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**AGILE MANAGEMENT CONCEPT IN
IMPROVEMENT OF IT ORGANIZATION'S
PROCESSES**

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**IMPROVEMENT OF IT ORGANISATION’S PROCESSES USING THE
AGILE MANAGEMENT CONCEPT**

The aim of this dissertation is to obtain a doctoral (PhD) degree in the scientific field of
„Management and Business”

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LIST OF ABBREVIATIONS

AAUW	:	American Association Of University Women
AHP	:	The Analytic Hierarchy Process
ANOVA	:	Analysis Of Variance
ANP	:	Analytic Network Process
ASD	:	Adaptive Software Development
COVID	:	Coronavirus Disease
CRM	:	Customer Relationship Management
DOI	:	Digital Object Identifier
EHRM	:	Electronic, Human Resource Management
ERP	:	Enterprise Resource Planning
EU	:	European Union
FDD	:	Feature-Driven Development
FDR	:	False Discovery Rate
FMEA	:	Failure Mode And Effects Analysis
FWER	:	Family-Wise Error Rate
GVT	:	Global Virtual Teams
HA	:	Alternative Hypothesis
HR	:	Human Resources
HRIS	:	Human Resources Information System
HRM	:	Human Resource Management
HRP	:	Human Resource Planning
ICT	:	Information And Communication Technology
IT	:	Information Technology
MCDM	:	Multi-Criteria Decision-Making Method
MET	:	Meta-Analysis
MOE	:	Margin Of Error
MVP	:	Minimum Viable Product
NCWIT	:	The National Center For Women & Information Technology
QFD	:	Quality Function Deployment
R&D	:	Research and Development
ROI	:	Return On Investment
SmartPLS	:	A Software With Graphical User Interface For Variance-Based Structural Equation Modeling (Sem) Using The Partial Least Squares (Pls) Path Modeling Method.
STDEV	:	Standard Deviation
STEM	:	Science, Technology, Engineering And Math
UK	:	United Kingdom
URL	:	Uniform Resource Locator
USA	:	United States
YAGNI	:	You Are Not Going To Need It
XP	:	Extreme Programming

Table of Contents

INTRODUCTION	1
1. OBJECTIVES AND HYPOTHESES	5
1.1. Aims and Questions of The Research	5
1.2. Research Hypotheses	6
1.3. Research Motivation and Problem Statement	8
1.3.1. Workplace Bullying	8
1.3.2. Migration Issue	9
1.3.3. Problem Statement:	10
2. LITERATURE REVIEW	11
2.1. UNCERTAINTY	11
2.1.1. Uncertainty in Software Development and Beyond	11
2.1.2. Types of Uncertainty	12
2.1.3. Methods Suitable for Dealing with Uncertainty	12
2.2. Agile Management	16
2.2.1. Agile Trends	17
2.2.2. Reviewing Previous Agile Literature	18
2.2.3. Agile Concepts and Methods	20
2.2.4. Agile Values and Characteristics	22
2.2.5. Principles and Roles of Agile	24
2.2.6. Agile Key Practices	25
2.3. Agile Conclusion and Discussion	30
2.3.1. Limitations of Agile and Suggested Solutions	30
2.3.2. Unfavorable Agile Methods	32
2.3.3. Unfavourable New Agile Methods	32
2.3.4. Agile Methods That Are Good but Not New	33
2.3.5. New Good Introduced Agile Methods	34
2.4. Agile and Workplace Bullying	36
2.5. Agile in HR	37
2.6. Workplace bullying	40
2.6.1. Types of Workplace Bullying	40
2.6.2. Cyberbullying vs Workplace Bullying	43
2.6.3. Workplace Bullying Relation to Stress	44
2.7. Workplace Bullying and Legal Protection	44
2.7.1. Freelancers and Office Workers Comparison	44
2.7.2. Freelancer vs Remote Workers vs Telework	45
3. MATERIALS AND METHODS	47
3.1. Research Design	47
3.2. Research Methodology	48
3.3. Quantitative Data Method:	50
3.4. Population and Sampling	52
3.5. Qualitative Research Approach	61

4. RESULTS OF THE RESEARCH	65
4.1. Agile Adaptation Level	65
4.2. The difficulty of applying Agile and building trust.....	67
4.3. Testing the Existence of Workplace Bullying.....	69
4.3.1. Discrimination.....	69
4.3.2. Workplace Bullying Type	69
4.4. Hypothesis Testing.....	71
4.4.1. H1 The Relationship Between Agile vs Trust	71
4.4.2. H2 The Relationship Between Trust vs Discrimination	76
4.4.3. H3 The Relationship Between Agile Implementation and Workplace Bullying.....	80
4.4.4. H4 Working Conditions and Workplace Bullying.....	85
4.4.5. H5 Workrights vs Remote Working	90
4.5. Testing Structural Hypotheses.....	94
4.6. Thematic Analysis of The Qualitative Data	97
5. CONCLUSION AND RECOMMENDATIONS.....	100
5.1. Research Results and Their Explanation:	100
5.2. Summary	107
5.3. Research Recommendations	109
5.4. Research Limitations	112
6. MAIN CONCLUSION AND NOVEL FINDINGS.....	114
SUMMARY.....	118
BIBLIOGRAPHY	119
List of Tables	133
List of Figures	134
English Survey Questions.....	135
English Survey Results	138
Hungarian Survey Questions	142
Hungarian Survey Results.....	146
Interview Questions	150
LIST OF PUBLICATIONS.....	152
Consent Form	153
SmartPLS Results	154

INTRODUCTION

The modern workplace has evolved significantly due to rapid technological advancements, changing organisational structures, and the growing prevalence of remote work. These changes have created opportunities and challenges for fostering a positive work environment, particularly concerning trust and workplace bullying, which significantly impact employee well-being and overall organisational health. These variables interact in various work contexts.

The rise of remote work has introduced new dimensions to workplace interactions. One of the advantages of remote work is increased flexibility and work-life balance; however, challenges include communication barriers and feelings of isolation. This shows a different pattern from the usual on-site workplace bullying, which is characterised by repetitive verbal, social or psychological mistreatment of one or more employees.

Agile methodologies have gained widespread adoption across various industries with practices designed to enhance flexibility. However, their influence extends beyond that to change organisation culture and how they deal with various challenges.

Uncertainty in product development can be a threat or an opportunity. Complete control over uncertainty seems impossible (Dönmez and Grote, 2018a), as IT business requirements are constantly changing fast, with a highly competitive market. The work of software development teams is very uncertain. It is crucial for project performance and affects many decisions (Na *et al.*, 2004). Uncertainty can come from multiple sources and affect all software development cycles, leading to difficulty managing it (Stamelos and Angelis, 2001). It also can lead to the development of extra unneeded features, reduced product quality, delayed delivery time, or customer dissatisfaction. Due to the high costs, software development teams must pay attention to them. (Ibrahim *et al.*, 2009)

There are many types of uncertainty in software development that can include but are not limited to program behaviour, undefined variables, values or names, and uncertain program defects. Some significant defects are considered unavoidable uncertainties that need an immediate fix, while other minor bugs can be ignored. (Ubayashi, Kamei and Sato, 2019)

Ignored uncertainty can be a real danger. It can cause project failure. Therefore, managers should know its sources (Marinho *et al.*, 2014) and have the proper techniques to address them. Teams can manage uncertainty using different methods, including investigating uncertain issues (therefore, uncertainty reduction or shifting it to another matter), intentionally ignoring uncertainty, or increasing it. (Grote, 2015)

However, it can be managed effectively by team collaboration and uncertainty-focused approaches such as Agile (Perminova, Gustafsson and Wikström, 2008). An agile mindset can be used to mitigate threats. Nevertheless, since uncertainty does not only include threats, it is vital to have the correct mindset in dealing with uncertainty to seize opportunities. When uncertainty is usually mentioned in the literature, it is mainly considered a negative effect on any project. Therefore, using different approaches to manage uncertainty is essential, as we cannot just claim that uncertainty is bad or good. However, all agree on its effect in defining that project's success or failure, Although only a few acknowledge this dual nature of uncertainty. However, it is essential to mention the bright side of uncertainty by encouraging innovation Field. (Jalonen, 2011; Marinho *et al.*, 2014)

Many MCDM methods and tools were used to manage uncertainty, such as the fuzzy linguistic approach (Tseng, 2011). The author has tested a new approach using an integrated AHP and QFD. The model was tested within its maximum limit by selecting sixteen technical parameters and considering fifteen variables for the software requirements. Stakeholders were highly involved when making decisions, and their decision consistency was calculated to make sure the best CRM software was selected. (al jafa, 2020a)

The model was designed with ten comprehensive steps, which included defining the problem and the goal, defining the customer's needs, starting with the Quality function development (QFD) model and finally making the decision using the Analytic hierarchy process (AHP). (al jafa, 2020b) As a result, although this method proved to be efficient in breaking down significant complex issues into smaller, manageable ones, using this method can be time-consuming and require many team members. Therefore, better ways have been studied to address the issue, testing its effectiveness in the new shift to remote work.

In a fast-changing market, an economic profit can only be made with an existing uncertainty (Hicks, 1931). Otherwise, it would be wasted, allowing the risk to grow and the opportunity to be lost. However, this high uncertainty must be addressed in software and product innovation projects. (Paixao and Souza, 2015)

A study focused on improving practices used to deal with uncertainty done by (Dönmez and Grote, 2018b). The study concludes that when teams are aware of the type of uncertainty they face, they can act accordingly, whether it is a threat or an opportunity. It suggests that Agile methods help deal with threats while allowing teams to remain open to new opportunities.

Agile is a multifaceted concept encompassing a mindset and methodology. Each organisation selects an adoption plan based on its leadership style. Agile methods support the agile philosophy, i.e., agile values and principles. Each Agile method consists of a different

combination of practices, describing how the software developer does the day-to-day work. Each method differs from the other by choosing its appropriate set of terminology and practices. (Alsaqqa, Sawalha and Abdel-Nabi, 2020)

Agile methods are a set of software development methodologies that prioritise flexibility and adaptability. They are characterised by their ability to handle situations on the go without the need for extensive prior planning (Manchanda *et al.*, 2017). Two popular methods in the software industry are eXtreme Programming and Scrum. (Maurer and Melnik, 2006)

According to (Mordi and Schoop, 2020), the Agile Manifesto's values and principles form the foundation of the Agile Mindset. It is defined by openness, flexibility, trust, accountability, ownership, and a commitment to continuous improvement. Certain character traits and an atmosphere that fosters autonomy for individuals and groups, manages uncertainty, and prioritises customer value all promote this way of thinking. Being agile is the desired condition instead of just practising agility. (Ozkan and Gok, 2020)

Applying Agile has a direct positive impact on trust, knowledge sharing and collaboration. It also encourages a transparent communication culture (Ram* and Vijayakumar, 2019), where any offence would be surfaced and be directly dealt with. In addition, Ram and Vijayakumar mentioned the effect of applying Agile to create self-managing teams who can take ownership of their work and embrace a trust culture which prevents the need for micromanagement. Therefore, less workplace bullying would be encountered. Trust is an essential part of adopting an Agile mindset. It is presented in the Agile manifesto principle in empowering Self-organizing Teams (Fowler and Highsmith, 2001). Agile organisations should provide teams the necessary trust by empowering them to act without hesitation (Meyer, 2014). This relation was tested later, and a direct link between the growth in trust led to the rise of team effectiveness. (Akkaya and Bagieńska, 2022)

While Agile methodology applied in software development can help deal with uncertainty, it is not directly related to preventing workplace bullying. However, applying Agile principles has a direct effect on reducing workplace bullying. Moreover, with Agile being implemented in many other departments and the new Agile HR, Agile HR can help prevent workplace bullying by fostering a culture of mutual respect, collaboration, accountability, learnability, design work-teams oriented, and practices oriented to empower workers (Junita, 2021). Organisations can create a more collaborative and communicative work environment (Al Jafa, Jihad and Várallyai, 2022), which may help to prevent workplace bullying. Organisations must adopt best practices for preventing workplace bullying, regardless of their project management approach.

The (Al Jafa, Jihad and Várallyai, 2022) study explored the role of HR in the Agile company transition, focusing on the environmental change and how different HRM models can help select the best tools that can benefit the organisation and not harm it.

This study explores the relationship between Agile implementation, the first principle of building trust, and workplace bullying in IT companies. Although no direct studies have been found on this relationship, previous research has investigated the link between workplace bullying and stressful working environments caused by unrealistic deadlines and micromanagement. (Johan Hauge, Skogstad and Einarsen, 2007) Conducted a study on 2539 employees in Norway and found that chances to have workplace bullying are greater in stressful workplaces characterised by damaging approaches to leadership. Another study by (Elsayed-El and Abdelwahid, 2020) discovered a strong positive relationship between authentic leadership behaviours and workplace trust. Moreover, workplace trust and authentic leadership were negatively and significantly correlated with workplace bullying. These findings underscore the negative impact of workplace bullying on employee well-being and productivity. These findings suggest that applying the Agile mindset in companies that embrace building trust is essential in preventing workplace bullying and promoting a healthy and productive work environment. The results of previous research, combined with the lack of direct studies on the relationship between Agile implementation and workplace bullying, highlight the necessity of further research in this area. Such a study can help organisations foster a safe and productive workplace environment.

The study utilises surveys and interviews to provide practical recommendations for organisations. Suggesting that promoting a workplace culture focused on trust and the Agile mindset can prevent workplace bullying and create a healthy work environment for both remote and on-site settings.

1. OBJECTIVES AND HYPOTHESES

1.1. Aims and Questions of The Research

This research investigates the impact of implementing an Agile management mindset on workplace bullying and abuse. The research objectives are to test hypotheses H1, H2, H3, H4, and H5 and to identify the correlation between implementing Agile Management and trust levels within the organisation. The study explores the relationship between Agile's first principle and its impact on building trust in Human Resources to prevent workplace bullying and exploitation. Additionally, the research will investigate whether transitioning to remote work creates new opportunities for workplace bullying that differ from those in traditional office settings and whether remote workers advocate for equal rights with office workers.

The Objectives of The Research

1. To investigate the perceived impact of implementing Agile methodology on employee trust in IT organisations.
2. To examine the relationship between organisational trust levels and workplace bullying and abuse incidences.
3. To evaluate the effectiveness of Agile management in preventing workplace bullying and abuse within IT organisations.
4. To compare and contrast the communication challenges and prevalence of work abuse between remote work and traditional office settings, and to investigate if there are significant differences in the severity of workplace bullying and exploitation among project-based and hourly freelance workers.
5. To identify the factors contributing to lower satisfaction among remote workers with existing labour regulations regarding worker protection, particularly concerning measures aimed at preventing workplace bullying.

Overall objective:

This research will test five hypotheses to investigate the relationship between Agile management implementation, remote work, and workplace bullying and abuse. The research findings will provide insights into ways organisations can adopt Agile management principles to improve IT companies' processes and reduce workplace bullying and abuse.

Based on the objectives of this research, the following research questions were formed:

1. How does the implementation of Agile methodologies within IT organisations impact the levels of trust among employees?
2. What is the association between organisational trust levels and the occurrence of workplace bullying and abuse?
3. To what extent does the adoption of Agile methodologies within IT organisations contribute to the prevention of workplace bullying and abuse?
4. What are the distinct challenges in communication and experiences of work abuse faced by remote workers compared to those in traditional office settings? Additionally, is there a significant difference between project-based and hourly freelance workers' severity of workplace bullying and exploitation?
5. What factors contribute to the lower satisfaction of remote workers with existing labour regulations regarding worker protection, particularly concerning measures aimed at preventing workplace bullying?

1.2. Research Hypotheses

The research began with a literature review that was introduced at the beginning and expanded in the following chapters. The review aimed to identify existing literature relationships studied by other scholars. After conducting the review, a research gap was identified, indicating no other research had been conducted in this area. This supported the novelty of the conducted research. Once five variables were extracted, a set of five hypotheses were formulated. Through this process, certain relationships were discovered and illustrated in Figure 1. After extracting 5 variables, we formulated a set of 6 hypotheses, which is summarised in Figure 2.

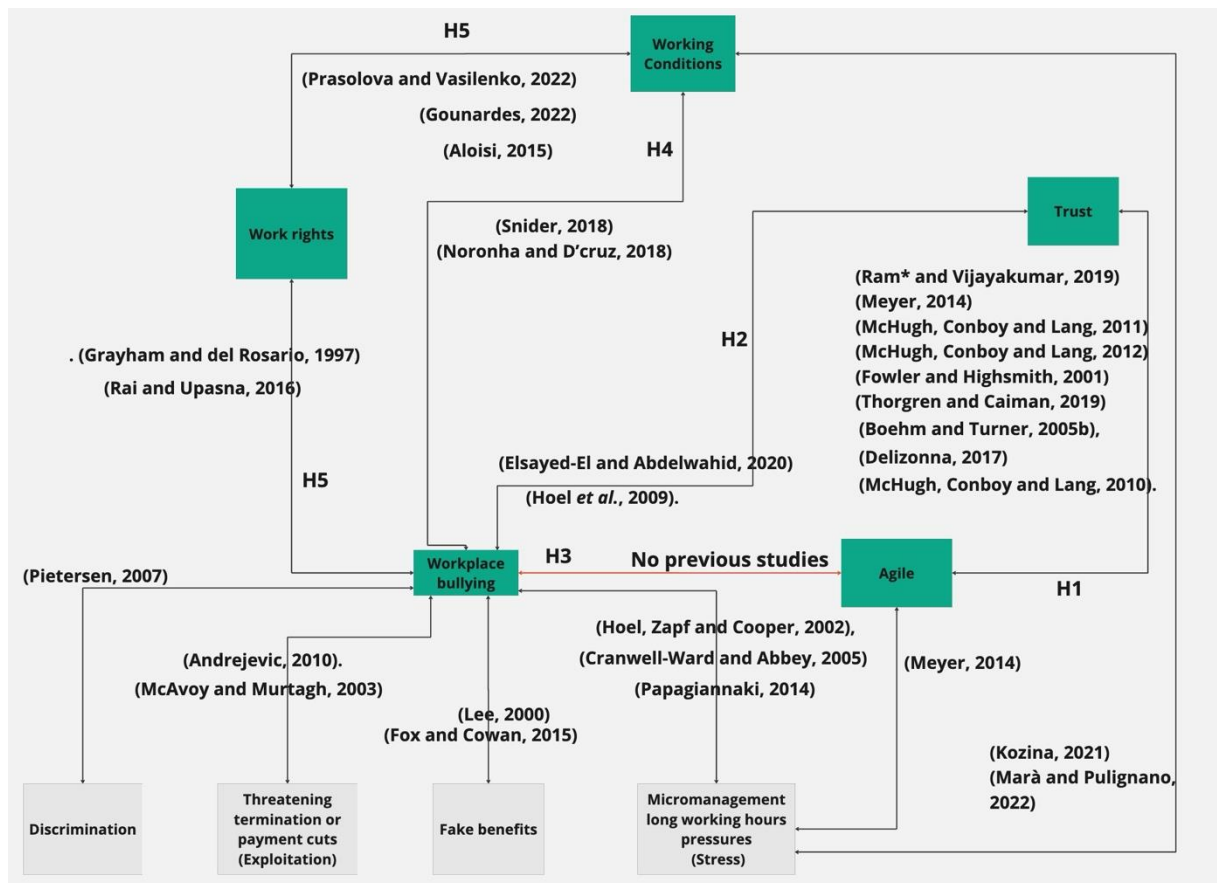


Figure 1 Model created based on literature review

The previous literature review analysis suggests a logical theoretical relationship between workplace bullying and Agile, as mentioned in the literature review. However, with the lack of studies measuring this relationship, this research investigates the impact of implementing Agile management on workplace bullying and abuse. The formulated hypotheses studied in the research using SmartPLS which are shown in Fig.1:

H1: Implementing Agile methodologies in IT organisations will increase employee trust.

H2: Increased organisational trust levels result in lower workplace bullying and abuse incidences.

H3: Implementing Agile methodologies in IT organisations will prevent workplace bullying and abuse.

H4: Remote work poses distinct challenges for communication and work abuse compared to traditional offices, but there's no significant difference in the severity of workplace bullying and exploitation between project-based and hourly freelance workers.

H5: Remote workers report lower satisfaction with existing labour regulations regarding worker protection compared to on-site workers, especially regarding the measures to prevent workplace bullying.

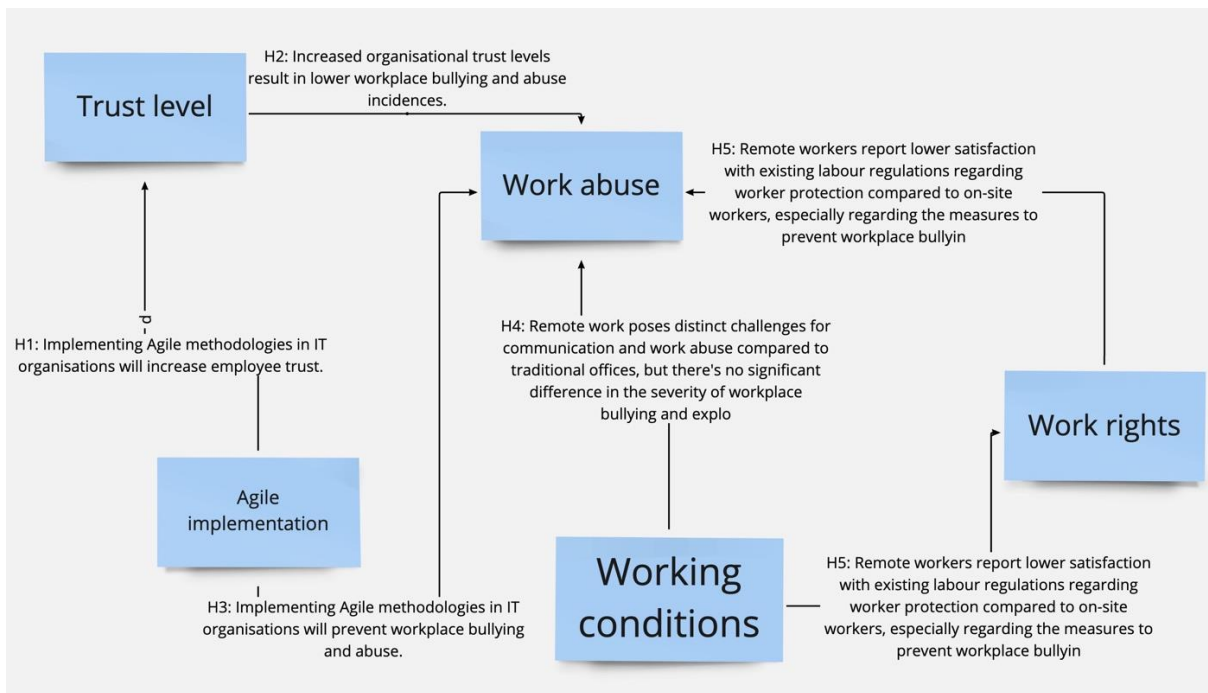


Figure 2: Hypothesis detailed overview

Source: based on Own work

1.3. Research Motivation and Problem Statement

The current research motivation was developed with the aim of positively impacting the issues of workplace bullying and migration. The aim is to make a meaningful difference in the lives of those affected by them by proposing a solution to these challenges.

1.3.1. Workplace Bullying

Workplace bullying and abuse have become a significant concern in the current workplace environment, leading to high employee turnover and mental health problems (HOGH, HOEL and CARNEIRO, 2011; Coetzee and van Dyk, 2018). Implementing Agile can address this by increasing employee trust (Ram* and Vijayakumar, 2019). However, whether Agile management implementation effectively decreases workplace bullying and abuse is unclear. Furthermore, with the increasing prevalence of remote work (Gifford, 2022), there is a need to investigate potential differences in workplace bullying and abuse incidences between remote work and traditional office settings (Rai and Upasna, 2016; Bollestad, Amland and Olsen, 2022). Additionally, remote workers advocate for equal rights as office workers, and legitimising remote work for freelancers can help reduce work abuse by establishing the same standards as traditional office work (Prasolova and Vasilenko, 2022). Therefore, this study aims to investigate the impact of implementing Agile on workplace bullying and abuse and to

examine the potential differences in work abuse incidences between remote work and traditional office settings.

