other and other parties (customers, product managers, stakeholders, etc).

- **Phase 4: Adapt**

In the adapt phase, modifications, changes, and corrections occur in the project management lifecycle. This phase is designed to analyze the actual results versus planned results. More importantly, consider the improvements needed and re-planning the approach for the upcoming iteration.

- **Phase 5: Close**

And here comes the final phase. During this phase, everyone associated with the project determines the project's endpoint. But before they put an end to the project, they analyze, and review all the key aspects of the project to make sure that they deliver exactly what's expected of them.

4.2- Customer Satisfaction:

Customer satisfaction is a crucial objective in the interior design industry, reflecting the client's overall perception of the design process and the final outcome. Several key factors contribute to achieving high levels of customer satisfaction in interior design projects. One of the most important factors is the quality of design, which encompasses both the aesthetic and functional aspects of the completed space. The design must align with the client's desired style, effectively utilize the available space, and meet their functional needs (Park et al., 2019). Communication and collaboration throughout the design process are also critical. Effective communication ensures that the design aligns with the client's vision and minimizes misunderstandings, leading to a more satisfactory outcome (Suchánek & Králová, 2019).

Another significant factor in customer satisfaction is adhering to the budget and project timelines. Staying within the agreed-upon budget and delivering the project on schedule requires transparency and realistic planning, contributing to a more positive client experience (Wang & Perng, 2019). Flexibility and adaptability are equally important, allowing for adjustments in response to changing client requirements or unforeseen circumstances. Agile design approaches that prioritize flexibility can help accommodate these changes while keeping the project on track (Bambauer-Sachse & Helbling, 2021).

By focusing on these key factors—quality of design, communication and collaboration, budget and timeliness, and flexibility—interior design professionals can improve client satisfaction, ensure project success, and build a strong reputation in the industry. These considerations are vital for delivering high-quality projects that meet or exceed client expectations, ultimately leading to a higher level of customer satisfaction.

4.3- Mediating Factors:

The relationship between agile methodologies and customer satisfaction in interior design is influenced by various mediating factors. Project complexity plays a significant role, with higher complexity potentially diminishing the effectiveness of agile practices due to increased coordination challenges and risks (Anantatmula & Rad, 2018). Leadership competencies are another crucial mediating factor. Strong leadership characterized by effective communication, team motivation, and strategic decision-making can significantly enhance the implementation of agile methodologies, leading to better customer satisfaction (Gandomani & Navidi, 2016). When leaders are adept at managing complex projects and fostering a collaborative environment, the impact of agile practices on project outcomes is more likely to be positive.

4.4- Project Success:

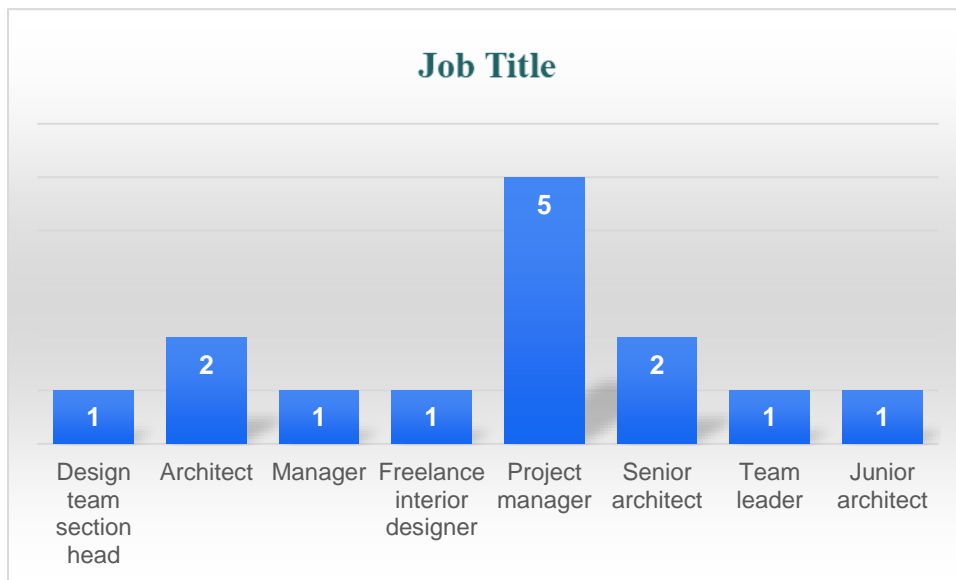
Project success in interior design is measured by several key factors. Client feedback is an essential metric, providing direct insights into customer satisfaction and indicating whether the project met the clients' expectations (Müller & Jugdev, 2017). Project outcomes, including completion within the agreed scope, timeline, and budget, offer a tangible measure of success (Joslin & Müller, 2015). A positive