The adoption of Agile management has become increasingly popular in IT organisations. However, implementing an Agile mindset poses challenges, particularly when scaling Agile methodology throughout the organisation (Boehm and Turner, 2005a). One area of concern is the level of employee trust in management and colleagues and how this trust affects workplace bullying and abuse incidents (Elsayed-El and Abdelwahid, 2020). Additionally, transitioning to remote work has highlighted the need to establish equal rights between remote and office workers and establish standards to prevent work abuse in non-traditional work settings (Prasolova and Vasilenko, 2022). Legitimising remote work for freelancers may be one way to address these issues. Therefore, this study aims to investigate the effect of implementing an Agile mindset on employee trust, workplace bullying and abuse incidences, and the impact of remote work on work abuse in IT organisations. The study will also explore the potential benefits of legitimising remote work for freelancers. The traditional management style in IT organisations has been known to cause several problems, including workplace bullying and abuse, which can lead to a lack of trust among employees (Hoel *et al.*, 2009). This lack of trust can also result in challenges with human capital, such as high turnover rates and difficulty in hiring skilled professionals. Additionally, trust plays an essential role in the success of the new shift towards a remote working style in the IT industry. (Qi and Chau, 2013)

This PhD study investigates the potential benefits of implementing Agile in IT organisations to address previously mentioned challenges. The study hypothesises that such an approach would increase employee trust (H1), which, in turn, would lead to lower incidences of workplace bullying and abuse (H2) and an overall decrease in an Agile organisation (H3). Furthermore, as more companies transition to remote work, it is essential to consider the unique opportunities for work abuse that may arise in this setting (H4). Remote workers advocate for equal rights with office workers, and legitimising remote work for freelancers would help reduce work abuse by establishing the same standards as traditional office work (H5).

1.3.2. Migration Issue

Hungary is an attractive nearshore software development destination (Jáki, Molnár and Kádár, 2019), with many international companies establishing their R&D centres in this country (Sass and Szalavetz, 2014). However, Hungary faces human capital challenges, including a lack of skilled professionals and a high cost of hiring foreign talent (Gödri, Soltész and Bodacz-Nagy, 2014). Remote work offers a good solution for highly skilled workers in Hungary. However, better working conditions, rights, and awareness of the importance of workplace culture are

needed to maintain human capital in the country. This study aims to fill the research gap by exploring new concepts from the human capital and outsourcing GVT perspective to overcome the challenges in applying large-scale Agile management in IT companies.

Remote work is a promising solution for various global issues, including youth migration in Hungary. Remote work allows young professionals to stay in their home country while working with companies outside Hungary, avoiding the need for costly foreign hires and preventing a brain drain (Bauer *et al.*, 2016). Moreover, multinational companies require employees with multiple language skills, making remote work an ideal solution to fill the demand (Ammon, 2006; López, Ramos and Torre, 2010). Similarly, remote work can help countries like Syria and Kosovo, where political conflicts and economic crises have resulted in a lack of human capital and high-skilled professionals (Krasniqi and Williams, 2018; Devadas, Elbadawi and Loayza, 2019). These countries can allow highly skilled workers to earn good money and rebuild their economies by enhancing the law of remote freelance work to let them seize opportunities.

In conclusion, remote work is a promising solution for global issues, offering opportunities for young professionals to stay in their countries and preventing brain drain. It also enables countries facing crises to retain high-skilled professionals and rebuild their economies. Additionally, it offers a solution to fill the demand for multiple language speakers, making it an ideal solution for multinational companies. However, bullying exists within organisations that employ Hungarian freelancers, discouraging highly skilled workers from entering the workforce in disturbed countries, which leads people to avoid remote work and migrate. The suggested solution is to apply agile methodologies to reduce workplace bullying. By implementing remote work with agile, trust can be built and bullying reduced.

1.3.3. Problem Statement:

The negative impact of workplace bullying on the trust of IT workers has raised concerns about managing remote workers and freelancers in the IT industry during the pandemic. This issue has become critical as it has discouraged highly skilled workers from entering the workforce in countries with political unrest, leading to a loss of qualified workforce. Therefore, this research aims to identify the best management practices to deal with workplace bullying among remote workers and freelancers in the IT industry. It also aims to explore the effectiveness of agile methodologies in reducing workplace bullying and building trust among remote workers. The ultimate goal is to create a work environment that encourages highly skilled workers to thrive and be productive in the workplace environment.

2. LITERATURE REVIEW

2.1. UNCERTAINTY

The literature review will start following the dissertation logic summarised in the introduction, and then it will dive into more specific details related to the investigated domains.

Uncertainty is a universal challenge that affects various departments in addition to software development, including marketing, finance, human resources, and operations. For instance, marketing teams confront uncertainty regarding customer preferences, competition, market trends, and digital disruption, mainly when promoting new technology products that require developing the product as an exchange good and are affected by environmental uncertainty. Consequently, Agile marketing practices that emphasise customer-centricity, experimentation, data-driven decision-making, and rapid testing are necessary to respond quickly to changes and opportunities. (Fink *et al.*, 2008; Katare, 2022)

Uncertainty is an inevitable challenge in software development that can either be a threat or an opportunity. Due to the constantly changing and highly competitive market, complete control over uncertainty seems impossible. In this context, it is essential to understand the sources and types of uncertainty in software development and the techniques to manage them effectively.

2.1.1. Uncertainty in Software Development and Beyond

Managing uncertainty in software development is a critical aspect that can have positive and negative impacts. Achieving complete control over uncertainty is deemed unattainable (Dönmez and Grote, 2018a) due to the dynamic nature of IT business requirements in a highly competitive market. Uncertainty is pervasive in the work of software development teams and has significant implications for project performance and decision-making (Na *et al.*, 2004). It can originate from multiple sources and disrupt all software development cycles, challenging its management (Stamelos and Angelis, 2001). Moreover, it can lead to the development of unnecessary features, reduced product quality, delayed delivery time, or customer dissatisfaction, which can be costly and detrimental to project success (Ibrahim *et al.*, 2009). Therefore, software development teams must pay close attention to uncertainty management.

Effective uncertainty management in software development is essential to mitigate potential risks and ensure project success (MacCormack and Verganti, 2003). The repercussions of not managing uncertainty can result in significant schedule delays, cost overruns (Bo Yang, Huajun Hu and Lixin Jia, 2008), poor quality and project planning (Jorgensen, 2005), and stakeholder dissatisfaction (Marinho *et al.*, 2014). Hence, proactive and collaborative uncertainty

management is crucial for project managers to evaluate project risks before designing the execution process.

Software development is particularly uncertain by nature due to complex requirements, evolving technology, changing user needs, and external factors such as market trends, regulatory changes, and socio-political events. As such, Agile methodologies have emerged as a popular approach to managing uncertainty in software development. (Harris, Collins and Hevner, 2009; Mellis, Loebbecke and Baskerville, 2013)

Other teams, like finance teams, also experience uncertainty when budgeting, forecasting, managing risks, and ensuring compliance. Agile financial practices such as rolling forecasts, adaptive budgeting, scenario planning, and Agile governance are vital to enhancing flexibility and responsiveness to business needs. (Rigotti and Shannon, 2005)

Moreover, human resources teams encounter uncertainty in talent acquisition, retention, development, and engagement and can thus utilise Agile HR practices to attract, develop, and retain Agile-minded professionals. These practices include talent branding, Agile performance management, continuous learning, and employee empowerment. (Kwong *et al.*, 2021)

2.1.2. Types of Uncertainty

Various types of uncertainty exist in software development, including program behaviour, undefined variables, values or names, and uncertain program defects. Some defects are unavoidable and require immediate attention, while others are minor and can be overlooked (Ubayashi, Kamei and Sato, 2019). Neglecting uncertainty can pose a significant risk and even result in project failure. So managers must identify its sources (Marinho *et al.*, 2014) and adopt effective management techniques. These techniques include investigating uncertain issues to reduce or shift uncertainty and deliberately disregarding or increasing uncertainty. (Grote, 2015)

Uncertainty can be a double-edged sword for organisational agility. While it can present opportunities for innovation, experimentation, and learning, it can also threaten stability, predictability, and control (Dönmez and Grote, 2018c).

2.1.3. Methods Suitable for Dealing with Uncertainty

Managing uncertainty is a critical aspect of business operations that requires effective collaboration among team members and adopting uncertainty-focused approaches, such as Agile or MCDM (Perminova, Gustafsson and Wikström, 2008). An Agile mindset can be employed to mitigate the risks associated with uncertainty. However, it is essential to note that

uncertainty encompasses threats and opportunities, and the correct mindset is necessary to capitalise on them. Despite its dual nature, uncertainty is often portrayed as a negative aspect of projects in the literature. However, the success or failure of projects is inevitably related to uncertainty. Therefore, using different approaches to managing uncertainty is critical. Nonetheless, recognising the positive aspects of uncertainty is crucial, as it can encourage innovation (Jalonen, 2011; Marinho *et al.*, 2014). Therefore, organisations must balance the benefits and risks of uncertainty and foster an Agile culture that embraces uncertainty as a natural element of business (Dönmez and Grote, 2018c).

In a fast-changing market, economic profits can only be realised in the presence of existing uncertainty, as noted by (Hicks, 1931). Nonetheless, high uncertainty must be addressed in software and product innovation projects. (Paixao and Souza, 2015).

MCDM approaches have been proposed to identify the best option from a set of choices. However, "alternative options" implies a clear set of options, which may not be applicable in ambiguous environments where both options and tasks are unclear.

Uncertainty is pervasive in software development and other fields, and MCDM methods have been applied to improve decision-making. However, these methods are often subject to limitations that impede their efficacy in certain situations. (Wang and Wei, 2010) Suggested that some MCDM techniques are unreliable in addressing uncertain data, while others have yet to be tested. Additionally, uncertainty in input and output data from decision-making units can lead to inefficiencies and meaningless efficiency scores. (Tseng, 2011; Tacnet *et al.*, 2017) suggested that some MCDM techniques can handle imprecision and vagueness through fuzzy sets and decision-making methods such as fuzzy methods, possibility and belief function theories, and information fusion.

An experiment conducted by (Al Jafa, 2020) proposed an integrated Analytic Hierarchy Process (AHP) and Quality Function Deployment (QFD) model to assist decision-makers in solving complex multi-criteria problems shown in Figure 3. The combination of AHP and QFD was effective, as AHP provided a comprehensive overview of technical parameters and improvement areas, while QFD considered stakeholders' needs. The model offers valuable outcomes, including creating a specialised ERP software model and helping companies select the best software that meets their needs. However, the method is time-consuming and requires a large team.

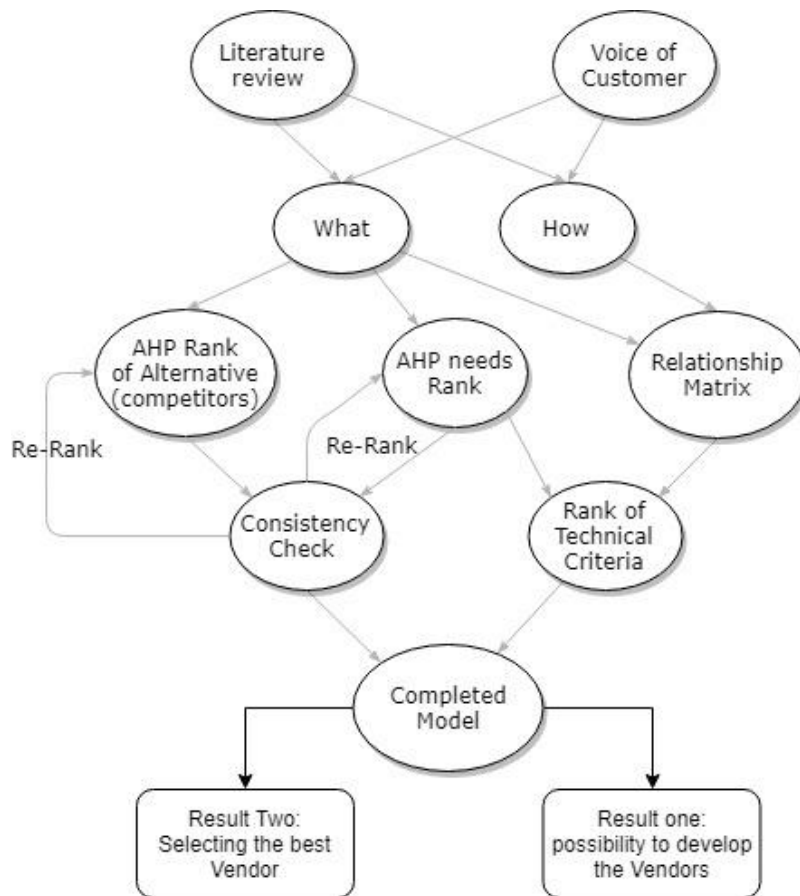


Figure 3: The process of Integrated QFD and AHP model

Source: based on Own work

In selecting the best CRM software, a comprehensive review analysed six vendors using the AHP and QFD methods to consider stakeholders' needs and break down the complex decision into smaller comparisons, respectively. The decision-making process's quality was improved by measuring the consistency of ranked elements and defining the most critical technical parameters. However, the process was complex and time-consuming, limiting the method's applicability.

Other MCDM methods were examined and compared with Agile in Table 1, Agile methodology has both advantages and disadvantages. It offers flexibility, encourages communication and collaboration, and leads to faster delivery times, but it may not be suitable for large teams and specific product domains. Therefore, other concepts like SAFE were developed.

Multiple Criteria Decision Making (MCDM) is a useful approach for complex decision-making, but it requires significant resources and time, can be complex and subjective depending on the criteria used, and too many MCDMs can make it difficult to select the best approach. Therefore, evaluating the pros and cons of MCDM is important before applying it to a specific situation.

Table 1: Comparison between Agile and MCDM methods dealing with uncertainty

	Advantages	Disadvantages
Agile	Emphasizes flexibility and adaptability. (Serrador and Pinto, 2015)	It can be difficult to implement in large teams. (Zia, Arshad and Mahmood, 2018)
	Encourages frequent communication and collaboration. (Pikkarainen <i>et al.</i> , 2008; Maruping, Venkatesh and Agarwal, 2009)	Lack of suitability for specific product domains. (Solinski and Petersen, 2016)
	Agile practices can lead to faster delivery times. (Kaur, Khurana and Manisha, 2021)	Requires skilled and experienced team members. (Omar <i>et al.</i> , 2018)
	Allows for continuous feedback and improvement. (L. Williams and Cockburn, 2003; Dingsoyr, 2021)	Lack of predictability can be problematic. (Popli and Chauahn, 2015)
	Helps to manage risks effectively. (Walczak and Kuchta, 2013; Serrador and Pinto, 2015)	
Multiple Criteria Decision Making (MCDM)	Can be applied to different fields and departments. (Taherdoost and Madanchian, 2023)	May not work well in highly uncertain environments. (Temur and Bolat, 2018)
	Allows for the consideration of multiple factors. (Kumar <i>et al.</i> , 2017; Bhole, 2018)	Requires significant resources and time. (Neeraj, Goraya and Singh, 2021)
	Provides a systematic approach to decision-making. (Caterino <i>et al.</i> , 2009; Liou and Tzeng, 2012)	Can be complex and challenging to understand. (Singh, 2014; Neeraj, Goraya and Singh, 2021)
	Breakdown the complex decision into smaller comparisons. (al jafa, 2020b)	Can be subjective depending on the criteria used (Dönmez and Grote, 2018c)
		Too many MCDM make it hard to select the best useful in companies (Bhole, 2018; Asadabadi, Chang and Saberi, 2019)

Source: based on Own work

Table 1 shows a comparison between Agile and MCDM methods together with each one advantages and disadvantages; MCDM methods are beneficial for managing uncertainty in software development and other fields. However, careful consideration is required when selecting appropriate methods, expertise, and criteria to avoid failures. MCDM methods are

unsuitable for dealing with unclear and ambiguous requirements and necessitate substantial preparation time and effort. An integrated approach, such as the proposed model, presents a solution for handling complex decision-making problems involving multi-criteria.

The present study focuses on improving practices for managing uncertainty, as discussed by (Dönmez and Grote, 2018c). The authors suggest that awareness of the nature of uncertainty allows teams to respond adequately to threats or opportunities. Agile methodology is recommended for managing threats while remaining open to new opportunities. Organisations must align their strategy, structure, processes, and people with Agile principles and practices to foster agility. This requires a mindset shift from command and control to collaboration and empowerment and from functional silos to cross-functional teams (Ozkan and Gok, 2020). This way, organisational agility can help achieve goals in a volatile, uncertain, complex, and ambiguous (VUCA) world, enabling faster responses, quicker learning, and better innovation (Worley and Jules, 2020).

Agile teams employ various practices, including user stories, sprint planning, daily stand-ups, backlog refinement, retrospective, and continuous integration/delivery, to manage uncertainty and reduce risks (Boehm and Turner, 2003; Albadarneh, Albadarneh and Qusef, 2015). Agile software development is an iterative approach that emphasises collaboration between cross-functional teams and continuous improvement (Thomas, 2006). However, multiple criteria decision-making (MCDM) may not be commonly used in Agile software development. Some MCDM methods have been tested, revealing their relativity, subjectivity, and imprecision (Kaur, Singh and Kaur, 2016). Given Agile methodologies' focus on flexibility, adaptability, and responsiveness to changing requirements, applying MCDM methods may prove challenging.

In conclusion, Agile software development's flexibility and adaptability make it challenging to apply MCDM techniques, although MCDM methods are not commonly used in Agile software development.

2.2. Agile Management

Agile techniques are a wonderful blend of beneficial and exceedingly harmful practices, and this mainly depends on the type of organisation processes. One passage in Agile literature might contain a splendid helpful vision. In another paragraph, one might discover an innocuous maxim; however, some fantastic pieces of advice or tools might harm the product development processes. Specialists have greatly dismissed applying Agile methods, for example, Extreme

Programming, Scrum, Lean Software, and Crystal as they are. Instead, they made up their mix of practices, dismissing unsuitable ones.

This chapter introduces an exhaustive definition and appraisal of the fundamental Agile ideas and a comprehensive introduction of the critical techniques and strategies, classifying what is helpful, what is not worthy of wasting time on it, and what might be harmful— "the good, the hype and the ugly". Since empirical software engineering, the objective study of software processes is still a science in progress.

2.2.1. Agile Trends

Agile ideas have recently become the new trend for companies, professionals, and technical journals, a tool to attract the best developers. (Altameem, 2015)

Starting with the most significant international companies like Ericsson, who have introduced Agile in their processes as part of the continuous push towards higher flexibility and shorter cycle time to all employees in development and other parts of the organization (Paasivaara *et al.*, 2018). This new transformation has been implemented and adopted in many other large organisations like Intel, Dell, IrishBank, TechCo, Accenture, Mosaic, SemiCo, ConsultingCo, and many others, which adopted the Large-Scale Agile Frameworks with colossal success doing it. (Conboy and Carroll, 2019)

Agile and Lean Concepts in IT Services:

Other trends shows that organizations started using Agile with tools presented in other practices like Lean manufacturing. In Agile organization where there is some ambiguity, finding solutions to prevent errors and visualise processes is essential. Some Lean tools can cover this and help improve work processes, such as using Value Stream Mapping for visualisation and clarifying ambiguous processes. It is also essential to determine the risks associated with each process using other tools like FMEA (Failure mode and effects analysis).

Agile can prevail with the help of the Lean management approach. Lean has been established with main principles such as eliminating the seven wastes found in processes, Transportation, waiting, over-processing, overproduction and reducing defects and storage costs, and has been adopted in the manufacturing processes successfully. Moreover, lean management started to immigrate into the services organisation with its tools and concept. It has been adapted successfully in the healthcare sector and helped identify the problems and implement solutions to improve the provided service.

Companies can use these tools and methods to reduce costs and increase flexibility by transforming the structure of an IT service company from the standard structure into Agile management and by using Outsourcing. The Global virtual team structures and lean management tools provide opportunities to use a lower-cost workforce with higher qualifications, especially when we face a higher percentage of highly qualified experts migrating each year from the country.

If we think about the Agile structure that works in flexible environments and rapid decision-making, the lean management concept similarly manages manufacturing systems. We can receive some tools of lean management that are implemented in services like “reducing the costs, eliminating the waste and the ability to prevent the potential errors using the Jidoka, just in time and the pull system. (Nielsen *et al.*, 2019)

A similar methodology has been tested in health care services and helped document the processes and find the problems with possible opportunities for improving the process.(Simon and Canacari, 2012)

2.2.2. Reviewing Previous Agile Literature

Software development studies are still in progress and evolving over the years. Many previous books illustrated the Agile development process, such as Boehm and Turner's Balancing Agility and Discipline book. They compared the traditional plan-driven approach with the Agile approach. Considered Agile as a counterpart to discipline, it works with discipline to prevent bureaucracy and reduce the planning time as it is considered a waste. This can happen in the software development market because its environment is affected by the fast growth of complexity and size, fast-changing of requirements, the high competitiveness with limited time frames, and the importance of usability and quality of the new products. (Barry and Richard, 2003)

Another book, "The Lean Startup" by Eric Ries, offered a novel strategy for start-up companies to construct and market their products through continuous innovation and validated learning while minimising waste and adapting to dynamic conditions. According to Ries, a start-up is an entity committed to producing a novel offering amid significant uncertainty. The book emphasises the significance of creating a minimum viable product (MVP) to assess and verify assumptions before scaling. The lean start-up approach is grounded on the principles of Agile implementation, which incorporates a versatile and iterative process for product development. This technique aims to increase the chances of success by rapidly adjusting to new information and feedback while minimising expenditures. By adopting the lean start-up method, businesses

can optimise their decision-making process and create successful products that meet customers' needs and expectations. (Kolodziej, 2001)

"Agile People: A Radical Approach for HR & Managers" (Thoren, 2017) advocates for companies to embrace a customer-focused mindset inspired by modern tech companies to enhance the productivity of their workforce and bolster their organisations. Thoren posits that conventional HR management practices emphasise compliance and control, undermining employee engagement and independence. By integrating Agile methodologies, companies can foster a culture of agility and resilience, enabling them to easily navigate the constantly evolving business landscape.

Thoren's approach requires a shift in HR management philosophy towards a customer-centric mindset, which is critical for employee empowerment and organisational success. Traditional HR methods prioritising control and conformity should be abandoned in favour of more Agile practices that encourage employee autonomy and engagement. Companies should aim to cultivate a culture of agility and resilience to stay competitive in today's fast-paced business environment.

In conclusion, Pia-Maria Thoren's "Agile People: A Radical Approach for HR & Managers" advocates adopting Agile methodologies to promote employee engagement, independence, and organisational resilience. Companies can create a more Agile and successful workforce by prioritising a customer-centric mindset and moving away from conventional HR practices that emphasise control and compliance.

(Barry and Richard, 2003) spoke about the history of traditional planning way, which is called Waterfall in software development, and how it started in the 1970s in military sites and other companies such as Siemens, Hitachi, and others. It was used to reduce the chaos and organise the development of missiles. However, it contained much documentation for all development steps, and only moving from one phase to another occurred after verification of the previous one. These steps are initiation and Requirement gathering and documenting, analysing, designing the system architecture, developing and coding the software in the Implementation phase, testing the deliveries and debugging the defects in verification, and finally, the maintenance phase of complete systems. These phases have also been improved, allowing iterations and incremental development. However, extensive documentation is still required.

Even though Agile is dominant in all practices, the waterfall or plan-driven approach is still a valuable asset that companies use in some scenarios when repeatability is needed. Standardising and documenting requirements becomes a beneficial approach that reduces costs, for example,

when a company opens up eCommerce stores worldwide using its collected experiences and documented methods in a sample of countries.

2.2.3. Agile Concepts and Methods

Some of the most important concepts they mentioned about Agile methods are embracing the change, iterative delivering cycle, simple design YAGNI (you are not going to need it), retrospective, and the importance of testing. (Highsmith and Cockburn, 2001; Williams, 2012) (Meyer, 2014) defined Agile methods as new processes requiring much less documentation, time, and more stakeholders like customer involvement. It has been described as a unification process for an organisation's chaotic system, which combines chaos and order and cannot be managed by traditional linear methods.