reputation and increased client referrals can also be indicative of project success, demonstrating that clients are satisfied enough to recommend the service to others (Ika et al., 2016). These indicators collectively reflect the success of agile methodologies in contributing to positive project outcomes and customer satisfaction.

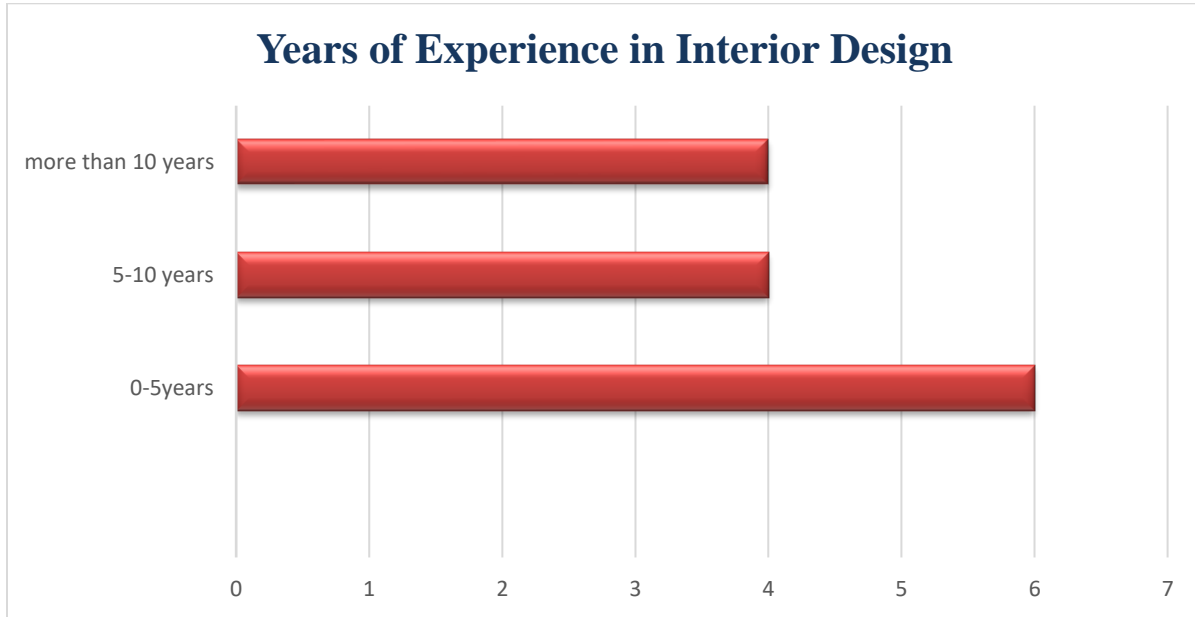
4.5- Impact of Agile Methodologies:

Agile methodologies can have a significant impact on customer satisfaction and project success in interior design. They enhance flexibility by allowing for iterative changes and continuous improvement, enabling teams to adapt quickly to changing requirements (Moe et al., 2016). Agile practices foster collaboration through improved communication and teamwork, leading to a more inclusive design process (Hoda et al., 2018). This increased collaboration also enhances responsiveness, allowing teams to address issues and client feedback promptly. Additionally, agile methodologies can drive innovation by promoting creativity and unique solutions, which are crucial in the field of interior design (Conboy et al., 2017). These benefits demonstrate the potential of agile practices to improve customer satisfaction and project success in interior design.

5- Data Collection Analysis:



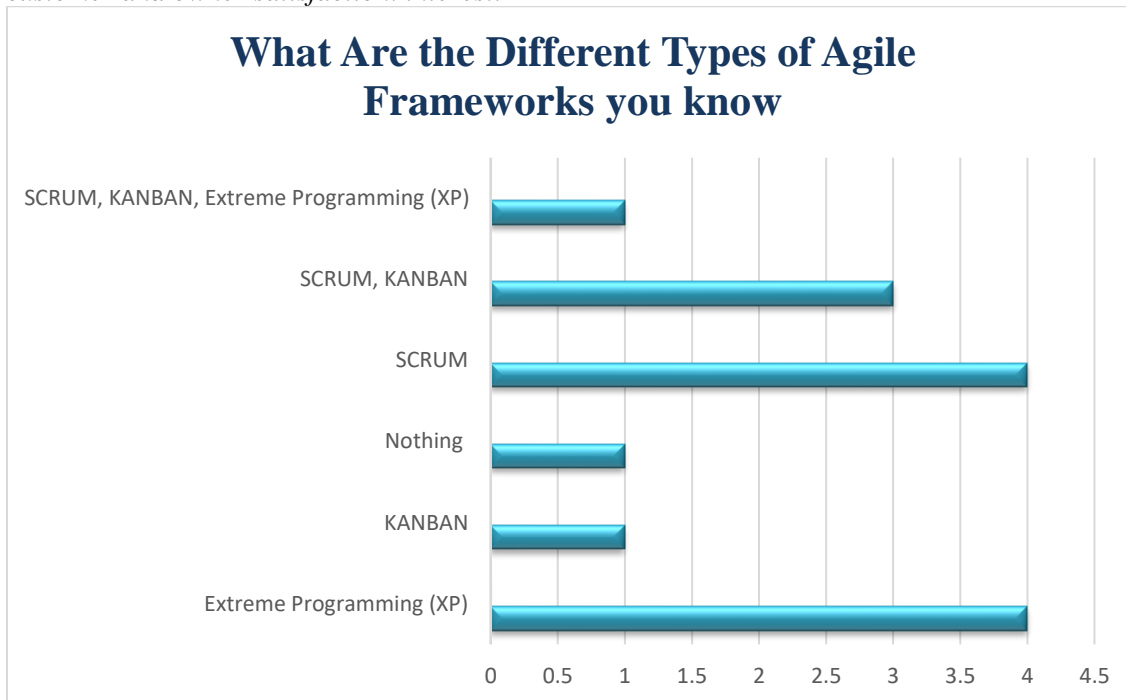
From the previous figure, it is clear that most of those who participated in the questionnaire were from the position of project manager, with 5 project managers.



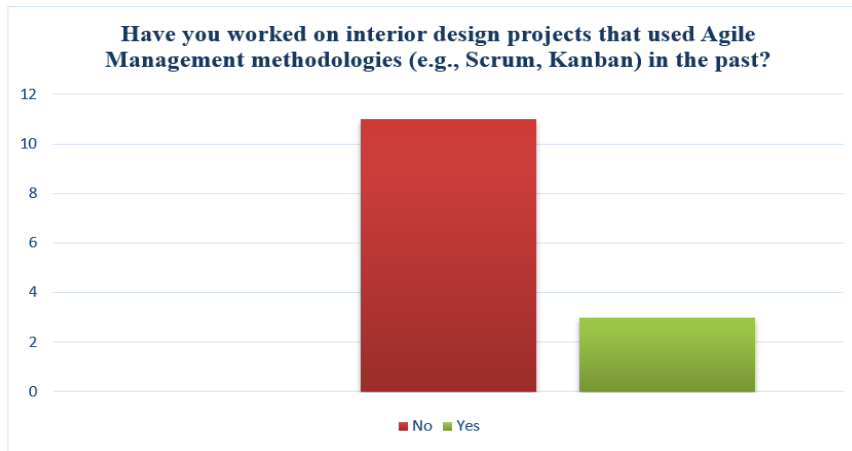
From the previous figure, it is clear that most of those who participated in the questionnaire had 0 to 5 years of experience.