Scrum: it works on aligning the team and removing obstacles for them, every day the team meet up in the morning to answer three basic questions that track the work for each developer; these questions are:

1. What did you do since the last scrum meeting?
2. Do you have any roadblocks?
3. What will be your subsequent step/work until the next meeting?

A sprint is a significant part of this method; it is organised by selecting prioritised tasks from the backlog and moving it to an arranged sprint. The team members will pick the tasks from the backlog according to their perspective, instead of the traditional way where a manager will assign the tasks for individuals; a pull system is used here, which empowers teams and improves their commitments to the given estimation of each task. The team agrees to finalise selected features or tasks within the sprint iteration, usually two weeks. (Srivastava, Bhardwaj and Saraswat, 2017)

Extreme programming (XP): it includes the pair programming concept and contains a set of rules and practices that are a framework to follow in work conditions, getting feedback, continuous improvement and code understanding, all combined in twelve practices. (*Extreme Programming (XP): Values, Principles, and Practices* / AltexSoft, 2021)

The Extreme Programming (XP) methodology incorporates several practices that can be grouped into four categories. The first group pertains to feedback: Test-Driven Development, The Planning Game, On-site Customer, and Pair Programming. The second category is characterised by continual processes and encompasses Continuous Integration, Code Refactoring, and Small Releases. The third group concerns code understanding, which includes Simple Design, Collective Code Ownership, System Metaphors, and Coding Standards. Finally,

the fourth category relates to work conditions and is defined by a 40-Hour Week. These XP practices are intended to optimise software development processes and enhance the quality of the final product. (Lindstrom and Jeffries, 2004)

Extreme Programming (XP) is a software development methodology with several advantages and disadvantages. One of the benefits of using XP is that it provides a stable system by utilising continuous integration, testing, and deployment. XP promotes writing clear code, leading to improved maintainability and faster time-to-market for a minimum viable product (MVP). Furthermore, XP reduces the time spent on documentation by using user stories and acceptance tests. Additionally, XP emphasises team collaboration, high visibility, and customer satisfaction. Despite these benefits, XP also has several disadvantages. If incorrectly implemented, it may result in unclear estimates and waste time.

Furthermore, it may require a significant cultural change to adopt XP fully. Pair programming may take longer, and collocated teams are necessary for the success of XP. Finally, XP may be stressful due to its emphasis on transparency and continuous feedback. Improving software development methods, such as XP, is crucial to meet the demands of the modern technological landscape. (Beck, 1999)

Adaptive Software Development (ASD) allows the teams to quickly adapt to market and requirements changes following feature-based planning and iterations, using a three-phase process: speculate, collaborate, and learn. This method can show how Agile software development practices can be used to develop an adaptable capability. (Meso and Jain, 2006)

Crystal – it is a method that concentrates on people and their interactions. It illustrates various levels of “ceremony” according to the team and project size. (Williams, 2010)

Feature-driven development (FDD) – An easy-going iterative process that sets up feature lists and the whole object architecture, then focuses on delivering individual feature results very efficiently.

Many researchers set comparisons in detail to determine when each approach is best to follow and which is the best. Scrum and XP are the most common practices (Atawneh, 2019). When choosing the best method, checking the main project characteristics is essential. Such characteristics can include Application, Management, Technical and Personnel characteristics. (Meyer, 2014) concluded that Agile management was very efficient in small to medium-development teams where customers and users are available for collaboration. Also, tests were developed and written before and while coding.

Furthermore, there was a high collaboration between developers, who were often very efficient in solving problems. Finally, when the environment is fast changing in ambiguous requirements, on the other hand, a plan-driven approach is more efficient in large complex systems where requirements are stable and predictable.

Five Critical Project Factors must be considered which are:

- Size – How big is the project? How big is the dev team?
- Criticality – What is the risk of underperforming?
- Dynamism – Are the requirements stable or dynamic?
- Culture – Does the dev team thrive on chaos or order?
- Personnel – What % of the dev team are experts?

2.2.4. Agile Values and Characteristics

Since the Agile concept is not just software techniques, it is an ideology or a movement into accepting changes. Its central values as presented by (Meyer, 2014) are:

1. Reconsider the developer's manager and customers' roles

Agile methods transfer many of the manager's duties to the team, such as assigning tasks, defining tasks, and rejecting rigid top-down hierarchy. The redefinition of roles also affects customers, who are not passive recipients of the software but active participants in the Agile world. Customers' relationships have also been changed, so they will contribute and participate in the development process instead of just receiving the products.

2. No extensive planning steps “Big Upfront.”

Rejecting upfront planning since users' requirements still need to be clarified when initiating the project causes users not to know what they want. Moreover, most of the requirements specified at the beginning of the product will be changed throughout the project. Lean software deals with unused features and functions in the software as "wastes". It minimised waste within the development process, such as unused plans and built features, and minimised the work in progress.

Constant customer interactions are recommended by Agile methods instead of requirement documents and extensive upfront planning. Agile considers building upfront designs a waste of time and effort and should be avoided and suggest a design improvement process throughout the project known as refactoring.

3. Iterative development.

Agile development is a time-boxed and iterative development. It follows the same concepts as Scrum sprints. In each iteration beginning, a set of functions is prioritised and selected to be implemented based on its Return on Investment (ROI).

4. Functionalities are limited and negotiated with customers.

In Agile methodology and product development, implementing functionalities is a delicate and intricate task that necessitates careful consideration of customer requirements and preferences. The Agile literature recognises and deplors traditional projects' endeavours to create ineffectual program features that cater to only a limited number of customers. Instead, it emphasises the need to restrict functionalities to the most significant ones, evaluated by their business value, i.e., return on investment (ROI).

The selection of functionalities for each iteration is a product of negotiation with the customers, performed during the iteration and not beforehand. It is worth noting that the Agile approach posits that due to the inability to determine comprehensive prerequisites in advance, committing to both functionality and delivery time is not practical. Suppose only some of the functionalities intended for an iteration can be achieved. In that case, the Agile methodology emphasises the significance of those functions that would provide the most value to the business and the customer.

5. Focus on quality, understood as achieved through testing.

The Agile methodology espouses the value of prioritising quality, which is construed as being attained through continuous testing. As such, it is imperative to augment the current understanding of quality by incorporating a series of inquiries to enhance the accuracy of the estimated arrival time. The Agile philosophy deprecates the practice of persisting with developing functionality, although the code already constructed merely fulfils specific testing criteria. Regression tests, which refer to assessments that need to be fulfilled, have long been acknowledged and implemented. Nonetheless, the Agile framework confers a central role in regression testing within the developmental process.

Agile methodology has five fundamental components that define the core Characteristics: values, principles, roles, practices, and artifacts, which were elaborated extensively by many scholars like (Meyer, 2014). The values are the guiding beliefs that underpin the Agile framework. The principles consist of core rules that define the organisation and technical aspects of Agile development. The roles describe the responsibilities and privileges of the different participants in the Agile process. The practices encompass the specific activities performed by Agile teams, and the artifacts are the virtual and physical tools used to support these practices. The following chapters will describe these five components in detail.

2.2.5. Principles and Roles of Agile

The (Meyer, 2014) Principles of Agile outlines several organisational and technical principles for Agile software development. These principles include putting the customer at the centre, allowing the team to self-organize, and working sustainably. Other development principles include developing minimal software by producing minimal functionality, only developing requested products, and only developing code and tests. In addition, accepting change, developing iteratively, and producing frequent working iterations while freezing requirements during iterations. The final principle is treating tests as a critical resource by only starting new development once all tests pass and testing first, and expressing requirements through scenarios.

Technical Principles: The technical principles of Agile are based on an iterative development process (*Agile Manifesto*, 2001). Each iteration is short and results in a working software release. During each iteration, functionality is frozen, as introduced by Scrum. If new functions are discovered during development, they are postponed to the preparation of the next iteration. This methodology is not only limited to software development but also extends to other departments that work with ambiguous requirements.

In addition, the primacy of tests embodies Agile's focus on quality. New development can commence only once all current tests have passed. This principle reflects a strict policy of quality and a refusal to compromise on bug-fixing. Extreme Programming introduced the Test First principle, which dictates that no code may be written unless there is already a test for it. This principle can be applied differently in other departments, such as handling defects.

The technical principles of Agile emphasise the use of scenarios to define the functionality of a system. A scenario is a depiction of a user's interaction with the system. It can be obtained from customers to indicate the essential properties of the system's functionality, as seen from the user's perspective. Although the term "scenario" is not commonly used in Agile, it covers similar variants, such as use cases and user stories that differ in granularity level. In contrast to requirements, a scenario is just an example and cannot claim to be complete.

Unlike traditional software development, Agile development does not collect requirements at the beginning of the project. Instead, requirements are collected throughout the project. Scenarios, which can be used in other departments such as marketing, are directly obtained from customers when collecting their requirements. (Meyer, 2014)

Agile Roles: Agile methods define different roles in a team, such as the Team, Product Owner, Scrum Master, and Customer. In Agile, a team is a self-organising group that includes

developers and other individuals, including customer representatives, responsible for assigning development tasks to individual members. Agile has introduced new roles that assume some of the traditional manager responsibilities. The product owner is responsible for defining the product's properties under development, including the right to change those properties, except during a sprint, which is a development iteration. The Agile methodology defines a unique role called a Scrum Master, who ensures that the team adheres to Agile principles while protecting the team from internal and external distractions. However, some companies try to skip this position, and it is found to be not fully recognised and appreciated by many companies. This can be risky and cause project failure (Ereiz and Music, 2019). Not having a scrum master can lead to a lack of guidance and support for the team. Finally, the customer is a critical component of the Agile process, as their input and feedback are essential for determining the product's success.

2.2.6. Agile Key Practices

Implementing Agile in organisations has led to the adoption of various practices in both the organisational and technical domains. The organisational practices include daily meetings, planning games such as planning poker, continuous integration, retrospective analysis, and shared code ownership. On the other hand, technical practices encompass test-driven development, refactoring, pair programming, the principle of the most straightforward solution that can work, and the use of coding standards.

These practices can be changed according to the organization's needs, as there is considerable freedom in shaping the organization's best approach. (Krzanik *et al.*, 2010)

a- Day-to-Day Organizational Practices in the Era of Remote Work

Agile methods advocate frequent face-to-face interaction among team members, and Scrum mandates a daily meeting, known as the "daily Scrum," at the start of each working day. The meeting, which typically lasts for 15 minutes and involves a group of a dozen or two people, has a specific scope that is limited to three questions. These questions include "What did I do on the previous working day?", "What do I plan to do today?" and "What impediments am I facing?". The resolution of significant impediments must take place outside of the meeting. The daily meeting fosters team cohesion, provides visibility on individual activities and enables early detection of potential issues.

Transitioning to remote work may necessitate alterations in how teams operate. A study by (Deshpande *et al.*, 2016) revealed that virtual and co-located teams experience significant differences in the use of virtual artifacts, information flow, and reliance on collaborative

platforms. Similarly, (Sepulveda, 2003) work indicates that building and maintaining trust is the most challenging aspect of team dynamics for virtual teams.

Effective communication is a critical success factor for Agile processes, and remote environments can pose a risk to communication efficacy, according to (Asfaw *et al.*, 2022). Companies can mitigate the risk of communication breakdowns in remote settings by leveraging various tools such as video conferencing, chat, and project management software.

Software development projects often face challenges in planning, particularly in accurately estimating delivery times and functionality. This necessitates the adoption of Agile methodologies to navigate the complexities of a globalized digital world.

Agile methodologies propose various techniques to overcome these challenges, such as the "planning game" in Extreme Programming and the "planning poker" in Scrum. These group estimation techniques promote initial independent estimates from participants, peer reviews of those estimates, and iterative estimation processes until a consensus is reached.

Agile methodologies aim to avoid micromanagement and stress related to deadlines. Instead, effective time management is encouraged. According to (Wijnands and van Dijk, 2007; Moore and Tenney, 2012), time pressure can influence team communication and best practices. Additionally, setting realistic and wise deadlines is essential for maximizing productivity and achieving project success. (Huck-Fries *et al.*, 2020) found that Agile practices can reduce work overload and promote project success in information systems development. Additionally, the research highlights the crucial role of team leads or SCRUM Masters in managing time pressure.

The strategies employed in Agile planning and time management are integral to overcoming challenges and achieving success in software development. Global virtual teams (GVTs) emerge as robust and Agile structures for organising work in global locations. These teams bring together individuals who can only sometimes collaborate, addressing challenges in remote working.

Organizational agility plays a pivotal role in a company's ability to adapt swiftly to changes in the market. As highlighted by (Ebrahim, Ahmed and Taha, 2009), a high degree of organizational agility enables successful reactions to new competitors, industry-changing technologies, and sudden shifts in market conditions. Companies seeking cost efficiencies often turn to GVTs and outsourcing, creating flexibility and innovative solutions for complex projects. This approach aligns with the principles of Agile methodologies, emphasizing adaptability and efficiency in a globalized landscape. The organizational agility facilitated by

Global Virtual Teams is complementary to Agile methodologies, providing adaptive solutions for dynamic market conditions.

In modern development practices, continuous integration is a fundamental principle adopted by Agile methodologies. Frequent integration at intervals not exceeding a few weeks is advocated, with some proposing integration multiple times daily. Additionally, Agile methodologies emphasize retrospectives after each development iteration. This practice allows teams to reflect on experiences and lessons learned, enhancing the overall development process. Shared code ownership is promoted, preventing undue dependence on individuals and avoiding territorial battles during changes or new developments spanning multiple system parts.

Incentives calculated to encourage team velocity and task completion further contribute to Agile development practices. The personal stake that all team members have in the product fosters a collaborative and efficient development environment. Agile development practices, focusing on continuous integration and collaborative ownership, contribute to a dynamic and productive software development process.

In conclusion, Agile strategies offer a comprehensive framework for success in software development challenges globally. From effective planning and time management to the utilization of Global Virtual Teams and embracing continuous integration, Agile methodologies emphasize adaptability, efficiency, and collaboration as essential elements in achieving project success. The interconnectedness of these strategies emphasizes the importance of a cohesive approach to software development.

Agile Technical Practices: Agile technical practices encompass a range of software development techniques aimed at improving efficiency and productivity. These practices include test-driven development, refactoring, pair programming, and coding standards. (Beck and Andres, 2004; Müller, 2004)

Test-driven development involves writing tests corresponding to new functionality, fixing the program until it passes the test, and performing code examination and refactoring. This iterative process is central to software development in Extreme Programming.

Refactoring, on the other hand, is the Agile response to Big Upfront Design. It involves critically examining a design or implementation, making necessary changes to improve consistency, connecting with test-driven development, and maintaining a clean design. (Krzanik *et al.*, 2010)

Pair programming is a practice where two developers work together, sharing a workstation and taking turns controlling the keyboard and mouse. The pilot-and-navigator goal is to catch

possible mistakes at the source, with the pilot explaining their thinking aloud to identify and correct errors. (Müller, 2004)

Using the most straightforward solution that can work is another practice popularised by Extreme Programming. It advocates for minimalistic principles that produce only the product requested without including work intended to make the solution more extendible or reusable, as such work is viewed as illusory in the Agile view. (Beck and Andres, 2004)

Finally, Agile also promotes using coding standards and defined style rules to ensure that all code produced by the team is consistent and of high quality.

Agile Artifacts: Agile methodologies rely on various supporting tools, including virtual and material artifacts. Virtual artifacts include use cases and user stories, which describe the desired functionality from the end-user perspective, and burndown charts, which track the progress of tasks over time. Material artifacts include story cards to capture user stories and their details and storyboards used to visualise the user interface and interactions. Additionally, open rooms serve as a physical space for team collaboration and communication. Employing these Agile artifacts can greatly enhance project outcomes and facilitate effective teamwork.

Virtual Artifacts: User cases, particularly user stories: Virtual artifacts, such as user cases and user stories, illustrate users' interactions with a system. Use cases were popularised before the Agile movement by (Jacobson, Ivar; Christerson, Magnus; Jonsson, and Patrik; Overgaard, 1992) based on book and user stories, which are now frequently used in Agile development, differ in their level of granularity. The difference is in granularity. A user story is a smaller unit of functionality expected by users.

The burndown chart measures a project's progress and displays the velocity at which it "burns down" the items on its task list over time, as shown in the example in Figure 4 (Vajda and Mureş, 2009). If the task list is predetermined for the iteration and completed tasks are not reopened, the curve on the chart will not increase.

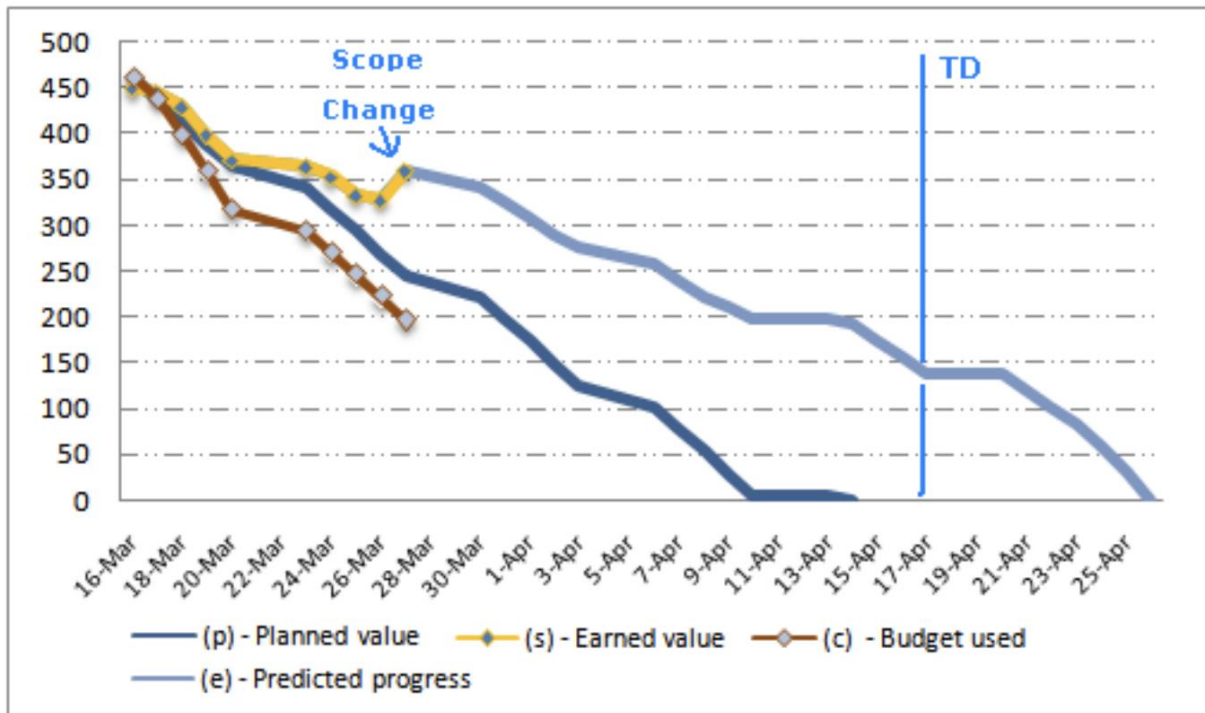


Figure 4: Burndown Chart

Source: (Vajda and Mureş, 2009)

The velocity, denoting the total number of tasks completed, is represented by the blue line, which signifies the constant-velocity line. If the burndown chart falls below this line, the project is deemed to be advancing more rapidly than initially projected; conversely, if the chart is above the line, it progresses at a slower rate. Maintaining the burndown chart is a mechanism to apprise the team of its advancement and a warning when tasks are not being discharged expeditiously enough. By employing the burndown chart, teams can identify when they are underperforming and make any necessary adjustments to ensure timely project completion.

Material Artifacts: The remaining artifacts are physical objects that represent tangible project-related information. One such artifact is the story card, a paper card utilised to document a user's story. These cards are designed to be affixed to a giant storyboard that can accommodate multiple cards. The team can then arrange the cards into different categories throughout the project. (Meyer, 2014)

The storyboard is often converted into a task board, used with the burndown chart to monitor the project's progress. The task board employs notes to denote individual tasks that need to be completed. As work is completed, the team can shift the notes towards the right side of the board, indicating that the task has been accomplished. (Vajda and Mureş, 2009)

In addition to these artifacts, Agile methodology recommends a physical office layout that promotes constant interaction between team members. Instead of having closed offices, an open

room is preferable. This facilitates regular communication and collaboration among team members, leading to the more efficient and effective completion of tasks. (Ram* and Vijayakumar, 2019)

2.3. Agile Conclusion and Discussion

There are several misconceptions related to software development that persist within the industry. One such misconception is that compliance can be ensured solely through documentation. While documentation can aid in managing predictable changes, it may prove insufficient in handling unforeseen changes. Agile methods, on the other hand, acknowledge the importance of planning but rely on implicit planning achieved through regular face-to-face communication. This allows for greater adaptability to changing circumstances, making Agile methods more suitable for today's dynamic business environment.

2.3.1. Limitations of Agile and Suggested Solutions

Scholars also investigated the negative effect of using Agile, or in other words, the limitation of using it. Presenting the most difficult challenges and obstacles in adopting,

According to the research (Meyer, 2014) conducted, two case studies highlighted the following challenges and recommended solutions:

1. Challenge: Two significant challenges were faced during the execution of the project. The first challenge was managing tacit knowledge and planning for large-scale projects, especially those involving over 100 working objects and personnel changes during iterations. The second challenge was that numerous components and functions passed individual tests but failed integration tests.

Solution: The suggested solution for these two challenges entailed the creation of a high-level architectural plan while retaining the flexibility to modify it during any development phase.

2. Challenge: Inadequate comprehension of requirements or team members failed to complete work assuming others would undertake it.

Solution: To address these challenges, it was suggested that a more comprehensive task list be created for each user story in the backlog.

3. Challenge: A simple design and the You Ain't Gonna Need It (YAGNI) problem require constructing only what is necessary.

Solution 1: Constant refactoring is necessary for previously completed components due to new changes incorporated by other implemented features.

Solution 2: Different tests necessitate similar test drivers, leading to the duplication of effort in developing such drivers. The solution recommended was to devise a pattern for these challenges to avert future occurrences.

Agile software development methodology, despite its flexibility, can pose challenges if not managed effectively. To address business owner loss of interest, using tools without thinking, lack of team collaboration, and behavioural change issues, according to (Jarikre *et al.*, 2022), companies need to ensure that they have a well-trained team with the necessary skills and knowledge to implement this methodology effectively. Furthermore, managers should closely monitor their team's progress and provide adequate support to ensure the project is completed successfully. It is important to note that failing to address these challenges can result in delays and subpar results. Organisations must prioritise team cohesion and stakeholder engagement to optimise the use of Agile methodology, establish clear goals and requirements, and continuously monitor and evaluate progress. Team members must deeply understand the vocabulary specific to Agile software development to communicate effectively and collaborate. Organisations can provide their team members with specialised training programs to improve their knowledge of Agile terminology and other academic vocabularies necessary for effective communication in software development.

(Boehm and Turner, 2005) Identified in their later article the challenges affecting Agile implementation in traditional development organisations and suggested some techniques to address business process problems. Such as addressing HR issues at the beginning of a new project and their impact on conventional processes should be assessed. Even though it looks like it is a time-consuming step and can cause delays, it can remove confusion, obstacles, and hard feelings if problems appear mid-project. They introduced a five-stage framework grounded on risk assessment to optimise the employment of Agile in contrast to a plan-driven strategy within organisations, considering the organisational capabilities and stakeholders. They conducted a trial with three samples and concluded that Agile scaling presents a challenge for high-risk or large-scale projects and necessitates the development of Agile techniques to manage complexity. Additionally, emphasising individuals and interactions over processes and tools could address such challenges. Software engineering is for the people (developers build software for other people's needs), by the people (people identify the needs of other people) and for the people who use the software and pay its price. (Barry and Richard, 2003)

Researchers usually use various arguments in their books, such as experience, empirical analysis, logical reasoning, and sometimes gut feeling. (Meyer, 2014)

Agile ideas and concepts were familiar, dating back to the 1990s in the development of Extreme Programming (Beck and Andres, 2004). Then it matured and was announced in 2001 the “Agile Manifesto” (*Agile Manifesto*, 2001). It donates a comprehensive abstract of previous methods and best practices in software development, including Extreme Programming (XP), Lean software, Scrum and Crystal. The core characteristics of Agile methods include Values, Principles, Roles, Practices and Artifacts.