From the previous figure, it is clear that some show prior knowledge of Agile management principles in the context of interior design projects by 50%, while others appear to be unfamiliar with them by 50%. Understanding and adopting Agile principles can lead to improved project implementation and better customer and owner satisfaction. interest.

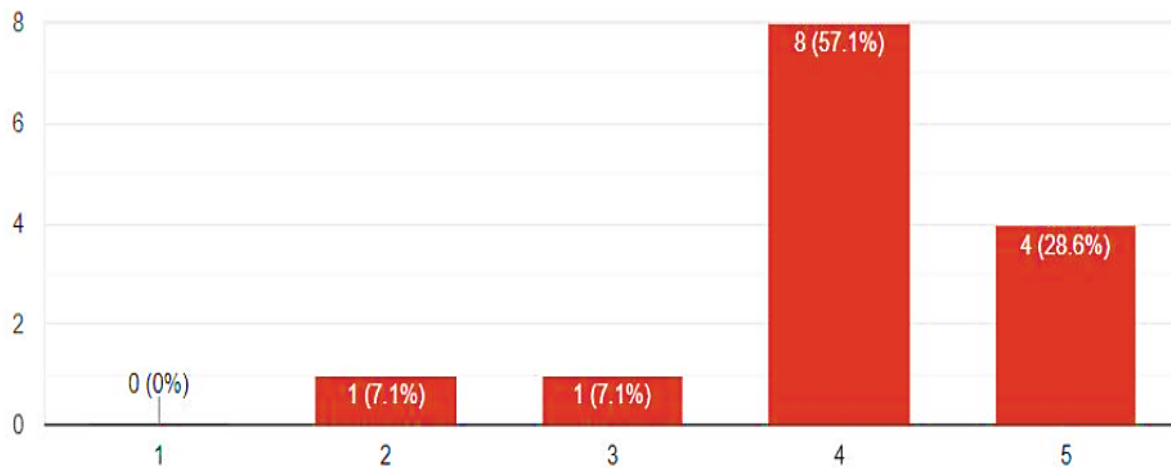


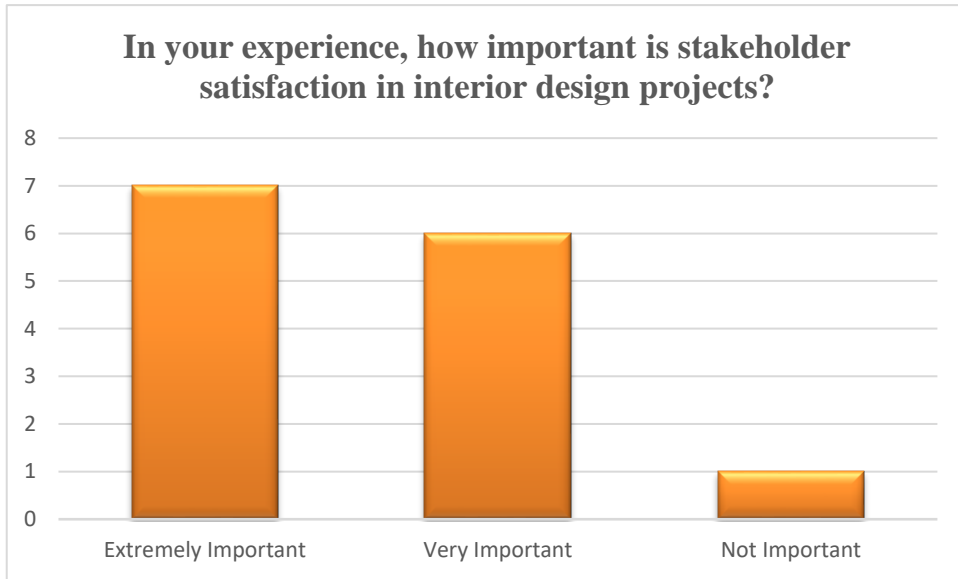
From the above figure, it appears that many of the participants in this survey are familiar with some of the different Agile frameworks, such as Extreme Programming (XP), SCRUM, and KANBAN. This diversity is evident in the knowledge of agile frameworks among the participants, which can contribute to improving the performance of teams and project management in the field of interior design.



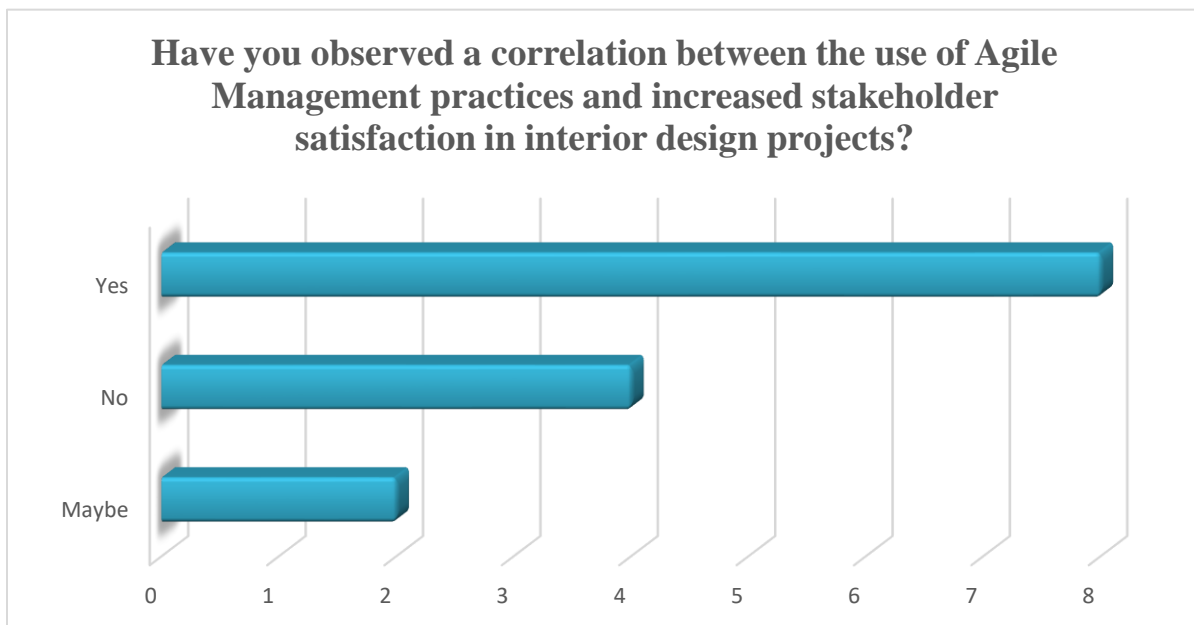
From the above figure it appears that many participants have not worked on interior design projects that used Agile management methodologies in the past, while some of them appear to have done so. This distribution reflects the variation in participants' experience in using agile methodologies in the field of interior design, and this may affect the level of readiness and knowledge of those methodologies.

On a scale of 1 to 5, with 1 being "Not Effective" and 5 being "Very Effective," how effective do you think Agile Management practices are in improving project efficiency in interior design?