Companies may find various Agile methods attractive, but implementing them requires a substantial amount of effort. Additionally, the benefits of these methods may vary depending on the characteristics of the company. Researchers have categorized these methods into four groups based on whether Agile introduced them or they were already used before Agile. These categories are:

1. Unfavourable Agile Methods
2. Unfavourable New Agile Methods
3. Agile Methods That Are Good but Not New
4. New Good Introduced Agile Methods

The upcoming sections will discuss the methods that fall under these four categories.

2.3.2. Unfavorable Agile Methods

The Agile methodology for requirements engineering relies on user stories, which were known before Agile. However, as a standalone tool, user stories prove insufficient for accurately defining system requirements. User stories only capture particular examples of system execution and fail to identify general functions encompassing a broader range of possibilities. Thus, user stories only provide a limited view of the system's functional requirements, resulting in partial coverage of its full scope. Therefore, it is classified as an unfavourable method, and Additional tools and techniques, such as use cases, should be incorporated to ensure comprehensive requirement definition and coverage. (Meyer, 2014)

2.3.3. Unfavourable New Agile Methods

The XP methodology introduced the concept of pair programming, which has been subject to criticism. It may be deemed excessive to categorise pair programming as unfavourable, as it can prove beneficial if appropriately implemented and lead to higher code quality. However, the effectiveness of pair programming is disputed, as it disregards the influence of the programmer's personality, in addition to the questionable cost efficiency having double personnel cost (Müller, 2004). Studies suggest that pair programming is not inherently superior to traditional techniques such as code reviews. The efficacy of pair programming is further

questioned by its limited adoption duration in many projects, rendering it a mere anecdote. (Hannay *et al.*, 2009) Research the effects found on quality, duration, and effort are all relatively small and moderately positive, respectively.

Agile management has introduced novel concepts such as "Produce Only the Product Requested" and "Develop Only Code and Tests" (4.3). Although these approaches may entice inexperienced project managers by tackling programmer perfectionism and facilitating speedy delivery of results, they tend to overlook the most productive software engineering practices. For example, creating generalised code for easy extension and reuse and designing tools to automate repetitive processes.

However, these concepts share significant similarities with lean management principles, which aim to eliminate waste. While such efforts may not immediately benefit the customer, they ultimately contribute to continuously enhancing a company's software process and professionalising software practice. Therefore, it is crucial for managers to exercise wisdom and awareness in implementing these principles. (Ndiokubwayo, 2010)

The rejection of upfront requirements, a new concept introduced by Agile, can lead to suboptimal outcomes. While recognising those requirements are subject to change and challenging to capture initially is accurate, it does not warrant the radical conclusion that upfront requirements are entirely dispensable. The existing software engineering literature emphasises that requirements should be treated as a fluid product that undergoes modification throughout the software process, much like other artifacts. (Meyer, 2014)

Several recent projects have adhered to the simplified Agile advice of discarding the systematic requirements phase, attempting to evolve the system iteratively with occasional customer interactions. This advice is questionable as it often leads to unfulfilled expectations, delays in the project timeline, and discarding already built functionality.

In light of the above, serious software projects should proceed cautiously, ignoring Agile advice. Instead, they should collect requirements at the outset, produce a tentative version before delving into the design phase, and view requirements as a dynamic product continuously adapted throughout the project's lifecycle.

2.3.4. Agile Methods That Are Good but Not New

The Agile literature often depicts a sense of novelty, but not all Agile practices are new. One such practice, iterative development, has been in use for decades. The traditional model of working in silos for several months and then bringing the pieces together has long been problematic. Microsoft's "daily build" practice, which involves producing a functional version

of the software daily, was publicised in a New York Times bestseller by Cusumano and Selby in 1995. Similarly, the open-source community has been releasing early and often for many years. The advent of the Web has intensified this trend, with cloud-based applications such as Google undergoing frequent updates without any formal release process. While the Agile literature has helped to entrench the idea of frequent releases in the software industry, it did not originate it. (Michael A. Cusumano and Richard W. Selby, 1995)

Furthermore, Agile methods recognise that change is crucial to software development. Agile methods may not make any technical contributions but improve software flexibility through organisational practices and recognition that changes play an essential role in software development. It also supports a change mentality better than previous software construction methods. Agile methods may enhance software change through organisational practices but make no technical contribution.

2.3.5. New Good Introduced Agile Methods

Agile methodology has identified several concepts and practices that contribute positively to software development projects. Agile methods have introduced novel concepts that have proved beneficial and good practices. These concepts focus on team empowerment, management practices, requirement freezing, time-boxed iteration, and technical advancements. These concepts are instrumental in delivering high-quality software products within a reasonable time frame. These practices include:

1. Team empowerment is a significant factor in successful software development projects. The Agile approach prioritises the team's central role and encourages them to handle traditional management responsibilities. This approach proves particularly advantageous when staffed by competent people. (Ozkan and Gok, 2020)
2. Management practices: Agile methods utilise practices that initially may seem simplistic but contribute significantly to project success. For instance, Scrum's daily meetings, which promote programmer interaction and require individuals to provide updates on their progress and impediments, are a brilliant idea. (Wijnands and van Dijk, 2007)
3. Freezing of requirements during iterations: While the Agile Manifesto advocates for changes, Agile development acknowledges that not all changes are welcome. This principle brings stability to the software process by delaying change requests instead of rejecting them. Agile iterations are typically short, so the delay is often brief, allowing for necessary changes without negatively impacting the project's timeline. (Meyer, 2014)

4. Time-boxed iteration: Another effective Agile practice is time-boxed iteration. This practice influences the planning process by discouraging unrealistic promises, resulting in better time management and project outcomes. (McHugh, Conboy and Lang, 2011)
5. One of the most significant achievements of Agile methods is recognising the practical importance of regression test suites, which is an old idea. Agile methods taught us that regression suites are critical project assets, and many activities should revolve around them. This highlights the Agile movement's advocacy of professionalism and quality. (Meyer, 2014; Bakalova, 2014)

Although not entirely new, Agile concepts have been effectively communicated to the software industry. Short iterations and the central role of code are two principal examples that Agile methods have popularised. These practices have been used in the software industry for a long time, but Agile methods have contributed significantly to their acceptance and implementation.

Agile methods place themselves in the best software engineering tradition by emphasising and popularising these principles. It is an incremental step that improves our understanding of existing concepts and introduces new insights. The Agile revolution may have indulged in temporary stupidities, but it will be remembered as a practical step in delivering high-quality software products.

Agile Implementation: It is difficult to accurately estimate the number of IT companies in Europe that have adopted an Agile mindset, as there is no definition of what it means to be "Agile" (Sheppard and Young, 2006). No comprehensive data on adopting Agile practices in the industry (Syed, Hayat and Miah, 2021). Agile is a set of principles for software development that emphasises the importance of flexibility, collaboration, and rapid iteration. It is often used with specific methodologies, such as Scrum or Kanban, to help teams deliver high-quality products quickly and efficiently. (Meyer, 2014)

In recent years, adopting Agile practices has become more widespread in the IT industry, and many companies worldwide have implemented Agile methodologies. However, not all IT companies in Europe likely have fully adopted an Agile mindset, and the extent to which they have incorporated Agile practices may vary.

Here are a few sources of information on the adoption of Agile practices in the IT industry in Europe and around the world:

- The "State of Agile" report is an annual survey conducted by Agile Alliance that provides insights into the adoption and effectiveness of Agile practices in the software development industry. The 2021 report includes data from over 20,000 respondents in over 100 countries, including Europe.

- The "Agile Adoption and Maturity Survey" is an annual survey by VersionOne that looks at adopting Agile practices in organisations worldwide. The 2021 report includes data from over 2,000 respondents in over 40 countries, including Europe.
- The "Global IT Agile Adoption in 2021" report is a study conducted by the DevOps Institute that looks at implementing Agile practices in the IT industry globally, including in Europe.

These reports and others can provide valuable insights into adopting Agile practices in the IT industry. However, it is essential to note that the data and findings may not represent the industry.

2.4. Agile and Workplace Bullying

In the realm of workplace bullying prevention, the principles of organisational and management practices are of paramount importance. Starting with the value given to customers, Agile development as a customer-centric approach to software development (Beyer, Holtzblatt, and Baker, 2004) aims to deliver the best Return on Investment to the customer by involving customer representatives throughout the project. Ending with value enablers, which are the employees, Agile teams are self-organising and empowered to make decisions about their tasks, promoting autonomy and accountability among team members.

The notion of value sustainability is also a fundamental aspect of Agile development, which rejects the so-called “death marches” or periods of intense pressure that force a team to work exceptionally hard in preparation for an upcoming deadline (Meyer, 2014). In this context, sustainability requires that programmers work reasonable hours, preserving evenings and weekends. By empowering programmers and consultants against managers (Boehm and Turner, 2005b), Agile methods underscore the importance of trust and less pressure in promoting a healthy work environment.

Agile development is also characterised by minimalism (Meyer, 2014) and focusing on value (Bakalova, 2014). This is done by entails building only the essential functions and building only what is requested (minimal functionality). It excludes extra work to prepare for future reuse and extension (minimal product). It builds only two kinds of software, programs, and tests, excluding anything that will not be delivered to the customer and hence is considered waste (minimal artifacts). This approach aligns with lean management principles and can help prevent workplace bullying by promoting a sense of purpose and minimising opportunities for conflict.

Finally, Agile development embraces change and focuses on continuous development (Laurie Williams and Cockburn, 2003), recognising that not all requirements can be determined at the beginning of a project. Instead, requirements emerge as the project develops and evolves based

on customer and stakeholder feedback. This approach fosters a culture of adaptability and flexibility, which can help prevent workplace bullying by promoting a sense of inclusivity and collaboration.

In summary, Agile principles have a logical theoretical connection in preventing factors that cause workplace bullying; in addition to those, figure 5 discovers the mediators that can link Agile with workplace bullying in literature.

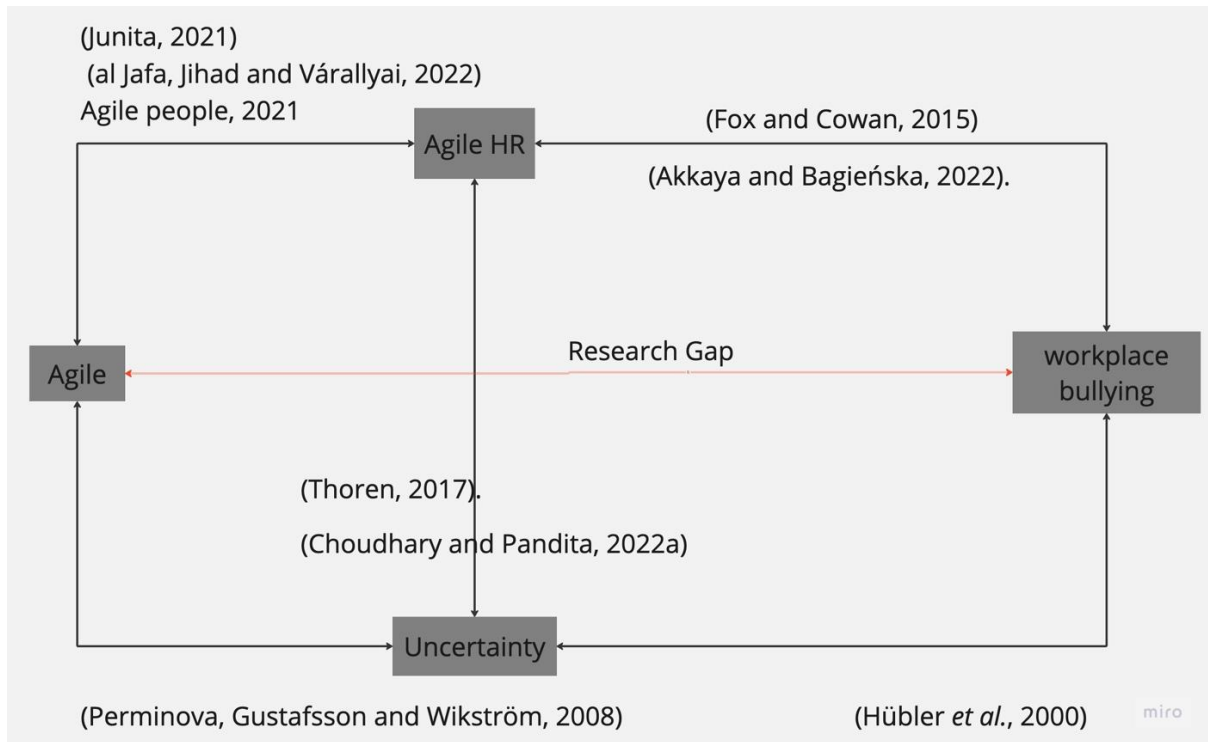


Figure 5 Agile and workplace bullying relationship

Based on the findings, Figure 5 presents the literature review links that were discovered. It suggests that the direct relationship between Agile and workplace bullying has not been studied before. However, through mediator factors such as Agile HR and uncertainty, those topics can be linked to logically support hypothesis H3. This highlights the significance of this research. More details about the sources presented in the figure will be explained in the upcoming sections.

2.5. Agile in HR

Human Resources (HR) involvement is essential in building trust and adopting Agile within organisations. HR plays a critical role in fostering a workplace culture free of bullying (Fox and Cowan, 2015), making it their responsibility to ensure a healthy work environment. Agile management is a powerful approach for companies to respond to changes rapidly, adapt to complex business environments, and, most importantly, build self-managing teams based on

trust (McHugh, Conboy and Lang, 2011, 2012; Ram* and Vijayakumar, 2019). In this context, HR is vital in facilitating a successful transition to Agile by managing talent and selecting optimal processes for organisational benefits (Thoren, 2017). While Agile methodology has proved effective in software development to deal with uncertainty, it is not directly related to preventing workplace bullying. However, with the implementation of Agile in various departments and the emergence of Agile HR, Agile HR can aid in preventing workplace bullying by fostering a culture of mutual respect, collaboration, accountability, and learnability and designing work-teams oriented practices that empower workers. (Junita, 2021)

Organisations can create a more collaborative and communicative work environment that may help prevent workplace bullying. Regardless of the project management approach, organisations must adopt best practices for preventing workplace bullying. The present dissertation includes a study that explores the role of HR in the Agile company transition, focusing on environmental changes and how different HRM models can help select the best tools that benefit the organisation and avoid causing harm.

The paper (al Jafa, Jihad and Várallyai, 2022) was the explanatory part of this dissertation. It discusses how the (*Agile Manifesto*, 2001), first announced in 2001, has transformed software development management and is now shifting to other organisation departments, primarily HR (Agile people, 2021). It cites the first principle in the Agile manifesto and how it has impacted the HR department. The paper also discusses the challenges the HR department has faced in digitalisation and how an Agile mindset and tools can help overcome these challenges. The main challenge that HR leaders face is prioritising HR resources to achieve the highest outcome.

The article explores the benefits and challenges of implementing Agile management practices in human resource management (HRM) environments. The article argues that Agile management can help organisations address the uncertainty and rapid changes in HRM environments (Choudhary and Pandita, 2022a), further exacerbated by the COVID-19 pandemic.

The article "The Role of Agile Management in HRM Environment Change" discusses how Agile management can cope with uncertainty and adapt to rapidly changing business environments. The article highlights the importance of taking action over the things that can be controlled, challenging the need for certainty, and accepting uncertainty as a reality of business environments. The authors argue that the Agile approach effectively builds self-managed software development teams that quickly respond to changes and adapt to ambiguous and complex business environments with fast-changing requirements.

The article provides anecdotal evidence based on the author's experience implementing Agile management in the HRM environment. The recommendations and best practices mentioned are consistent with the existing literature on coping with uncertainty in business environments. (Thoren, 2017; Lenka and Singh, 2019; Choudhary and Pandita, 2022a)

Recommendations: The article recommends several practices to implement Agile management in HRM environments. These include:

1. Creating cross-functional teams to promote collaboration and communication.
2. Adopting a customer-centric approach to HRM to focus on employee needs.
3. Implementing short and frequent feedback loops to adapt to changing requirements quickly.
4. Promoting continuous learning and development to improve skills and knowledge.
5. Encouraging experimentation and innovation to drive creativity and problem-solving.

Challenges: (al Jafa, Jihad and Várallyai, 2022) article also outlines several challenges organisations may face when implementing Agile management in HRM environments. These include:

1. Resistance to change from employees and managers who may be unfamiliar with Agile management practices.
2. Limited support from senior leadership who may not fully understand the benefits of Agile management.
3. Inadequate training and development to support the adoption of Agile management practices.
4. Difficulty in measuring the impact of Agile management on HRM outcomes.
5. Uncertainty about how to adapt Agile management practices to different HRM functions and roles.

Best Agile Practices for Agile HR: The article suggests several best Agile practices that can be applied in Agile HR, including:

1. Scrum meetings: Regular meetings that focus on sharing information and planning work to be done.
2. Kanban boards: Visual boards that help track work items' status and promote transparency.
3. User stories: Short descriptions of work that focus on the needs of employees.
4. Retrospectives: Regular meetings to reflect on past work and identify opportunities for improvement.
5. Agile HR software tools: Technology that supports implementing Agile management practices in HRM environments.

In summary, Agile management can effectively address the uncertainty and rapid changes in HRM environments. The article provides recommendations for implementing Agile management practices in HRM environments and best Agile practices that can be applied in Agile HR. However, the article published as a part of this dissertation also acknowledges the challenges organisations may face when implementing Agile management in HRM environments and suggests ways to address these challenges.

2.6. Workplace bullying

The issue of workplace bullying is a growing concern that affects workers across different industries and employment statuses. As discussed previously, Agile HR practices can help prevent workplace bullying by promoting a collaborative and respectful work environment. However, the problem of workplace bullying is prevalent in the online labour market and affects freelance workers globally. This calls for further investigation into the literature on workplace bullying to understand its impact on different employment sectors, including IT workers and independent contractors. Additionally, there is a need to explore how international law is moving to protect citizens and prevent capitalism from exploiting freelancers. The present dissertation aims to fill this gap by examining the role of HR in preventing workplace bullying in the Agile company transition and how different HRM models can help select the best tools that benefit the organisation and avoid causing harm.

2.6.1. Types of Workplace Bullying

The prevalence of workplace bullying is a pervasive concern affecting freelance workers worldwide, irrespective of their occupational standing or industry. The present study's outcomes align with prior research, indicating a significant problem that needs immediate attention.

The qualitative study by (Noronha and D'cruz, 2018) examined workplace bullying among freelance workers using the Upwork platform. The study reported a positive correlation between workplace bullying and non-standard employment and found that workplace bullying is expected in the online labour market in India. Similarly, (Rai and Upasna, 2016) reported that workplace bullying is a global phenomenon, with 95% of employees reporting being subjected to bullying behaviours.

While workplace bullying is a topic that has been widely researched in the healthcare sector, there is a notable lack of research on the experiences of IT workers. However, a similar problem exists in the "Uber economy." The exploitation of gig workers is largely unregulated and has contributed to political, cultural, and economic inequality. (Snider, 2018) argues that labour exploitation is not criminalised as it is a cornerstone of the capitalist system. This article

examines how employee theft of time, space, and income was normalised and celebrated, exacerbating inequality and threatening the quality of life for many. The author explores how neoliberal capitalism intersects with the democratic state's duty to protect citizens and stop capital from exploiting them.

(Aloisi, 2015) notes that the extreme flexibility offered to gig workers comes at the cost of uncertainty and insecurity. Employers shift significant business risk to workers and avoid paying benefits or unemployment insurance. Moreover, minimum wages are often not met. This paper investigates the experiences of independent contractors working remotely, highlighting that they are not entitled to benefits such as paid time off, sick leave, special group medical coverage, or retirement benefits. Additionally, unlike Amazon employees, they are ineligible for workers' compensation benefits in the event of an injury.

The present research investigated the connection between five factors and workplace bullying:

- **Unpaid overtime and micromanagement pressure:**

Several studies have identified mandatory or unpaid overtime and micromanagement pressures contributing to workplace bullying (Hoel, Zapf and Cooper, 2002). Workplace bullying has significant negative consequences for individuals and organisations and is a crucial psychosocial hazard.

(Hoel, Zapf and Cooper, 2002) They further noted that male part-time workers were more susceptible to workplace bullying than their full-time counterparts. Additionally, long working hours have been positively correlated with high rates of bullying. It raises the question of whether the same phenomenon exists between hourly working freelancers and project-based freelancers, as hypothesised in H4.

The proliferation of digital technologies and the global pandemic has significantly increased remote work (Izbienova and Averyanova, 2020). Special regulations are necessary to safeguard remote employees' physical and mental well-being.

Cultural differences between countries impact workplace bullying (Seo, 2010). Korean and UK employees differ in their views and attitudes toward workplace bullying, such as the prevalence rate, bully/perpetrator status, health outcomes (e.g., job satisfaction and work-related burnout), and predictors (e.g., leadership style, role conflict, and interpersonal conflict).

While unpaid overtime has been observed in the past 15 years, evidence suggests it existed long before (Papagiannaki, 2014). (Hübler *et al.*, 2000) found that unpaid overtime is related to uncertainty over task completion. The paper argues that unpaid overtime is a detrimental phenomenon, and current theories do not fully explain its existence or persistence.

Remote workers face difficulty tracking their working hours (Kozina, 2021). The pressures of work spill over into non-work life, making it difficult to unwind after the workday. Furthermore, unpaid overtime in remote work is linked to higher organisational commitment, job satisfaction, and job-related well-being, but this comes at the expense of work intensification and the inability to switch off.

- **Threats of termination and payment cuts:**

The issue of workplace bullying can manifest in various forms, including threats of termination and payment cuts, as discussed by (McAvoy and Murtagh, 2003). Creating a hostile work environment exposes workers' job security, dignity, and well-being. These bullying behaviours may be used to control and intimidate workers and enforce compliance, leading to increased stress, anxiety, and reduced job satisfaction.

The phenomenon of unpaid labour in digital platforms is a growing concern, according to (Marà and Pulignano, 2022) study. The study revealed that many freelancers who work on online platforms in Italy, France, Belgium, and Poland do not receive sufficient compensation for their labour, despite working long hours. This includes time spent on platform-related tasks like bidding, marketing, and client communication. They negatively affect employees' independence, work-life balance, and income.

Moreover, the "on-demand" economy's low-wage service workers, particularly female and racialised workers, are vulnerable to exploitation, as highlighted by (van Doorn, 2017). The on-demand economy nowadays is characterised by low wages, job insecurity, and a lack of access to benefits for remote freelance workers. Therefore, leaving these workers in precarious labour conditions. Digital platforms use algorithms, rating systems, and surveillance to monitor and control workers, making them susceptible to exploitation and abuse. This situation can be seen in the gig economy, where workers are hired for short-term contracts without traditional employment benefits, resulting in economic insecurity and social marginalisation.

- **Promises of fake benefits:**

Research (Lee, 2000) found that remote workers who were promised fake benefits received reduced pay through penalties, were denied pay raises and were at an increased risk of exploitation in the workplace. (Fox and Cowan, 2015) measured this factor as threatening employees with job loss or demotion. (Keashly and Harvey, 2005) outlined eight characteristics or criteria to differentiate bullying from hostile, abusive, or uncivil behaviour. These characteristics include the behaviour occurring persistently or repeatedly, involving a formal or informal power difference. Perceived intention to harm the target, confirmed intent to harm the target, support or participation of other employees or

managers, behaviour that would be deemed abusive by a reasonable person, resulting in harm to the target financially, psychologically, or physically. These characteristics must be considered in determining whether behaviour qualifies as workplace bullying.