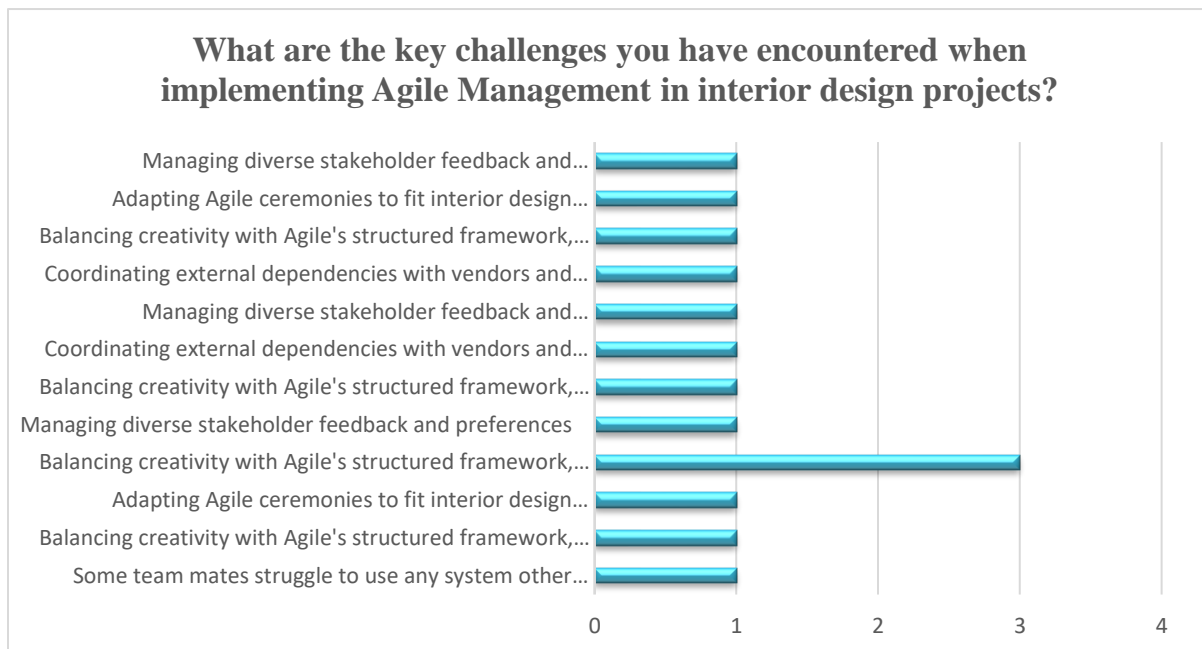
From the above figure it appears that Stakeholder satisfaction appears to be a very important factor in interior design projects according to the participants' experiences. There are 13 responses that emphasize the importance of stakeholder satisfaction, while there is only one statement to the contrary



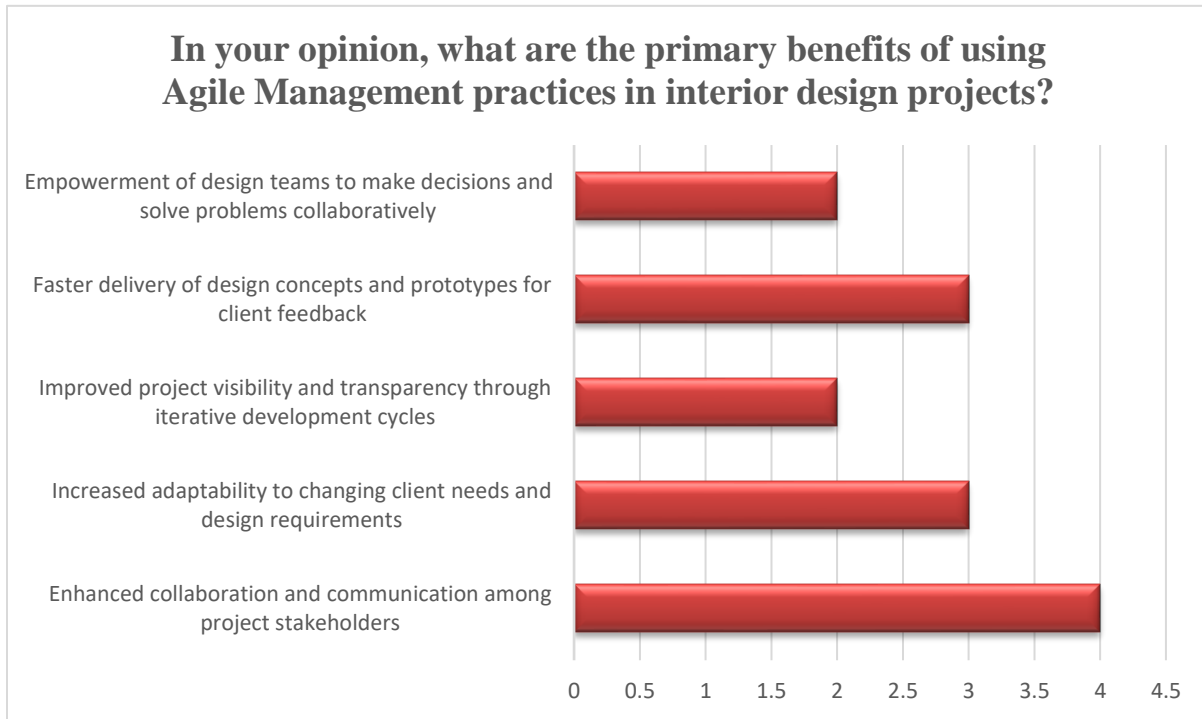
From the figure above it appears that there is diversity in participants' experiences regarding the relationship between the use of agile management practices and increased stakeholder satisfaction in interior design projects. There are participants who believe that this relationship exists, and there are others who do not think so.



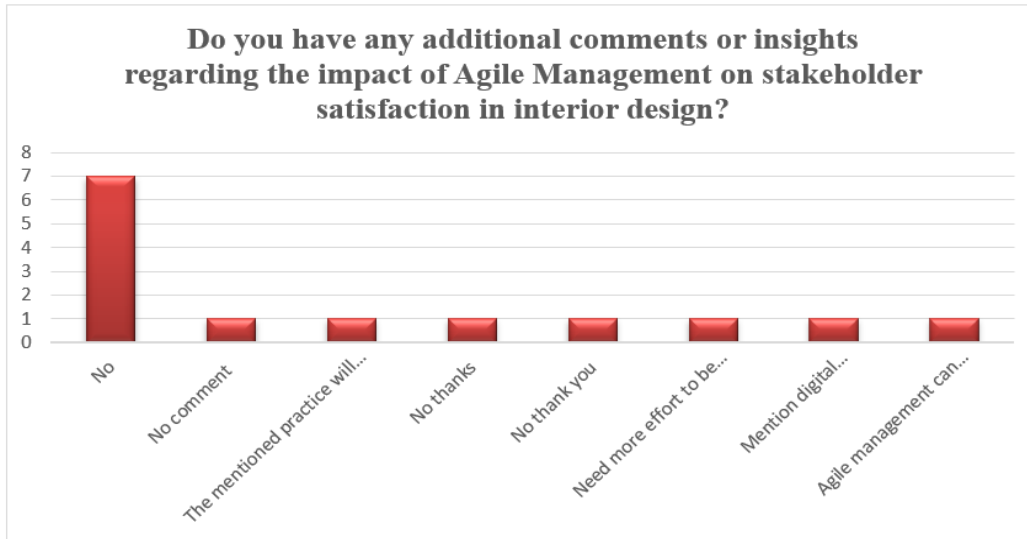
From the above figure it seems that opinions agree that Agile management practices play an important role in improving stakeholder satisfaction. This includes promoting frequent communication and collaboration among stakeholders, increasing transparency by seeing project progress and identifying weak points through a feedback cycle. It also allows stakeholders to provide early feedback and realize incremental value, providing flexibility to adapt to changing requirements and market conditions. These practices also enable teams to make decisions and solve problems collaboratively, which ultimately improves project outcomes and thus stakeholder satisfaction.



The data presented in the previous figure shows the main challenges that participants faced while implementing Agile management in interior design projects. Among these challenges, some teams include difficulty using any system other than the traditional one. They also face difficulty in achieving a balance between creativity and structure found within the Agile framework, in addition to coordinating external dependencies with suppliers and contractors. Furthermore, they find it difficult to adapt Agile protocols to fit their interior design workflow, as well as manage various stakeholder feedback and preferences. These challenges highlight the importance of adopting flexible and integrative strategies to deal with the diverse challenges facing the implementation of Agile management in the field of interior design.