- **Discrimination:**

The issue of workplace bullying is an area of concern, particularly for freelance remote workers. One form of workplace bullying is discrimination, as (Pietersen, 2007) reported, which emphasises the need for further research in this domain. In addition, HRPs face difficulties in responding to employee complaints of workplace bullying, which can be traced back to existing conflicts between various HR roles, a lack of detailed organisational rules and procedures for handling bullying, and ambiguous definitions and standards for a behaviour to be labelled as bullying. To address these challenges, (Fox and Cowan, 2015) suggest clarifying the definition of bullying from the HR perspective and determining the behaviours and criteria that are perceived as bullying by HRPs. Overall, employers must recognise and address the prevalence of workplace bullying among freelance remote workers to foster a safe and healthy work environment.

2.6.2. Cyberbullying vs Workplace Bullying

Workplace bullying and cyberbullying are similar in involving repeated aggressive behaviour intended to harm, mock, hurt the feeling or intimidate another person. However, there are some critical differences between the two.

Workplace bullying typically involves verbal or physical abuse, harassment, or discrimination. It often occurs professionally and can be directed at employees, supervisors, or managers. (RAYNER and HOEL, 1997)

Conversely, cyberbullying occurs primarily online and may involve social media, email, text messages, or other forms of electronic communication. It can be directed at anyone and occur both in and out of the workplace. (Sathyanarayana Rao, Bansal and Chandran, 2018)

Another significant difference is that cyberbullying can be anonymous, meaning that the victim may not know who is responsible for the abuse, and it can be harder to be detected. On the other hand, workplace bullying is more identifiable, and often the victims know who the bully is.

In summary, workplace bullying is physical or psychological harm that occurs in the workplace, often by colleagues or supervisors. Cyberbullying refers to using electronic communication to harm or intimidate someone. It can happen anywhere and by anyone.

2.6.3. Workplace Bullying Relation to Stress

This literature review explores the problem of bullying, abuse, and stress at work, how it impacts organisational performance, employee relationships, and team dynamics, and the ways to manage them. The concept of *karoshi* in Japan, which deals with the legal handling of illness related to stress and death caused by overwork and stress at work, whether it happens by suicide or heart attack (Kobayashi and Middlemiss, 2008), is compared to the legal treatment of work stress in the European Union. (Grayham and del Rosario, 1997) Highlights the legal obligation of employers to have a documented health and safety policy that includes a stress and workplace bullying statement and emphasises the significance of sensitive management and leadership. But is it enough? The practical implementation of knowledge in enterprises remains challenging due to gaps in translation from theory to practice. Additionally, preventive interventions need more clarity and more standardisation of risk assessment instruments (Zoni and Lucchini, 2012). The absence of legal treatment of work stress in the European Union for remote workers opens the door for another *karoshi* concept in the EU.

Stress significantly impacts the quality of provided service, relationships, and trust between team members. It can lead to physical assault, verbal abuse, hostile body language, harassment, bullying, and threatening behaviour. The reasons for organisational stress are globalisation, technological change, downsizing, lack of flexibility, work-life balance issues, and macho culture. (Cranwell-Ward and Abbey, 2005)

The causes of stress are based on three areas: oneself, the relationship with others, and the relationship with the workplace environment (Hoel, Zapf and Cooper, 2002). Bullying in the workplace is identified as a growing problem that adds to the risk of high stress. The law in the UK specifies that businesses with more than five employees are required to have a documented health and safety policy that includes a stress, bullying, and harassment statement. The stress management effort has been expended into a broader project called “Shaping the Future”, which enables the Trust's many directorates to take action to enhance staff health and wellbeing.

2.7. Workplace Bullying and Legal Protection

2.7.1. Freelancers and Office Workers Comparison

Freelancers are considered self-employed and are not entitled to the same employment protections as office employees (Humanika *et al.*, 2014). They generally have different employment rights and protections. They do not have a secure job or the same rights for benefits as unemployment. However, freelancers may be protected by contract law (STOREY, 2012), and they can negotiate the terms of their engagements with clients to ensure their rights are

protected. Under the European Union (EU) law, independent contractors may occasionally be entitled to specific protections. For example, the right to work in a safe and healthy environment and to be free from discrimination and harassment (Bell, 2002; Mantouvalou, 2014). Some of the other rights are:

- European Union health and safety laws (Hervey and McHale, 2015): EU health and safety laws require employers to provide a safe and healthy work environment for their employees, including freelancers. Some examples of these laws include the Health and Safety at Work (89/391/EEC) and Protection of Young People at Work (94/33/EC) (Ales *et al.*, 2018).
- EU anti-discrimination laws (Ellis and Watson, 2012): Right to be free from discrimination and harassment laws forbid discrimination on the basis of race, ethnicity, religion, age, gender, sexual orientation, and disability. They also prohibit harassment or any act violating a person's dignity. Some examples of these laws include the EU's Equal Treatment (2000/78/EC) and Racial Equality (2000/43/EC). In addition to (European Commission *et al.*, 2022), a comparison of non-discrimination laws across Europe 2022.

In contrast, office employees typically enjoy many labour protections mandated by EU legislation, including the entitlement to a minimum wage, the privilege to operate within a secure and wholesome milieu, and the right to be immune from prejudicial and intimidating conduct. Additionally, in the event of redundancy or unwarranted dismissal, office staff may have access to jobless benefits and severance pay. In some cases, office workers may also have the right to appeal a termination or challenge other employment-related decisions through arbitration or mediation.

Overall, the employment rights and protections available to independent contractors and office workers can vary greatly depending on the specifics of freelancers' contracts and the laws of the nation where they work. However, both groups are generally entitled to certain basic protections under EU law. For example, protection by the contracts or agreements they have signed with the European company, which may specify the terms of their engagement and any rights or protections to which they are entitled.

2.7.2. Freelancer vs Remote Workers vs Telework

This survey was collected randomly from a population of 904 remote workers. It was announced and conditioned when this survey was distributed to only fill it in case of working remotely. In addition, the interviews were done with remote workers working in the IT. However, two types of remote workers were distinguished in this study based on their contracts. The first is freelancers, who usually have project-based contracts. Their work ends when the

project or the feature they are building is delivered. Therefore, they are paid according to milestones or when the project is delivered.

The other type of contract is the full-time or hourly paid contract. In this type of work, the payment is given through weekly or monthly iterations, and the worked hours are usually logged using time-tracking software or manually by the management.

Freelancers are self-employed individuals who offer their services on a project-by-project basis. They may work for multiple clients and are typically paid per project or hourly. Freelancers may work in various industries, including IT development, writing, design, marketing, and consulting. They are often highly educated and are vital in driving innovation, entrepreneurship, and job creation. (Burke and Cowling, 2020)

Remote workers, on the other hand, work remotely rather than in a traditional office setting. They are typically hired by a company and receive a salary or hourly wage. Remote workers may work from home, a co-working space, or another location. They may use video conferencing and project management software to communicate with their colleagues and complete their work. (Ferrara *et al.*, 2022)

In summary, the main difference between freelancers and remote workers is that freelancers are self-employed and work on a project-by-project basis. In contrast, remote workers are employees who work remotely for a company.

The distinction between "telework" and "remote work" is indeed acknowledged in the literature. (Vartiainen, 2021) notes that telework involves using personal electronic devices, while remote work does not necessitate the use of such devices or visits to the main workplace. Both forms of work have significantly increased in recent years, especially during the COVID-19 pandemic. (Garrett and Danziger, 2007) divided telework into three categories - fixed-site, mobile, and flex work - each with distinct characteristics and effects. The study also included freelance teleworkers as part of the computer-using workforce. However, in my research on IT freelance workers, who work remotely and primarily from home with the support of ICT, both terms have the same meaning for IT freelance workers.

Furthermore, (Sládek and Sigmund, 2021) highlight that both telework and remote work involve employees working outside their usual place of work, often from home, and maintaining communication with their employer through telecommunication networks.

While the term "telework" may not have been explicitly mentioned in my dissertation, it essentially conveys the same meaning as "remote work." The original distinction lies in the historical context of telework, which encompassed telecommunication tools in the 20th century.

3. MATERIALS AND METHODS

This chapter aims to provide an overview of the methodology used in this dissertation, specifically the methods employed for data collection to test the five hypotheses generated through analysis. As noted by (Bailey, Marshall and Rossman, 1996), research methodology typically begins by establishing the study's objectives, selecting an appropriate study design and identifying the optimal method for data collection.

3.1. Research Design

Research can be classified into three categories: descriptive (evaluative) and explanatory (causal). Evaluative research aims to find out how well something works. Evaluative research in business and management will likely assess the effectiveness of an organisational or business strategy, policy, programme, initiative, or process. (Powell, 2006; N. K. Saunders, Lewis and Thornhill, 2015)

The research design is a descriptive and explanatory research study incorporating a combined method using quantitative design and survey methodology to collect data from a sample of IT workers who work as freelance software developers, in addition to qualitative design done through interviews with IT workers to gather insights from remote workers. The study aims to test five hypotheses structurally using SmartPLS, correlation analysis, chi-squared test, logistic regression analysis, adjusted p-values, data analysis, visualisation, Pearson's correlation coefficient, regression analysis, and ANOVA. The statistical analyses employed, including the Smart-PLS model, regression analysis correlation and other statistical models, were selected for their robustness and adherence to established principles, ensuring the validity and reliability of the research findings. (Hair *et al.*, 2019). The study population was defined using LinkedIn, and unrelated accounts were excluded using Boolean Search. The survey was distributed randomly to 200 accounts, and the response rate was 54.5%. The survey was offered in English and Hungarian; most responses were in English. Additionally, 20 questions were formulated for the qualitative design to guide the interview using open-ended questions, allowing the interviewer to direct the conversation. The survey was distributed online to participants working remotely as freelancers on project-based or full-time hourly paid-in IT companies. In this cross-sectional study, data collection occurred between 2021 and 2022, capturing experiences one year after the emergence of COVID-19. This timeframe indicates that the pandemic can affect results. The freelancers were recruited from various online forums and social media platforms, and though they lived in Hungary, they worked for companies from around the world.

To test the hypotheses, this study will use different statistical analyses depending on the hypothesis, including correlation analysis, chi-squared test, logistic regression analysis, adjusted p-values, data analysis, visualisation, Pearson's correlation coefficient, regression analysis, and ANOVA. These analyses will help identify the relationship between variables and provide evidence for or against the hypotheses.

A qualitative approach is commonly employed to gain deeper insight into individuals' underlying reasons or perspectives in specific situations without relying on numerical data. This method can be particularly useful in exploring complex and nuanced subject matter and provide valuable context to inform decision-making processes.

Overall, the study is well-designed and appropriate for investigating the link between workplace bullying, Agile implementation and trust among freelance software developers in Hungary and the Netherlands working for international companies worldwide. Using survey methodology and different statistical analyses will allow for a thorough investigation of the research questions and hypotheses.

3.2. Research Methodology

This section delineates the classification and structure of the study following the aims of causal research, which entails identifying cause and effect variables and exploring their relationship. The study employs a quantitative explanatory approach, incorporating a mixed-method quantitative and qualitative design that relies on a two-data collection technique - the questionnaire, coupled with an appropriate quantitative analytical procedure. A mixed-method quantitative design was chosen for its ability to address specific research questions effectively (Creswell J. David and Creswell John W., 2017). The study aims to gather the opinions and perceptions of remote workers in the IT industry. Qualitative research methods will be used to achieve this, including interviews and literature review. The research will follow an interpretivism philosophy, which means that it will try to understand participants' subjective experiences and perceptions. Thematic analysis will be employed to identify patterns, themes, and meanings within the data, making it possible to explore the research topic in a comprehensive and systematic manner. One-to-one interviews will be conducted in an abstract format without the potential to be expressed in a quantitative format. The gathered insights will provide valuable information for further analysis and decision-making. In addition, the study combines descriptive, exploratory and evaluative research. The exploratory study investigates the existence of work bullying and abuse in Agile organisations that seek to empower teams through a survey. At the same time, the evaluative research tests the effectiveness of Agile techniques in combating workplace bullying and fostering trust. The purpose of evaluative

research in business and management is to assess the efficiency of an organisational or business strategy, policy, initiative or process, and a goal that aligns with the aims of this study.

This study investigates the relationship between Agile implementation, workplace bullying and remote work environment exploitation. A literature review was conducted first, followed by a survey to collect primary data. The interviews were conducted with 12 IT workers. The research also aims to investigate the impact of implementing an Agile management mindset on workplace bullying and abuse in the IT industry. The research objectives are to test hypotheses H1, H2, H3, and H5.

The quantitative data for this study were collected using a survey method. The survey was designed using Google Forms and distributed randomly using the LinkedIn platform to 200 IT professionals with experience working as freelancers for companies around the world and who lived or lived in the past in Hungary. The respondents answered without mentioning their names or emails, and a consent form was created following confidentiality standards at the University of Debrecen. There wasn't any uncompleted questionnaire submission because the unfinished survey won't be saved. The sample size was determined by using the population size obtained from LinkedIn, which included 904 accounts of people who work or previously worked in the IT sector as software developers, software architects, or software testers. The survey was offered in two languages, English and Hungarian, to maximise the response rate.

According to (Bell and Bryman, 2019), the most suitable way to investigate the existing research and knowledge in an area is by doing a literature review. It directs the research and is considered an appropriate way to improve the researcher's understanding of the topic and concepts in the specified research area.

A literature review is suitable for investigating existing research and knowledge in a particular area. Two types of scientific literature review were utilised: a narrative review and a systematic review. The narrative review critically analysed the literature relevant to Agile HR practices, workplace bullying, and exploitation. The systematic review, on the other hand, was used to answer specific research questions by examining the methodology to identify, select, and evaluate study results. This type of review is more suitable for quantitative research. (Bell and Bryman, 2019)

The Scopus, ScienceDirect, and Google Scholar databases were utilised in the literature review. The search used relevant keywords, including Agile E-HRM, HRIS, EHRM, Agile HR, Agile, MCDM methods, workplace bullying, and uncertainty. The search was restricted to outcomes connected to management and IT, as well as the twenty years from 2000 to 2021. The results consisted of journals, books, and websites. The next step was to filter the relevance of the

candidate studies and professional articles published in the Agile community. All candidate studies were systematically analysed to choose the studies that were most directly related to the research topic.

After the literature review, a survey was designed to collect primary data for quantitative analysis. The survey examined the relationship between employees' trust in the Agile mindset built-in teams and the possibility of workplace bullying and exploitation in a remote working environment. Later, 20 Questions were formulated for the qualitative interviews to get more understanding; the final step will be evaluating and analysing the collected data and supporting it with the previously reviewed literature.

In Figure 6, you can see how the variables are associated with the survey questions. Table 14 categorises the questions and shows how they relate to measuring the hypothesis. It also identifies each question's dependent and independent variables and connects them directly to the survey questions.

3.3. Quantitative Data Method:

The author used the Smart-PLS model to analyse the data. The model effectively deals with the high degree of multicollinearity present in the complex model that the author presented in Figure 7. This is because the model can effectively analyse multiple variables affecting each node using Partial Least Squares. The model is designed to evaluate the correlation between five different variables. These variables are not isolated and are interrelated, with each variable affecting the others in some way. The letters used in the model represent the different questions asked to test each variable's value. By analysing the answers to these questions, we can identify the strength and direction of the relationships between the variables. This information is critical for making informed decisions and taking appropriate actions to achieve our goals.

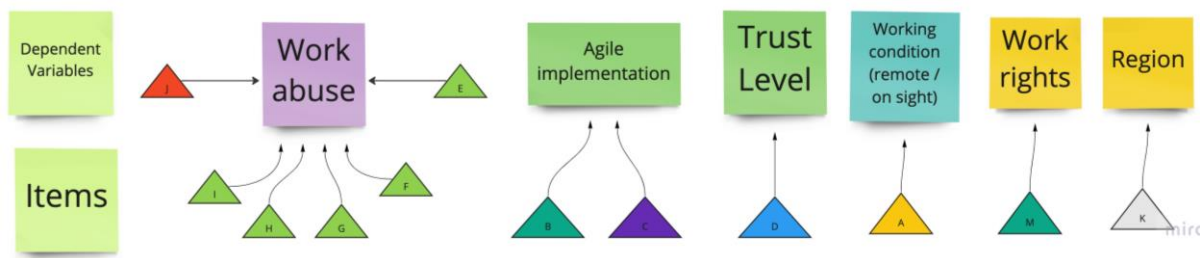


Figure 6: Variables and question items relation

Source: based on Own work

Figure 7 shows the preliminary research plan before applying SmartPLS. Later, two actual SmartPLS models were implemented, shown in Figure 22 and Figure 23. The objective was to

find relationships between variables and questions and identify existing connections. Detailed explanations of these connections can be found later in Table 14 in the appendix. The purpose of this figure is to illustrate the variables being tested and the expected direction of their relationships, whether positive or negative, along with the questions which measure each variable.

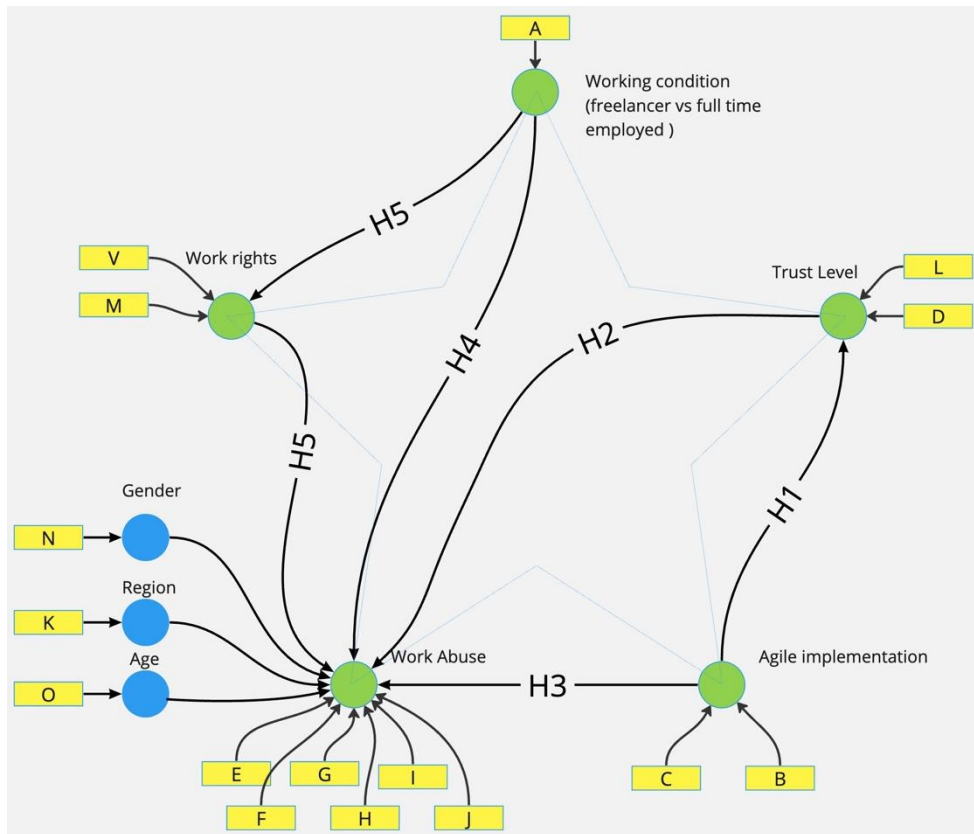


Figure 7: Structural Hypothesis Proposed Model

Source: based on Own work

Hypothesis Test Equations for Quantitative Analysis:

The following equations were structured to test the hypothesis with methods other than SmartPLS:

$$H1: \text{When } B \neq 1 \ \& \ c \neq 3 \implies D > 3$$

According to the hypothesis, when a Freelancer answers a question regarding the implementation of Agile in their company with anything other than 1, and also specifies whether Agile was implemented across the entire organisation or only within the development team, then their answer is compared with the question about trust. The trust score should be above 3, indicating that trust exists within the company. If there is a relationship between these two metrics, the hypothesis is considered accepted.

H2: When $D > 1 \implies E, F, G, H \text{ or } I > 2$

Hypothesis two compares the variables of trust and workplace bullying. If the trust score is above 3, it indicates strong trust in the organisation. Questions related to the five metrics (represented by questions E, F, G, and H) measuring workplace bullying (as described in Chapter 3.7) are then compared. If any of the metrics score higher than 2, it indicates the existence of workplace bullying.

H3: When $c \neq 3 \ \& \ B \neq 1 \implies E, F, G, H, \text{ or } I > 2$

Here, we compare two variables: Agile implementation and Workplace bullying. These variables are calculated similarly as described in the previous equations.

H4: When $A = 1 \text{ or } 3 \implies E, F, G, H \text{ or } I > 2$

Hypothesis 4 compares variable one, which identifies the working condition. A value of 1 or 3 represents hourly freelancers, while 2 represents project-based freelancers. These values were compared with workplace bullying, as described previously.

H5: When $M > 2 \implies E, F, G, H \text{ or } I > 1$

Hypothesis 5 compares satisfaction with the legal rights recommendation measured by question M by comparing the working conditions with on-site workers and the existence of sufficient measures to prevent workplace bullying.

3.4. Population and Sampling

This study examines the workplace bullying of remote workers who are living in Europe, specifically in Hungary and the Netherlands. Moreover, since freelancers are considered independent contractors, most outsourced freelanced work contracts are not regulated by law or monitored by governments or work chambers. Unlike a typical office job because the labour law directives did not affect the employment rights of independent contractors (self-employed) and economically dependent workers (formally self-employed) (Gyulavári, 2014). (Tamás, 2009) reported the crises and the grey zone that exists in the labour law concerning self-employment, where employees are not entitled to labour law protection.

The study sample was identified to include IT workers who specifically live in Hungary and the Netherlands but work remotely for international companies worldwide. With the lack of data, research or an official number of freelancers who work only in software development in Hungary, the population number has been defined by the use of the popular social networking service used for professional networking, LinkedIn. Using the following keywords: freelance software developer, or freelance web developer, the results showed the same number of profiles

using both keywords (1500 accounts). It included people working or previously working as a freelancer in software development. By skimming a sample of results that had 100 accounts, many accounts were found to be included in the results, such as the IT consultants, researchers, concept developers, and some other accounts that were not related. Using the Boolean Search on LinkedIn (LinkedIn, 2021) to exclude unrelated accounts using NOT, by writing the following: freelance software developer NOT consultant NOT manager NOT researcher, the results were shrunk to 904 accounts representing the population of the PhD study.

The survey has been sent to 200 accounts using private messages on LinkedIn. The response rate was 54.5%. The survey has been offered in two languages: English and Hungarian, the number of Hungarian language respondents was 29, and 80 responses were in English. For most academic studies involving individuals or organisations' representatives, response rates of approximately 50 per cent and 35 to 40 per cent, respectively, are reasonable. (Baruch and Holtom, 2008)

Using sample calculations, the next step in the research is to find whether this sample is representative and if there will be a need to share the survey with more people from the population.

Characteristics of the Sample and its Representation: Individuals who have worked or are currently working in the IT industry as software developers, software architects, or software testers residing in Hungary and the Netherlands and working for international companies between the ages of 18 and 65, with both male and female gender representation.

The total population for the survey is 904 accounts from LinkedIn.

In Hungary, freelancers are considered self-employed, and they must register with their companies to legalise their work. This process is similar to any retailer opening a store or any other business. However, due to the lack of official statistics tracking freelancers and remote workers, specifically those in software development, the population is considered infinite with an unknown number. As a result, the total number of freelancers in Hungary is estimated to be 904, which is based on the total number of LinkedIn accounts found in recent research.

Calculating the minimum population size according to (Cochran, 1977):

1. To calculate the minimum sample size for a population of 904 with a margin of error of 6%, we can use the formula:

$$n = (z^2 * p * q) / e^2$$

where z = z-score corresponding to the desired level of confidence (e.g. 1.96 for 95% confidence) p = estimated proportion of the population with the characteristic of interest (we use 0.5 for maximum variability) $q = 1 - p$ e = margin of error (0.08)

Substituting these values, we get:

$$n = (1.96^2 * 0.5 * 0.5) / 0.09^2 \qquad n = 129 \text{ (www.calculator.net, 2023)}$$

This means 129 or more measurements/surveys are needed to have a confidence level of 95% that the real value is within $\pm 8\%$ of the measured/surveyed value.

2. Since the population is less than 10,000, we can use an adjusted minimum sample size (N. K. Saunders, Lewis and Thornhill, 2015). According to the book, the adjusted sample size can be calculated using the formula:

$$n_{\text{adj}} = n / (1 + (n - 1) / N)$$

Where n = calculated minimum sample size (129 in this case), N = population size (904)

Substituting these values, we get:

$$n_{\text{adj}} = 129 / (1 + (129 - 1) / 904) \qquad n_{\text{adj}} = 113$$

Therefore, the adjusted minimum sample size required for a population of 904 with a margin of error of 8% is approximately 113.

3. To determine if the collected data is representative, calculate the margin of error (MOE) is needed. With a population size of 904, a sample size of 109, and a 95% confidence level, the MOE can be calculated using the following formula:

$$\text{MOE} = 1.96 * \text{sqrt}((p * (1-p)) / n)$$

Where p is the estimated proportion of the population with the characteristic of interest, and n is the sample size.

Since no estimated proportion is given, we can assume a conservative estimate of $p = 0.5$, which gives us the following:

$$\text{MOE} = 1.96 * \text{sqrt}((0.5 * (1-0.5)) / 109) = 0.100 \text{ or approximately } 10\%$$

Therefore, with a margin of error of 10%, we can say with 95% confidence that the true population parameter is within $\pm 10\%$ of the sample result.

Random sampling is an effective method for obtaining a representative sample. Each member of the population has an equal chance of being chosen and included in the sample group. This study selected this method since the target population was within one geographical area. (N. K. Saunders, Lewis and Thornhill, 2015)

The survey was distributed randomly to the sample using random sampling. The calculated minimum sample number with the accepted margin error indicates that the collected sample is representative of only the selected population of 904.

Sample distribution: As shown in Figure 8, The random sample data showed that 65% of the workers worked remotely on hourly or full-time-based contracts. On the other hand, only 14% worked as freelancers on the project-based system, while the remaining 21% of respondents came from remote workers who did or are doing both and working on a project and hourly-based contracts.

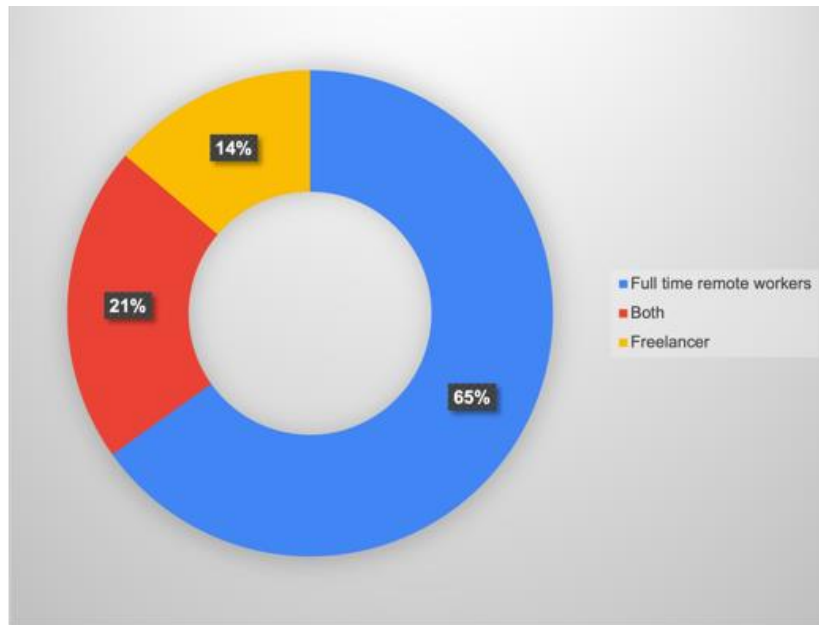


Figure 8: Distribution of the Sample according to work type

Source: own editing based on survey data, 2023.

Age Distribution: The table provides data on the age distribution of 109 respondents who are remote workers in IT, and their classification as full-time employees working remotely, freelancers who usually work until the end of a project, or both. The respondents are grouped into three age categories: below 24, between 24 and 32, and 32 or older. The results are shown in Table 2:

Table 2: Sample distribution according to age

What is your age range?	Have you ever worked remotely or as a freelancer?			Grand Total
	Remotely, Home office (full-time employee)	Both	Freelancer (usually works ends when the project is over)	
24 - 32	52	11	8	71
32 or more	14	11	5	30
< 24	5	1	2	8
Grand Total	71	23	15	109

Source: own editing based on survey data, 2023.

Most respondents are aged between 24 and 32, with 71 out of 109 respondents falling within this age range. The remaining 30 respondents are 32 or older, while only eight are below 24.

When looking at the distribution of remote workers across age ranges, the 24-32 age group is the most prevalent. Of the 71 respondents in this age group, 52 work remotely as full-time employees, 11 work both as full-time employees and as freelancers, and eight work primarily as freelancers. On the other hand, of the 30 respondents aged 32 or older, 14 work remotely as full-time employees, 11 work both as full-time employees and as freelancers, and five work primarily as freelancers. Finally, of the eight respondents below the age of 24, 5 work remotely as full-time employees, one respondent worked both as a full-time employee and freelancer, and two are working primarily as freelancers.

Overall, the data show that remote work is a common practice for young adult workers in the IT industry, with the majority of remote workers falling into the 24-32 age range as showing in Figure 9. Most respondents in this survey reported that they have worked as full-time employees or as freelancers remotely.

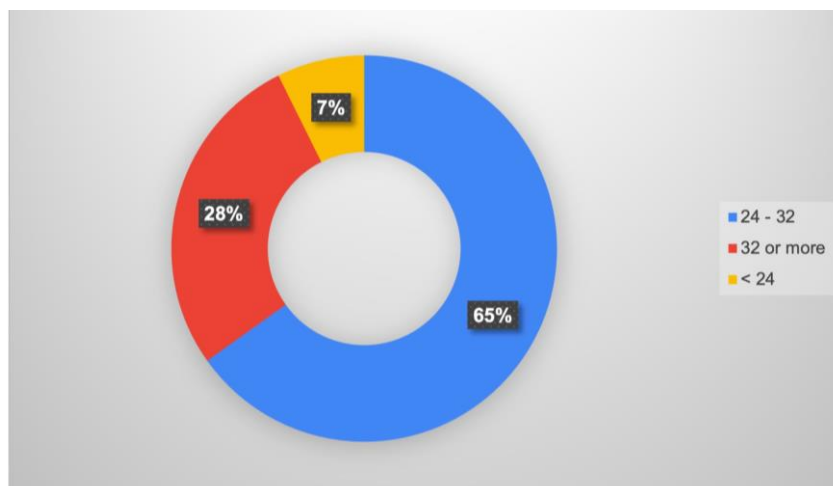


Figure 9: Distribution of the Sample according to age

Source: own editing based on survey data, 2023.

Gender Equality: The sample population revealed that 65% of freelance workers were engaged in remote work, either hourly or full-time, while only 14% worked as freelancers on a project-based system. Moreover, 21% of respondents had experience in both areas during their careers. The survey results showed that most of the surveyed remote workers were male, with most falling within the age range of 24-32 years. The research finding is consistent with previous studies, which have also reported lower participation of women in the IT sector over the past two decades, thus raising concerns about underrepresentation (McKinney *et al.*, 2008). Additionally, (Morton and Redmond, 2015) study found that only one out of every six female

students pursue computer-related degrees, emphasising the persistent gender imbalance in the IT field. Therefore, this research recommends reassessing and investigating the reasons behind this imbalance.

Overall, the survey results show that most remote workers who filled out the survey were male, while only 22% were female, as shown in Figure 10.

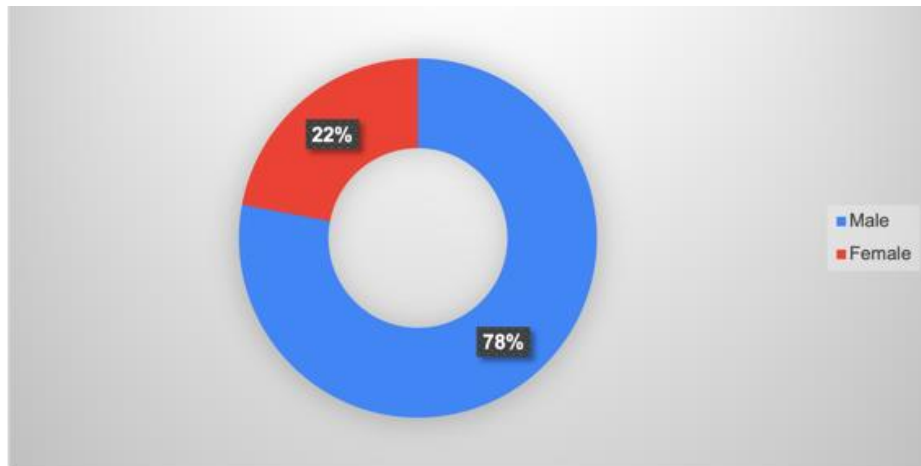


Figure 10: Distribution of the Sample according to gender

Source: own editing based on survey data, 2023.

Several factors contribute to the gender imbalance in the IT industry. Here are a few possible reasons:

- **Stereotypes and biases:** Some people may believe that IT work is more suitable for men, which can discourage women from pursuing careers in this field. This bias can also lead to discrimination and unequal treatment of women in the workplace. (Michie and Nelson, 2006)
- **Lack of representation:** Women may need to see more role models or mentors in the IT industry, making it harder for them to envision themselves in these roles. (Ahuja, 2002)
- **Education and training:** There may be fewer women studying computer science and other technical subjects in school, which can limit the pool of qualified candidates for IT jobs. (Ahuja, 2002)
- **Work-life balance:** The IT industry can be demanding and require long hours, which may be less appealing to women who are also responsible for caring for children and other family members. (Ahuja, 2002)

Recognising and addressing these issues is essential to create a more diverse and inclusive IT workforce. Many organisations and initiatives are working to encourage more women to pursue careers in technology and support them in these roles.

Many studies and articles have explored the gender imbalance in the IT industry and the factors that contribute to it. For example: "Why So Few? Women in Science, Technology, Engineering, and Mathematics" is a report published by the American Association of University Women (AAUW) that examines the factors contributing to women's underrepresentation in STEM fields, including IT. (Dawson, 2014)

Data Analysis: The data collected from the survey were analysed using various statistical tools to test the hypotheses. Correlation analysis was used for H1, H2, H3, and H5 to determine the relationship between the variables. Data Analysis and Visualization were used to test H1, H2, H4, and H5. For H3, chi-squared test, logistic regression analysis, and adjusted p-values using Bonferroni, The Holm-Bonferroni, and The False Discovery Rate (FDR) correction were used to determine the significance of the relationship between implementing Agile management and workplace bullying and abuse.

For H5, correlation analysis, a chi-squared test, and a logistic regression analysis were used to investigate whether better remote work regulations for freelancers would help reduce work abuse by establishing the same standards as traditional office work.

Using a survey method allowed the researchers to collect data from a sample of IT professionals with experience working as freelancers for worldwide companies but who are currently residents in Hungary. The data were analysed using Excel and Python to test the hypotheses, and the results were used to investigate the impact of implementing an Agile management mindset on workplace bullying and abuse in the IT industry in Hungary and the Netherlands.

Hypothesis test: To perform a hypothesis test, the following steps are done:

1. State the null and alternative hypotheses, where the null hypothesis is the default assumption where there is no relationship between the two variables. The alternative Hypothesis is the claim being tested that there is a positive relationship between the two variables.

$$H_0: \rho = 0$$

$$H_A: \rho \neq 0$$

2. Determine the level of significance (α):

The level of significance is the probability of making a Type I error (rejecting the null hypothesis when it is true). It is usually set to 0.05 or 0.01. In this case, we will assume a level of significance of 0.05.

3. Calculate the test statistic: To calculate the test statistic, we will use the formula:

$$t = r * \sqrt{(n-2)/\sqrt{1-r^2}}$$

Where t is the test statistic, r is the correlation coefficient, and n is the sample size.

4. Calculate the mean for each variable.

5. Measure each variable's standard deviation.
6. Calculate the standard error of the mean difference between the two variables using the following formula:

$$\text{standard error} = \sqrt{[(s1^2/n1) + (s2^2/n2)]}$$

Where s1 and s2 stand for the standard deviations for each variable, and the sample sizes are n1 and n2.

7. Calculate the t-test statistic using the following formula:

$$t = (r * \sqrt{n-2}) / \sqrt{(1-r^2) * ((n1+n2)/(n1*n2))}$$

Where r is the sample correlation coefficient, n is the total sample size, and n1 and n2 are the sample sizes for each variable.

8. Determine the critical value:

The critical value is determined for the t-distribution with n-2 degrees of freedom and a significance level of 0.05. We can use a t-table or a calculator to find the critical value.

9. Compare the absolute value of the test statistic with the critical value. If the absolute value of the test statistic is greater than the critical value, reject the null hypothesis; otherwise, fail to reject the null Hypothesis.

10. Determine the p-value associated with the test statistic (t) using a t-distribution table. The p-value is the probability of obtaining a test statistic as extreme or more extreme than the observed test statistic, assuming the null Hypothesis is true.

11. Calculating the p-value for the given t-test statistic. Since the alternative Hypothesis is that there is a positive relationship between the two variables.

12. Make a decision and interpret the results.

Correlation Analysis: Performing a correlation analysis involves determining the link between two quantitative variables, including their intensity and direction. The most used method for measuring correlation is the Pearson correlation coefficient (r). (Saris and Coenders, 1995)

The book (Archdeacon, 1994) covers the various statistical methods used in social sciences and includes important correlation and regression analysis equations.

The equation for calculating the Pearson correlation coefficient is:

$$r = (\sum XY - \sum X \sum Y) / \sqrt{[(\sum X^2 - (\sum X)^2)(\sum Y^2 - (\sum Y)^2)]}$$

Where $\sum xy$ is the summed results of multiplying each pair of corresponding values of the two variables, $\sum x$ and $\sum y$ are the sums of the values, while n is the number of corresponding values.

- To test the statistical significance of the correlation coefficient, a t-test is used. The t-test calculates the test statistic, t, using the formula:

$$t = r\sqrt{(n-2)} / \sqrt{(1-r^2)}$$

Where n is the sample size and r is the correlation coefficient. (Illowsky and Dean, 2013)

- To calculate the p-value in the correlation analysis, a two-tailed t-test is used to determine whether the correlation coefficient significantly differs from zero. Precisely, the t-statistic is calculated as:

$$t = r * \text{sqrt}(n-2)/\text{sqrt}(1-r^2)$$

Where r is the correlation coefficient, n is the sample size, and the denominator is the standard error of the estimate. Then, the t-distribution is used with n - 2 degrees of freedom to calculate the p-value, which is the probability of obtaining a t-value as extreme as the observed one (in absolute value) if the actual correlation coefficient is zero.

Chi-squared Test: To perform a chi-squared test, the null and alternative hypotheses must be defined first. Then, calculate the observed and expected frequencies for each category of the variable(s) of interest. The expected frequencies can be calculated by assuming the null hypothesis is valid and using the formula.

$$E = (\text{row total} \times \text{column total})/\text{sample size}.$$

Once the frequencies are observed and expected, calculate the chi-squared statistic using the formula:

$$\chi^2 = \sum(O_i - E_i)^2/E_i$$

O_i is the observed frequency for category i, E_i is the expected frequency for category i, and the summation is taken over all categories.

The degrees of freedom for the test is calculated as df = (number of rows - 1) x (number of columns - 1).

Finally, a chi-squared distribution table or calculator can be used to determine the p-value associated with the chi-squared statistic, which can determine whether to reject or fail to reject the null hypothesis at a given significance level. (Greenwood and Nikulin, 1996)

Regression Analysis: The logistic regression model is defined using a logistic function of the form:

$$\pi = e^{(\beta_0 + \beta_1 X_1 + \dots + \beta_k X_k)} / (1 + e^{(\beta_0 + \beta_1 X_1 + \dots + \beta_k X_k)})$$

Where π represents the probability of the dependent variable taking a specific value, and β_0 , β_1 , ..., β_k represent the regression coefficients of the independent variables X_1 , X_2 , ..., X_k .

The maximum likelihood estimation method is used to calculate the logistic regression equation. The likelihood function is the product of the probabilities of the observed values of

the dependent variable given the values of the independent variables. The maximum likelihood estimates are then obtained by maximising the likelihood function. The regression coefficients are estimated using an iterative procedure that involves solving the score equations, which are the partial derivatives of the likelihood function concerning the regression coefficients. (Hosmer, Lemeshow and Sturdivant, 2013)

To calculate the p-value in Logistic Regression Analysis, a null hypothesis is created that assumes the predictor variables have no significant effect on the outcome variable. The p-value is then calculated to determine the likelihood of observing the logistic regression model results if the null Hypothesis were true. A small p-value (usually less than 0.05) indicates strong evidence to reject the null hypothesis and conclude that the predictor variables significantly affect the outcome variable.

To obtain the p-value for each predictor variable in a logistic regression model, statistical software packages such as R, Python, or Minitab typically provide a summary output that includes the coefficient estimates, standard errors, z-scores, and associated p-values. The p-value for each predictor variable indicates the significance of the relationship between that variable and the outcome variable. Smaller p-values indicate more robust evidence for a significant relationship. Additionally, the odds ratio can be calculated for each predictor variable, which measures the strength and direction of the relationship between the predictor and outcome variables.

3.5. Qualitative Research Approach

Interviews: The one-to-one interview is a commonly used technique in qualitative research. It is a valuable tool for gaining insight into people's perceptions and experiences. The interviewer must possess the necessary skills and knowledge to conduct such an interview effectively (Ryan, Coughlan and Cronin, 2009). This method is particularly useful during the exploratory phase of research. Practical tips for preparing and conducting one-on-one qualitative interviews were taken from (Stofer, 2019). The snowball sampling technique will be used to recruit participants from the target population of migrants and freelancers working remotely in Hungary and The Netherlands. Snowball sampling is particularly useful for accessing hidden or sensitive populations (Browne, 2005).

The informed consent form will be used to obtain ethical approval for the study, and the survey questions will cover the following areas:

- Region of origin
- Age

- Languages spoken
- Specialisation or field of work/study
- Perception of the work environment.
- Agile knowledge and experience working in Agile.
- Experiences of workplace bullying and discrimination, including examples
- Rules and regulations at the organisations.

The research findings will contribute to a better understanding of the challenges faced by freelancers working remotely and provide insights into ways to improve their working conditions and integration into society.

This study aims to examine the obstacles that remote freelancers encounter working in international companies worldwide. The research will focus on their difficulties in finding job opportunities and potential workplace bullying and discrimination. The participants in the study are individuals who currently work or have worked in the IT industry as either full-time employees or freelancers. The interviews were conducted over the course of 2023.

In addition, some freelancers have relocated to other EU countries and worked for global organizations, making their insights valuable in comprehending the circumstances around remote work and how workplace bullying can occur. As part of this study, you have been invited to participate in an interview. The interview will last for approximately 60 minutes and cover topics such as your background, work environment, experiences of workplace bullying and discrimination, and their impact on your integration process. The interview will be conducted by a researcher either online or in person, and the data collected will be kept confidential.

It's important to note that all interviews were conducted in a non-anonymous manner, but without identifying the participants or their employers. This approach was taken to ensure that participants could express their opinions on the topic without any concern for confidentiality. As per the ISA ethical code, researchers are required to maintain the confidentiality of personal information sources unless participants have given permission or expressed a desire to be acknowledged, as outlined in (Alasuutari, Brannen and Bickman, 2008). Before participating in the research, participants received a consent form.

Interview Structure: According to (Doody and Noonan, 2013; Jain, 2021), semi-structured interviews are an appropriate method for collecting data in exploratory research. This approach provides a comprehensive understanding of the research subject within a structured questionnaire framework while allowing for the collection of detailed information pertinent to

research questions. It also allows researchers to modify questions based on respondents' answers to ensure clarity. (Brew, 2007) adds that the autonomy of researchers in making these decisions is a key aspect of academic freedom. (Holmboe, 2018) emphasises the value of academic freedom in this context, particularly in discussing sensitive topics.

Data Analysis: Thematic analysis is used, which is a popular qualitative data analysis method that enables researchers to identify patterns, themes, and meanings within textual data. The key steps in thematic analysis include several stages:

1. Researchers gain a comprehensive understanding of the content through repeated readings.
2. Researchers systematically identify and label relevant data segments, capturing key concepts, ideas, and phenomena.
3. Codes are grouped together based on similarities and differences, leading to the identification of overarching themes that represent patterns within the data.
4. Themes are refined iteratively to capture accurate data content and meaning.
5. Themes are clearly defined and labeled, meaningfully representing the data and its underlying patterns.
6. The thematic analysis findings are synthesised and interpreted to highlight the themes' significance in relation to research.

Thematic analysis is a methodical and adaptable approach to examining qualitative data. It enables researchers to uncover intricate relationships, perspectives, and insights. In this study, we will utilise thematic analysis to delve into participants' experiences, perceptions, and interactions regarding Agile practices and workplace bullying in remote working environments. This will provide valuable insights into the dynamics of these phenomena. (Castleberry and Nolen, 2018)

The interviewees' responses will be also evaluated with the assistance of Voyant Tools, a powerful web-based software application utilised for performing text analysis. It is an open-source software offering user-friendly tools for visualising and analysing text data (Sampsel, 2018). Its efficacy in the arena of scientific information analysis has been demonstrated in the appraisal of a corpus of articles from open-access journals, where it was used to identify dominant research fields and discourse themes (Kairaitytė-Užupė, Ramanauskaitė and Rudžionis, 2023). This software allows users to upload text documents or web pages and perform various types of analyses, such as word frequency, topic modelling, and sentiment

analysis. Voyant Tools is free and open source, meaning its source code is publicly available for others to use and modify (Hetenyi, Dr. Lengyel and Dr. Szilasi, 2019).

Cyruss tool will be used to showcase qualitative data in quantitative terms. This tool generates word clouds that place the most frequently used words in the centre and in the largest size. The "Stop word" function can exclude certain words or define the maximum amount of words to be retrieved from the corpus.

Furthermore, the interviewees' responses will be analysed using content analysis (Schilling, 2006). This method will enable the researcher to thoroughly assess the content of the interviews, identify themes and sub-themes, and validate the findings of the quantitative analysis. It will also help develop new theories and provide in-depth reasoning for workplace bullying encountered by remote IT workers.

4. RESULTS OF THE RESEARCH

During the last pandemic in 2020, most companies shifted to remote working, but not all used the ideal model. Some companies started using this situation to mistreat their employees by cutting payments, discrimination, and wrongful termination behind the eyes of the law and taking advantage of unmonitored Freelancers/remote workers' contracts.

In the quantitative analysis, the survey collects the number of remote workers/freelancers affected by workplace bullying and abuse and the impact of Agile management on companies (especially its central principle being to build trust between individuals).

The results are separated into two parts. The first part contains general observations and results from analysing the collected quantitative data. The second part of the results tests the hypotheses with the support of qualitative analysis to check whether they have been accepted.

4.1. Agile Adaptation Level

Agile mindset adaptation level in the organisations that IT remote workers and freelancers worked at:

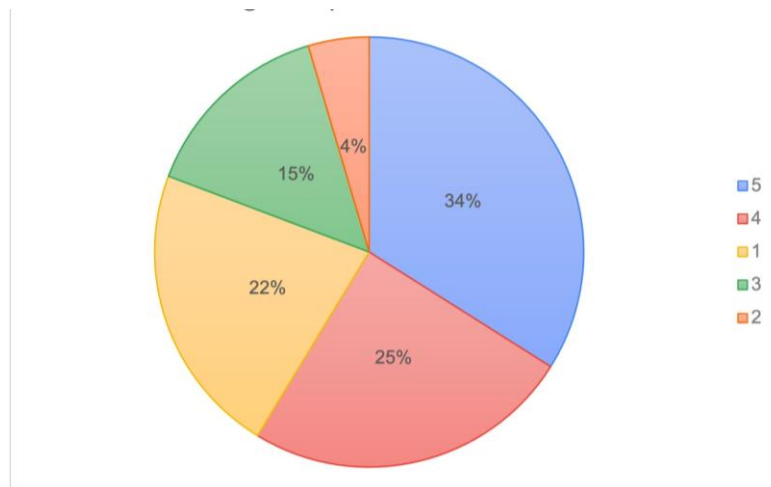


Figure 11: Agile Implementation level

Source: own editing based on survey data, 2023.