From the above figure it appears that participants see several key benefits of using Agile management practices in interior design projects. Among these benefits include enhanced collaboration and communication between project stakeholders, and increased adaptability to changing customer needs and design requirements. They also see improved project visibility and transparency through iterative development cycles, and accelerated delivery of design concepts and prototypes to get customer feedback faster. This commentary highlights the importance of adopting Agile management practices in improving interior design processes and better meeting client expectations.



From the above figure it appears that some participants have additional comments about the impact of Agile management on interior design stakeholder satisfaction. Some of them suggest that this practice will improve collaboration among stakeholders, while others note that it requires more effort to get lay professionals more aligned with it. While another comment points out the importance of mentioning digital transformation in studies, others express the belief that Agile management can improve stakeholder satisfaction by enhancing collaboration, flexibility, transparency, and quality, and accelerating the delivery of valuable solutions that align with stakeholder culture and expectations

Results

The analytical results underscore the importance of utilizing analytical techniques to gain deeper insights into customer needs and achieve designs that are more tailored to them. Additionally, the findings highlight the significance of developing training programs for design professionals to enhance service quality and increase customer satisfaction, as well as enhancing virtual communication platforms to facilitate faster and more effective communication between designers and clients and exchange of ideas.

- Analysis of key elements of agile management with the greatest impact: The study can identify specific elements of agile management methods that have a significant impact on customer satisfaction, such as effective collaboration, rapid response to changes, and involving customers in the design process.
- Identifying challenges related to adopting agile management: The study may highlight potential challenges that companies face in adopting agile management methods, such as the additional costs of frequent changes or difficulties in changing organizational culture.
- Providing a comparison between Agile management and traditional approaches: The study can also offer a comparison between the outcomes and outputs when using Agile management compared to traditional approaches, shedding light on the potential benefits and improvements that can be achieved by using agility in the field of interior design.

- Customer satisfaction is a primary goal in the interior design industry: This result underscores the importance of customers in the interior design industry, with a focus on meeting their needs and desires through the design process.
- Effective communication contributes to achieving alignment between the design and the client's vision and reduces misunderstandings: This conclusion highlights the importance of effective communication between interior designers and clients to ensure an accurate understanding of the client's vision and achieve alignment between it and the proposed design.
- Adhering to budget and timelines requires transparency and realistic planning, contributing to a positive customer experience: This result indicates the importance of transparent and realistic project management, including adherence to specified budgets and timelines, which contributes to improving the customer experience and increasing satisfaction.

Recommendations

Based on the potential results of the study on the impact of Agile management on customer satisfaction in interior design, the following recommendations can be provided:

- Enhance the adoption of agile management: Companies in the interior design industry should consider enhancing the adoption of agile management methods in their operations, and provide appropriate training and education for employees to ensure their understanding and acceptance of these new methods.
- Promote collaboration and communication: Companies should focus on promoting collaboration and communication between teams and clients, encouraging continuous exchange of ideas and feedback to improve work quality and meet customer expectations.
- Improve adaptability: It is important for companies to be prepared to adapt to rapid and changing customer requirements, and develop mechanisms and procedures that allow for effective handling of these changes.
- Foster a culture of innovation and motivation: Companies should foster a culture of innovation and motivation among their employees, encouraging them to propose new ideas and implement innovative solutions to improve interior design processes and achieve customer satisfaction.
- Using Analytical Techniques: Utilizing analytical techniques such as big data analysis or artificial intelligence in the interior design industry can lead to a better understanding of customer needs and preferences, resulting in the delivery of more tailored designs and increased customer satisfaction.
- Developing Training and Development Programs: Developing training and development programs tailored to interior design professionals can improve communication and negotiation skills with clients; enhance project management abilities, thus improving service quality and customer satisfaction.
- Enhancing Virtual Communication Platforms: Enhancing virtual communication platforms such as applications and software specific to interior design can facilitate communication between designers and clients, streamline the exchange of ideas and feedback on designs, reducing misunderstandings and facilitating the creation of designs that meet customer needs.

Conflicts of Interest

The authors have disclosed no conflicts of interest.

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