The pie chart in Figure 11 illustrates the Agile implementation level in the organisations where IT remote workers and freelancers have worked at. The sample size is 109. There are five categories, with the following values: 37% of the workers were in organisations that fully adopted the Agile mindset and used one or more tools, 27% were in organisations that had a strong adoption of the Agile mindset and used one or more tools, 24% were in organisations that had a moderate adoption of Agile mindset, 16% were in organisations that had a minimal

adoption of Agile mindset and 5% were in organisations that had not adopted Agile mindset at all. These categories represent the level of Agile principles, mindset and tools such as Scrum, Kanban, DevOps, user stories, and Jira used in the organisation.

Based on the pie chart, it can be concluded that adopting Agile principles, mindset, and tools is prevalent among the organisations where IT remote workers and freelancers have worked, with only 5% of the sample indicating no adoption of Agile mindset and tools [1]. The chart shows that 37% of the workers were in organisations that fully adopted the Agile mindset and used one or more tools. Another 27% were in organisations that firmly adopted the Agile mindset and used one or more tools.

Another measurement tested whether Agile was applied only in the software development department or activities or adopted in the whole organisation. The collected data illustrated in Figure 12 shows that 85/109 means 70% of respondents had worked or are still working in an Agile environment. Out of these 85, only 30% have reported that Agile tools expanded to be used in departments other than software development. At the same time, many workers saw Agile was only implemented in the IT software development department.

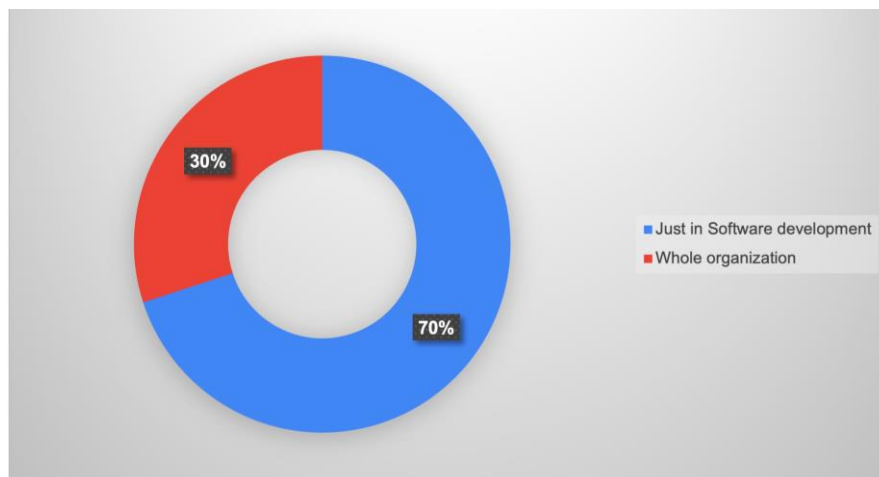


Figure 12: Agile implementation is software vs whole organisation

Source: own editing based on survey data, 2023.

As mentioned earlier, the movement for applying Agile in the whole organisation is still new. Big companies leading implementation like Ericsson, Intel, Dell, IrishBank, TechCo, Accenture, Mosaic, SemiCo, ConsultingCo, and many others. (Paasivaara *et al.*, 2018; Conboy and Carroll, 2019)

In the quantitative analysis, out of the 12 Interviewed remote workers,

4.2. The difficulty of applying Agile and building trust

Implementing Agile and building trust in an organisation is a challenging task. It requires significant effort and commitment from all levels of the organisation.

One of the main challenges in implementing Agile and building trust in an organisation is the need for a cultural shift. This shift requires changing how people work, communicate, and collaborate (Thorgren and Caiman, 2019). It also requires a willingness to embrace change and be open to new ideas and working methods. This change is not easy to achieve and requires considerable time and effort. Another challenge is the need for strong leadership. Leaders play a critical role in creating a culture of trust and enabling the Agile transformation. They need to be fully committed to the process and lead by example. They also need to be able to communicate the benefits of Agile and build trust with their teams. (Thorgren and Caiman, 2019)

A study conducted by the Harvard Business Review found that high-performing Agile teams had high levels of trust among team members (Delizonna, 2017). Research has shown that trust is a critical factor in the success of Agile teams. Trust enables team members to collaborate effectively and take risks without fear of judgment or blame. It also allows teams to be more adaptable and respond to changing requirements quickly.

However, building trust takes time and effort. A study found that building trust in an Agile team can take up to two years (McHugh, Conboy and Lang, 2010). The study also found that trust can quickly deteriorate if there is a lack of transparency, communication, or collaboration.

Figure 13 provides data on the perceptions of 109 remote workers in the IT industry regarding the difficulty of adopting Agile principles and building trust across different departments in the organisation. The responses are classified on a scale of 1 to 5, where 1 indicates the slightest difficulty and 5 indicates the most difficulty.

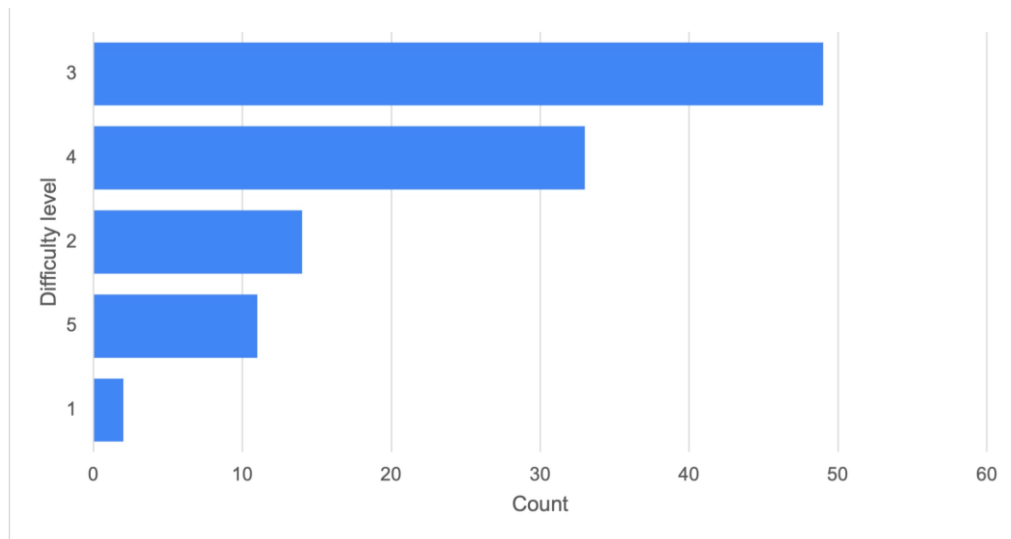


Figure 13: The difficulties of applying Agile and building trust

Source: own editing based on survey data, 2023.

Most remote workers found it moderately challenging to adopt Agile principles and build trust across departments, with 82 respondents rating their difficulty level as 3 or 4. On the other hand, only 13 respondents found it easy to adopt Agile principles and build trust, with a rating of 2 or below. Additionally, there were only two respondents who found it very easy to adopt Agile principles and build trust, while 11 respondents found it very difficult.

When looking at the distribution of responses across the different difficulty levels, the most common rating was 3, with 49 respondents indicating this difficulty level. They were followed by a rating of 4, with 33 respondents reporting this difficulty level. In contrast, the least common ratings were 1 and 5, with only 2 and 11 respondents indicating these difficulty levels, respectively.

Overall, the data suggest that while many remote workers in the IT industry find it moderately challenging to adopt Agile principles and build trust across departments, a significant number of respondents still find it very easy or difficult. This highlights the need for organisations to carefully consider and address the challenges associated with adopting Agile principles and building trust across departments to successfully implement remote work practices in the IT industry.

In conclusion, implementing Agile and building trust in an organisation takes work. It requires a cultural shift, strong leadership, and significant time and effort. However, the benefits of Agile and a culture of trust can be significant, including increased productivity, better collaboration, and faster response times to changing requirements. Organisations committed to the process

and willing to invest in the necessary resources and support are likelier to succeed in their Agile transformation.

4.3. Testing the Existence of Workplace Bullying

4.3.1. Discrimination

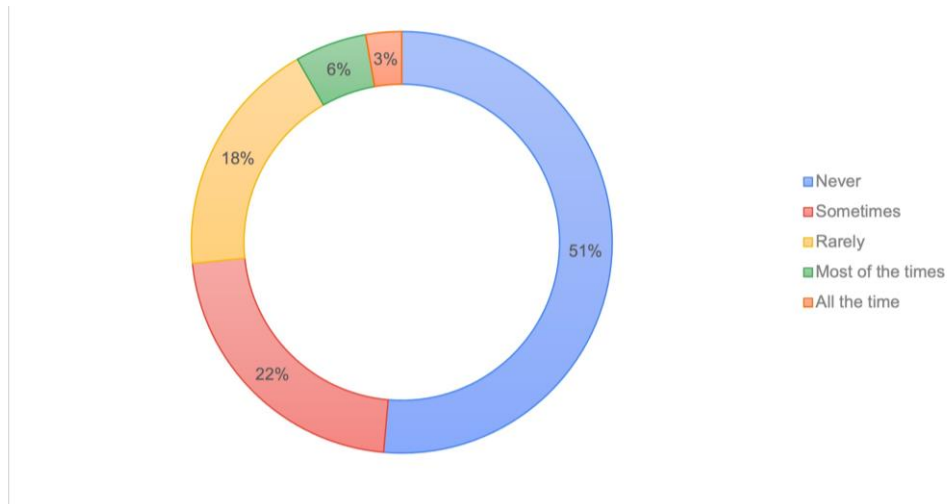


Figure 14: Discrimination distribution

Source: own editing based on survey data, 2023.

In a survey of 109 people about their experiences with discrimination in previous workplaces, As shown in Figure 14, the majority (56%) reported never encountering discrimination. 24% reported sometimes encountering discrimination, 20% reported rarely encountering discrimination, 6% reported most of the time encountering discrimination, and 3% reported constantly experiencing discrimination.

According to the survey's findings, most respondents did not report encountering discrimination at their previous places of employment. However, some respondents stated that they sometimes, rarely, most of the time, or constantly experienced discrimination. These results imply that, despite progress in combating workplace discrimination, more needs to be done to guarantee that all employees are treated equally and without bias. Employers are encouraged to take action to foster inclusive and equitable work environments by enacting anti-discrimination policies and offering employees training on diversity and inclusion. By doing this, companies can encourage a favourable and effective work environment for all employees.

4.3.2. Workplace Bullying Type

The current study investigated the relationship between workplace bullying and five factors: unpaid overtime, micromanagement pressure, threats of termination and payment cuts,

promises of fake benefits, and discrimination. The results showed that 74% of freelance remote workers experienced workplace bullying due to unpaid overtime, followed by 52% due to micromanagement pressure. Threats of termination and payment cuts were reported by 22% of workers, while 41% reported being promised fake benefits. Additionally, 31% of workers reported experiencing discrimination. Table 3 summarise the explained results:

Table 3: Workplace bullying type

Workplace bullying	Overtime and unpaid overtime	Cutting payment	Fake benefits or a pay raise	Micromanagement pressure	Discrimination
No	26%	78%	59%	48%	69%
Yes	74%	22%	41%	52%	31%

Source: own editing based on survey data, 2023.

Crowdsourcing Test - Workplace Exploitation:

In this research, a test was conducted using R to investigate the relationship between workplace bullying and crowdsourcing by requesting unpaid trials and delivering actual work / Ideas to the employer before getting hired. However, no relationship was found, and crowdsourcing failed to predict workplace bullying.

The results show that 68% of the freelancers were requested to do unpaid jobs and trials before being hired, while only 32% didn't encounter this,

The correlation between workplace bullying and performing free trials or delivering project ideas before being hired was not found to be significant. However, data analysis indicated that 68% of freelancers performed unpaid trials and shared their ideas without being hired or compensated for their efforts. Studies suggest that submitting work or trials for free and providing actual work during these trials without a protective contract may be considered a form of exploitation of freelancers. Even trustworthy platforms may be used to bypass employment regulations, resulting in increased risks and uncertainties for workers. (Aloisi, 2015)

Exploitation involves extracting unpaid, coerced, and alienated labour (Andrejevic, 2010). This definition suggests that various forms of unpaid but profit-generating online activity may fall under this category. Extreme flexibility often comes at the cost of uncertainty and insecurity (Aloisi, 2015). Recently, New York City passed the Freelance Isn't Free Act, a new law

protecting freelance workers from such practices (Gounardes, 2022). The law mandates that all companies hiring freelancers, whether in or outside the city, must provide written contracts and timely payments. This is a significant step towards protecting freelancers.

4.4. Hypothesis Testing

4.4.1. H1 The Relationship Between Agile vs Trust

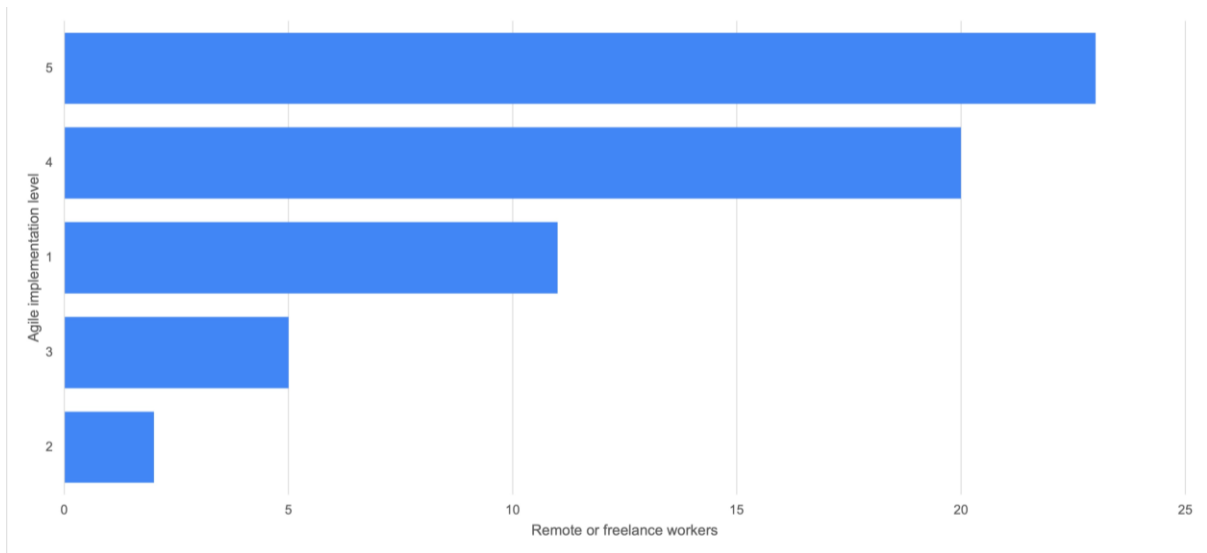


Figure 15: Agile implementation level

Source: own editing based on survey data, 2023.

Trust is measured by their ability to make decisions, transparency behaviour, and accountability through the quantitative (services) and qualitative (interviews) analysis. The chart in Figure 15 represents the survey results on the relationship between implementing an Agile mindset and trust in the organisation among 61 remote workers. They answered 4 or 5 on whether the relationship between individuals in the workplace was based on trust or micromanagement. The X-axis represents the number of remote workers, and the Y-axis represents the level of Agile concept implementation on a scale of 1-5, with 1 meaning no implementation and 5 meaning full adoption.

The results show that most remote workers (23 out of 61) had fully adopted the Agile concept, scoring five on the Y-axis. A slightly smaller number (20 out of 61) had a score of 4 on the Y-axis, indicating a high level of implementation. However, a smaller number of remote workers had scores of 1, 3, and 2 on the Y-axis, indicating a lower level of implementation or no implementation at all.

The data show a positive relationship between implementing an Agile mindset and trust in the organisation among remote workers, as most of those with a high level of Agile implementation also reported trust-based relationships in the workplace.

According to the data presented below in Figure 16, implementing Agile methods leads to high trust between individuals within a company. Specifically, a correlation can be observed between Agile mindset adoption, as indicated by answers 4 and 5 on a survey, and the reported trust level among remote workers. The exact correlation coefficient of 90.5% implies a robust positive relationship between these variables. However, it should be noted that this correlation does not necessarily imply causation and tests are needed to fully understand the relationship between Agile implementation and trust within a company.

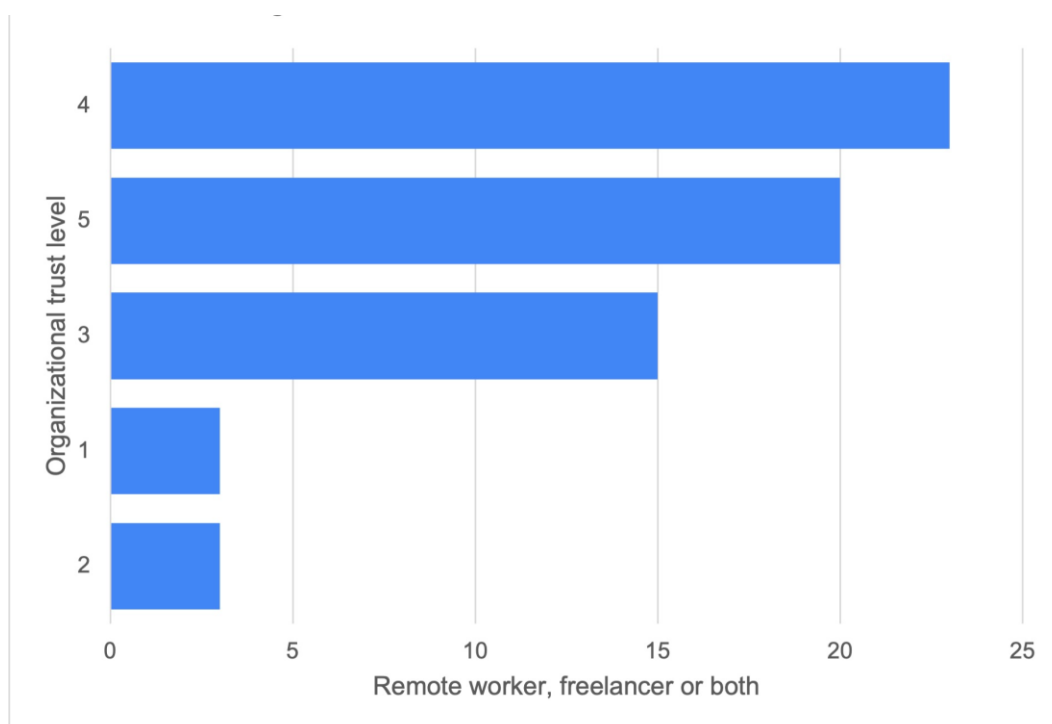


Figure 16: Agile organisation, a high level of trust has been found

Source: own editing based on survey data, 2023.

Figure 17 shows the correlation between adopting Agile practices and the level of trust within an organisation. The data were presented in the form of a graph, which illustrated the relationship between Agile and trust across three different levels of Agile adoption. Row 5 in orange, which represented Agile Level 5, exhibited the highest numerical representation with a total count of 37. The findings suggested that individuals with extensive exposure to or utilisation of Agile practices at the highest level concurrently manifested a greater propensity for positive organisational dynamics, including heightened levels of trust.

Row 2 in green, which represented Agile Level 4, registered a total count of 27. This row signified a substantial cohort wherein individuals at Agile Level 4 exhibited noteworthy counts reflective of positive relational factors within the organisational milieu.

This means, in the first two rows, that in organisations with mature agile implementation with a level of 4 out of 5, the level of trust was so high.

Row 3, which represented Agile Level 1 or Agile wasn't implemented, had a comparatively lower total count of 24. However, the results implied a discernible presence of positive relational dynamics even at lower levels of Agile adoption. In other words, most of the responses were in the lower area of trust, indicating low trust within the organisation.

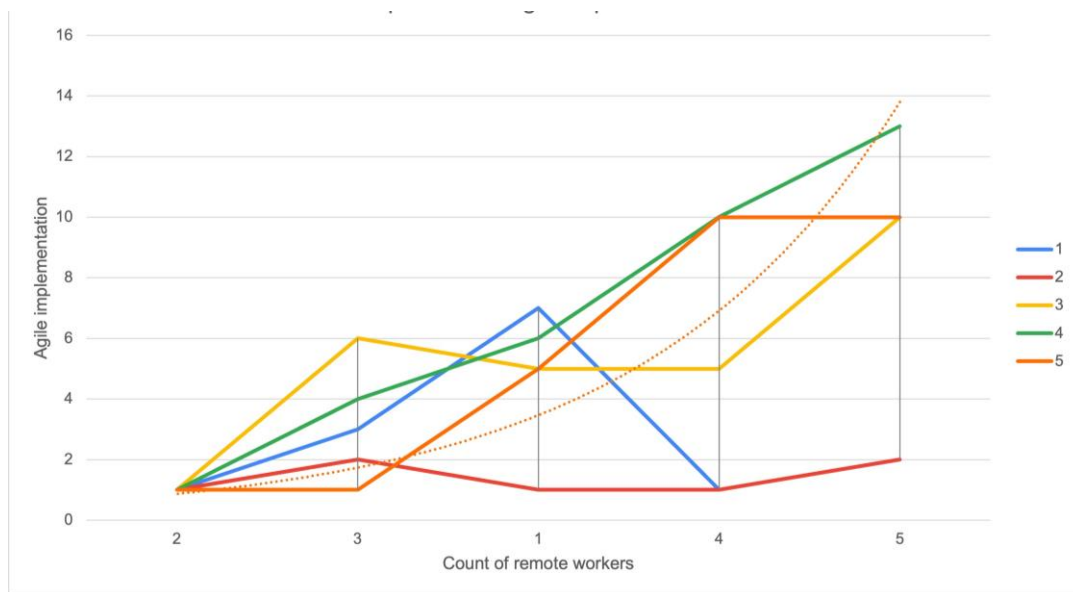


Figure 17: positive relationship between implementing Agile and high trust level

Source: own editing based on survey data, 2023.

In addition to SmartPLS descriptive results, multiple further statistical tests are also used to explain the statistical relationship between the two variables, Agile implementation and relationship trust level. The linear link between two continuous variables is measured using Pearson's correlation coefficient, which is a common technique, and then a Hypothesis test is conducted.

The correlation coefficient equals 0.326 between Agile implementation and the relationship trust level, with a p-value of 0.0002. Although the correlation is not extremely strong, this shows a positive link between the two variables.

The Hypothesis test was done as explained in the methodology. The mean for Agile implementation is 3.69 and the mean for the relationship trust level is 3.76.

The standard deviation for Agile implementation is 1.58 and the standard deviation for the relationship trust level is 1.24. To calculate the standard error for both variables, we use the values $s_1 = 1.58$, $n_1 = 100$, $s_2 = 1.24$, and $n_2 = 100$. The standard error is then found using the formula:

$$\text{standard error} = \sqrt{[(1.58^2/100) + (1.24^2/100)]} = 0.203$$

To calculate the t-test statistic, we use the values $r = 0.326$, $n = 200$, $n_1 = 100$, and $n_2 = 100$. The t-test statistic is found using the formula

$$t = (0.326 * \sqrt{200-2}) / \sqrt{(1-0.326^2) * \sqrt{((100+100)/(100*100))}} = 2.26$$

Therefore, the t-test statistic for the given data is 2.26

we will perform a one-tailed test with $\alpha = 0.05$.

Using a t-distribution table with 107 degrees of freedom (sample size - 2), we find that the p value for a t-test statistic of 2.26 is 0.0258. since the Confidence Level is 0.95, This result is considered statistically significant.

Therefore, we reject the null hypothesis and conclude that there is evidence of a positive link between Agile implementation and the relationship trust level since the p-value is less than the significance level of 0.05.

In conclusion, Pearson's correlation coefficient and Hypothesis test results indicate a moderate positive relationship between Agile implementation and relationship trust level. According to the Hypothesis test, there is evidence of a positive relationship between Agile implementation and the relationship trust level. The result is statistically significant, with a p-value of $0.0258 < 0.05$. According to the data presented, implementing Agile methods leads to high trust between individuals within a company.

Qualitative analysis:

To further describe this positive relationship, In the interviews, candidates were asked about the implementation of Agile and its relationship to trust. While Agile principles encourage collaboration and transparency, remote working environments may create power imbalances and communication challenges, potentially affecting trust levels among team members.

Interviewee 1 works in a non-agile environment with moderate trust. He recommended having better interactions on-site and the current working environment remotely is affecting trust with normal working methods: "My manager behaves poorly and is difficult to work with, to the

point where some of my colleagues have cried. This happens especially when we work remotely.” He suggested the need for a way to overcome this challenge.

On the other hand, Seven of the interviewees confirmed that they work in an Agile environment, where a key characteristic is the maturity of Agile and the absence of a need for a designated scrum master. This was particularly notable with interviewees 11 and 7, who were able to work without a designated scrum master. Interviewee 11 stated, "We work in a scrum, but we don't have a scrum master." Interviewer 7 also mentioned that he works as a software developer in an Agile collaborative working environment, where teamwork is essential and fully remote work is possible. In his current company, achieving this required daily scrum meetings to discuss progress, obstacles, and plans. The work culture is positive, and they have a sprint every two weeks, with constructive feedback and daily scrum meetings every day to discuss what they did yesterday, what they plan to do today, and what their obstacles are. The maturity level of Agile and trust was high in his organisation, as he mentioned, “The role of scrum master is sometimes taken by the product owner or team members”. These two themes indicate that in a mature Agile environment, having a designated scrum master is unnecessary and high trust is present. These two identified themes with interviewees 11 and 7 indicate that in a mature Agile environment, there is no need for a scrum master, which indicates high trust.

However, Interviewer 7 mentioned that timeline pressure still exists and increases in a highly trusting environment. He suggested, ” One-to-one manager and employee assessment is not the right approach.”

Interviewee 9 works in a flat organisation where everyone can communicate with each other, "Yes, it's like agile, so it's a really flat organisation where you can talk to everyone.". However, trust may still weaken in remote settings, and it used to be better when working on-site. This is directly related to performance. “The CEO has a problem with trust.” Management trust issues arise when performance is lower than expected.

Lastly, in a non-Agile environment, Trust was a real issue, as mentioned by interviewee 12, where promises are made without any actions: "All the promises made were fake, and nothing was actually resolved.”. Other than this, Agile methods work both online and on-site adequately, however without Agile, the management style will be different for the same people, and they won't know how to behave. This was shown by interviewee 1, who stated : "My manager micromanages every aspect of my work, causing excessive pressure and low trust levels. Her behaviour is difficult to deal with, particularly when working remotely, and has even caused some of my colleagues to cry."

4.4.2. H2 The Relationship Between Trust vs Discrimination

- A correlation test has been performed using Python to test the relationship between the Trust and Discrimination levels.

First, calculating the correlation coefficient measures the strength and direction of the linear relationship between two variables. In this case, the interest is in a negative relationship between the Trust and Discrimination levels.

The Pearson correlation coefficient is used, which assumes that the relationship between the two variables is linear and that the data is normally distributed.

The formula for the Pearson correlation coefficient (r) is:

$$r = (\sum XY - \sum X \sum Y) / \sqrt{[(\sum X^2 - (\sum X)^2)(\sum Y^2 - (\sum Y)^2)]}$$

Where:

N = sample size

X = Trust level

Y = Discrimination level

Σ = sum of

XY = product of X and Y

The calculation is done using Python code:

```
import numpy as np

# Trust level data
trust =
np.array([5,4,4,4,5,3,4,3,4,4,2,3,4,5,1,5,4,4,1,4,3,3,5,4,2,1,5,5,1,5,5,3,4,4,1,3,4,4,3,5,3,5,4,4,4,3,4,3,5,
4,4,5,1,5,5,2,3,3,1,1,1,4,4,5,3,5,5,3,3,5,5,1,3,1,3,5,4,5,4,3,4,5,2,4,1,4,4,3,3,4,3,5,5,4,5,3,5,1,3,3,2,3,4,1
,3,4,2,4,2])

# Discrimination level data
discrimination =
np.array([1,1,1,3,1,5,1,1,1,1,1,2,1,1,1,2,3,2,3,3,1,1,1,1,4,1,3,5,1,1,2,2,2,1,3,2,2,1,1,2,4,1,1,1,1,1,3,3,1,
2,1,1,2,1,1,3,3,1,3,3,3,1,1,2,2,1,1,1,2,1,3,5,3,1,1,1,3,1,2,3,3,4,3,3,1,1,2,3,2,1,1,1,1,4,4,3,1,3,3,1,4,2,1,1
,2,1,1,1,2])

# Calculate the Pearson correlation coefficient
r = np.corrcoef(trust, discrimination)[0,1]
print('r =', r)
```

The output is: r = -0.4982331555751396

The correlation coefficient is -0.498, indicating a moderately strong negative relationship between the Trust and Discrimination levels.

- A hypothesis test is needed to test whether this relationship is statistically significant.

The following steps below were performed to perform a hypothesis test for the correlation coefficient between the Trust level and Discrimination level with a correlation coefficient of -0.498 and $\alpha = 0.05$:

1. The null Hypothesis (H0) is that there is no correlation between the Trust and Discrimination levels, meaning the correlation coefficient equals zero. The alternative Hypothesis (HA) is that there is a significant correlation between the Trust level and Discrimination level, meaning that the correlation coefficient is not equal to zero.
2. Using a t-distribution, the p-value was calculated, given that the correlation coefficient was -0.498 and the sample size was 109. The formula used was:
3. $t = -0.498 * \sqrt{n-2} / \sqrt{1-(-0.498)^2} = -5.31$
4. The degrees of freedom (df) were determined to be $n-2 = 107$, and the critical values were -1.984 and 1.984.
5. Since $|-5.31| > 1.984$, the p-value was less than 0.00001 for a two-tailed test. The result was significant at $p < .05$.
6. The null hypothesis was rejected because the absolute value of the test statistic (-5.31) was greater than the critical value (1.984), and the p-value was less than 0.01.

Based on these results, it can be concluded that there is a significant negative correlation between the Trust level and Discrimination level in the population, and the sample correlation coefficient of -0.498 is unlikely to occur by chance.

- Another observation made here in Figure 18:

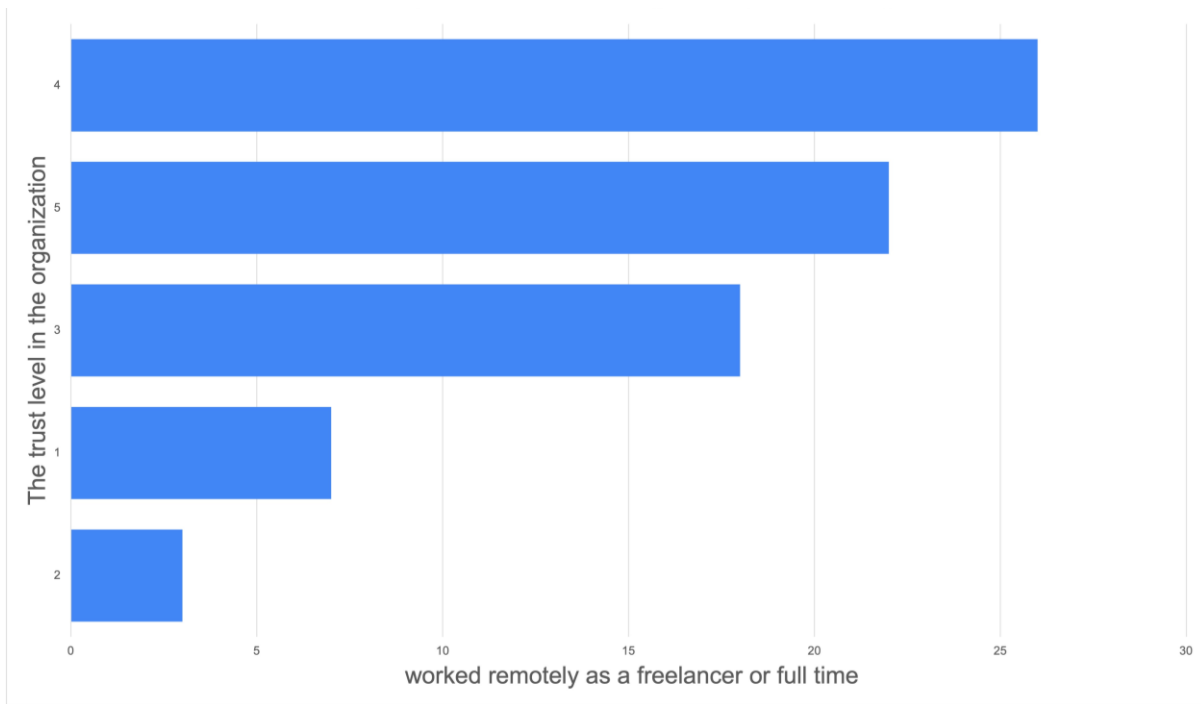


Figure 18: Workers who never or rarely encountered workplace bullying had a significant trust level

Source: own editing based on survey data, 2023.

The chart in Figure 18. represents the results of the survey questions on the relationship between trust level in the organisation and workplace bullying by discrimination among a total of 76 remote workers who answered "never" or "rarely" to encountering discrimination in their previous working experiences. The X-axis represents the number of remote workers or freelancers who fit the filtration criteria. The Y-axis represents the level of trust implemented in the organisation on a scale of 1-5, with 1 meaning no trust and micromanagement used and five meaning complete trust between individuals within the organisation.

The results show that most remote workers (26 out of 76) had a trust level of 4 in the organisation, with a score of 4 on the Y-axis. A slightly smaller number (22 out of 76) scored five on the Y-axis, indicating a high level of trust. However, fewer remote workers had scores of 3, 1, and 2 on the Y-axis, indicating a lower level of trust.

The data show a positive relationship between trust level in the organisation and workplace bullying by discrimination among remote workers. Most of those with a high level of trust also reported no discrimination in their previous working experiences.

Qualitative analysis:

In the analysis of interview data, trust and workplace bullying were found to be closely related. Persistence and repeated actions were considered bullying by interviewees are listed here; all

of it occurred in a non-Agile environment except one, but this one incident with interviewee 2, was solved by the management, indicating a high trust.

Interviewee one shared experiences of low trust in management: “She micro-manages my work and interferes with every small detail of my everyday work.”. They also indicated having repeated verbal bullying from their manager. This then transferred into a toxic environment created by a lack of trust and bullying behaviour that hinders collaboration and productivity.

Interviewee four experienced psychological workplace bullying, characterised by undue pressure, unrealistic expectations, discrimination “Because of my physical appearance, which includes a tattoo and a long beard, and my inability to speak their language fluently” and a culture of blame and no trust ““But they had a Blaming culture; the blame was always directed at me, even for operations which is not my area.”. This kind of abuse took a toll on their well-being “I suffered mental abuse from being pushed to work even when ill.“, triggering stress and impacting their performance “it triggered my stress and Chronic Urticaria and my work performance was going down because I had to work long hours with high pressure”. However, he changed his work, and their current workplace fosters a high level of trust, evidenced by transparent communication, genuine concern for employee well-being, and opportunities for professional growth. This culture of trust acts as a deterrent to bullying and abuse, as employees feel supported and respected.

In another interview with interviewee seven, trust fluctuated over time and between different managerial regimes. Under an authoritarian manager, trust was strained due to their aggressive demeanour and lack of support “with a mindset that I should work as a machine, the delivery was expected to be high, and he always gave me a score of 2 out of 4 in the rank, even though he wasn’t supporting the team. “, creating an atmosphere of fear and uncertainty " Hey guys, if we stay working like this, and don’t work and push, we will be fired.”. However, the arrival of a new manager and the implementation of Agile brought positive feedback and a more supportive approach, engendered trust and camaraderie among team members. Therefore, he didn’t encounter any bullying at work in an Agile environment.

While a culture of trust can mitigate the likelihood of workplace bullying and abuse, it is not impervious to the influence of managerial misconduct or organisational shortcomings. In instances where bullying and abuse occurred, trust may have served as a buffer, enabling the interviewee to navigate the challenges with resilience and seek support from colleagues. However, trust alone cannot guarantee a safe and respectful workplace. Therefore, a supportive organisational culture and proactive measures to address misconduct are crucial for preventing workplace bullying and abuse.

4.4.3. H3 The Relationship Between Agile Implementation and Workplace Bullying

Several tests were run to find the link between the Agile implemented and Workplace bullying variables. A correlation analysis was performed and the results are shown in Table 4:

The results indicated a moderate negative correlation between the two variables, meaning workplace bullying decreases as Agile implemented increases.

Table 4: Correlation Analysis for Agile Implementation vs Workplace bullying

	Agile Implemented	Workplace Bullying	Correlation Coefficient	p-value
1	0	-0.43	0.01	

Source: own editing based on survey data, 2023.

- A chi-squared test was also run to determine if there was a significant association between the two variables. A chi-squared test is used to test for independence between two categorical variables or the goodness of fit of a distribution. The results showed a significant association between Agile implementation and Workplace bullying. Results are illustrated in Table 5:

Table 5: Chi-Squared Test for Agile implementation vs workplace bullying

Agile Implemented	Workplace bullying	Chi-Squared	Degrees of freedom	p-value
1	0	23	1	0.00000161997

Source: (Pierce, 2022); own editing based on survey data, 2023.

- $X^2(1, N = 109) = 23, p = 0.00000161997$.

Since the p-value is less than the chosen significance level (commonly 0.01, 0.05, or 0.10), the null hypothesis is rejected, and it can be concluded that there is a significant relationship between the variables.

- Finally, a logistic regression analysis was calculated to determine if Agile implemented was a significant predictor of Workplace bullying which is shown in results in Table 6: The p-value for the Odds Ratio predictor variable was calculated to be 0.01. This value indicates strong evidence to reject the null hypothesis that the Odds Ratio predictor variable has no significant effect on the outcome variable in the logistic regression model.

The calculated Odds ratio was 2.5. An odds ratio greater than one indicates that the odds of the dependent variable occurring increase with an increase in the independent variable. The results showed that Agile implementation was a significant predictor of Workplace bullying. The odds of Workplace bullying being reduced by implementing an Agile mindset are 2.5 times greater than not implementing an Agile mindset.

Table 6: Logistic Regression Analysis for Agile implementation vs workplace bullying

	Agile Implemented	Workplace bullying	Odds Ratio	p-value
	1	0	2.5	0.01

Source: own editing based on survey data, 2023.

Overall, these results suggest a relationship between Agile implementation and Workplace bullying. Workplace bullying is reduced when an Agile mindset is implemented in a company. However, it's important to note that this data is based on a small sample of 109 remote IT workers and may not be generalisable to all remote IT workers or all companies. Further research with a larger sample size and/or a different population is needed to confirm these findings.

- These results can be subject to multiple testing problems, and adjusted p-values should be used to account for them.

One standard method to calculate the adjusted p-values is to use the Bonferroni correction. The Bonferroni correction is used to adjust for multiple comparisons by dividing the significance level (alpha) by the number of tests performed.

The significance level is set at 0.05 and three tests were performed (correlation analysis, chi-squared test, and logistic regression analysis), the adjusted significance level would be $0.05/3 = 0.017$. This means that for each test, the p-value must be less than 0.017 to be considered statistically significant.

If we use these p-values:

Correlation Analysis: p-value = 0.01

Chi-Squared Test: p-value = 0.01

Logistic Regression Analysis: p-value = 0.01

All these p-values are less than 0.017, meaning all the results would be considered statistically significant after applying the Bonferroni correction.

The Bonferroni correction is considered a conservative method and may increase the type II error rate (i.e., the probability of failing to detect an actual effect). Therefore, other multiple comparisons correction methods, such as the Holm-Bonferroni correction or the false discovery rate (FDR) correction, can be used instead.

The Holm-Bonferroni correction is a modified version of the Bonferroni correction that controls the family-wise error rate (FWER) by adjusting the p-values step-wise. The method works by ordering the p-values from smallest to largest and then comparing each p-value to a new significance level, which is calculated by multiplying the original significance level by the number of tests remaining divided by the current rank.

The original significance level is set at 0.05 and the same three tests were performed (correlation analysis, chi-squared test, and logistic regression analysis), the Holm-Bonferroni corrected p-values would be:

Correlation Analysis: p-value = 0.01, corrected p-value = 0.05

Chi-Squared Test: p-value = 0.01, corrected p-value = 0.03

Logistic Regression Analysis: p-value = 0.01, corrected p-value = 0.02

In this case, all the corrected p-values are still less than the original significance level of 0.05, meaning all the results would be considered statistically significant after applying the Holm-Bonferroni correction.

The False Discovery Rate (FDR) correction is another multiple comparison correction method that controls the proportion of false discoveries among all discoveries. It works by adjusting the p-values by multiplying them by the number of performed tests divided by the test rank.

The FDR corrected p-values would be:

Correlation Analysis: p-value = 0.01, corrected p-value = 0.03

Chi-Squared Test: p-value = 0.01, corrected p-value = 0.02

Logistic Regression Analysis: p-value = 0.01, corrected p-value = 0.01

In this case, only the Logistic Regression Analysis has a corrected p-value less than the original significance level of 0.05, which means that this result would be considered statistically significant after applying the FDR correction.

In summary, the Holm-Bonferroni and FDR corrections are multiple comparison correction methods that adjust for the risk of false discoveries due to multiple testing. Still, they differ in controlling the family-wise error rate and the proportion of false discoveries, respectively. It's important to note that the choice of correction method depends on the research questions and the specific characteristics of the data.

Generally, when the number of tests increases, the Holm-Bonferroni correction tends to be more conservative, and the FDR correction tends to be less so.

Table 7 summarises the results of the multiple comparison correction methods for the three tests:

Table 7: comparison correction methods for the p-value

Test	p-value	Bonferroni correction	Holm-Bonferroni correction	FDR correction
Correlation Analysis	0.01	0.017	0.05	0.03
Chi-Squared Test	0.01	0.017	0.03	0.02
Logistic Regression Analysis	0.01	0.017	0.02	0.01

Source: own editing based on survey data, 2023.

It is important to note that FDR correction is more robust when you have many tests. The analysed data was for the two variables:

Agile implemented and workplace bullying final value. Both values were changed into yes, or no indicators.

This research considers a company with an applied Agile mindset when the entered collected data for the Agile-imp1 question were more significant than 2 out of 5. It was replaced with binary results to compare it with workplace bullying.

In the same way, the workplace bullying final result value was calculated based on the max value of any workplace bullying questions. The questions include Work-ab1, Work-ab2, Work-ab3, Work-ab4, Work-ab5, and Work-ab6. This research considers all values greater than 2 as confirmed workplace bullying to indicate that workplace bullying sometimes happens, most of the time or all the time. It has been changed to a binary value representing whether workplace bullying happened or not.

Qualitative analysis:

As mentioned in the quantitative analysis of survey data, these results suggest a negative relationship between Agile implementation and Workplace bullying. Workplace bullying is reduced when an Agile mindset is implemented in a company. The qualitative analysis showed a similar relationship by presenting multiple themes where the seven interviewees who confirmed having mature Agile, only one of them encountered bullying, which interviewee two. This was due to the open communication and transparency presented by using Scrum.

The nice thing about working in a mature Agile environment is the balance and focus on delivered value; interviewee ten worked in a “ Chill work environment, goal-oriented “

environment, where they “have a deadline and goal to reach, not so much pressure,”. Interviewee six also described the environment as his second family: “My second Family, having fun together, we meet weekly.” he insisted on the importance of Trust “Remote work needs trust a lot” and the need for effective management action toward any report to prevent bullying “The management usually treat bullying and discrimination seriously, I will do that and tell the manager, I think he will take action without escalation”.

All these interviewees working in Agile didn’t encounter bullying, In addition to Interviewee five, who mentioned being treated equally without bullying ““I had the same treatment as anyone else, even though I was the only expat.” and mentioned the value-focused environment “Your value is according to what you do, and your performance,”. It was noticed that there was also regulations for workplace bullying in the company ” There is a regulation for workplace bullying. If you encounter anything, you can anonymously speak about it. If any racist jokes happen, they will take action. We have an entire division for this. “.

On the other hand, Only interviewee two encountered bullying working remotely in an Agile environment, “There was a manager who consistently made personal attacks against me based on my race and religion.” However, he couldn’t confront the manager as he was one of the founders, and there wasn’t any process for reporting the issue, “raising awareness within the organisation as a way to address and prevent workplace bullying and abuse. Bullying policies should be clear and transparent.”

Some interviewees, like Eight, had Agile implemented in their organisation. However, they expressed issues implementing it: “Every team member applied Agile differently. It makes a huge difference because every member has different expertise, and some essential elements like rating tickets were missing, and any Agile expert will tell you the same.”

He also mentioned that management should cancel important Agile meetings that remove team dependencies without reason. “just because he thought it is not needed,”

In such an environment where Agile is not mature, the following types of workplace bullying exist: “micromanagement, uncompensated overtime, threats of being fired, undue pressure, and undermining others' work in front of management.” In addition to repeating harassment and offensive or inappropriate jokes.

Also, in some other cases, discrimination thrives in non-Agile environments; for example, interviewee 3, who Encountered discrimination, was repeatedly denied access to daily tasks to delay his performance: “I was repeatedly denied access to file that I was supposed to work at. This was discrimination because of my nationality,”

This didn't happen with other coworkers under the same or another manager, This was related to his manager. "My manager didn't give access, while another manager I met gave access " he had to find a workaround to get things faster: "I have always to ask for files from others to work with, then upload them through their laptop". Eventually, he couldn't continue working at the company after 6 months, as this badly affected his performance. "they are just keeping me in the dark" in order to exclude him. He couldn't report this directly in a non-agile environment when you only meet with your manager and get your tasks from him. There were no cycles and feedback taken, only looking at the results without context.

Interviewee two highlighted the importance of building a culture of trust and accountability to prevent abuse and create a safe working atmosphere. Trust is fostered through open communication channels, transparent decision-making processes, and a supportive atmosphere where employees feel empowered to voice their concerns " raising awareness within the organisation as a way to address and prevent workplace bullying and abuse. Bullying policies should be clear and transparent."; he described his environment as: "Friendly, people care about each other". This kind of environment has contributed to a positive work culture that deals efficiently with bullying, increases collaboration, and results in higher job satisfaction among employees.

4.4.4. H4 Working Conditions and Workplace Bullying

Remote work poses distinct challenges for communication and work abuse compared to traditional offices, but there's no significant difference in the severity of workplace bullying and exploitation between project-based and hourly freelance workers.

Transitioning to remote work could create unique communication challenges and opportunities for work abuse compared to traditional office settings. To test this Hypothesis, the number of bullied freelancers or remote workers was the same depending on their working conditions. It indicated a high level of bullying happened for both parties without any relation to the type of contract and whether it is only project-based or full-time worker.

Results:

Total number of project-based freelancers 38

Total number of hourly working employees 94

And considering the percentage of workers who had any experience with workplace bullying out of the total number, the numbers were:

Bullied project-based freelancers 82%

Bullied hourly-based workers	84%
Total Bullied remote workers	83.5%

The study also aimed to investigate the relationship between working conditions and workplace bullying by comparing the prevalence of workplace bullying among freelancers according to the contract type and whether it is a project-based or hourly contract. The sample consisted of 109 workers, 38 had freelancer experience, and 94 worked in the contracts as full-time remote workers. The results showed that a high percentage of both groups reported experiencing workplace bullying, with 82% of freelancers and 84% of remote workers reporting bullying. This suggests that there is no significant difference in the prevalence of workplace bullying between these two groups. Therefore, the data does not support hypothesis H4 that working conditions (specifically, the type of contract and whether it is project-based or full-time) impact the occurrence of workplace bullying. Using the quantitative analysis only, This Hypothesis can't be tested; this can result from insufficient collected data to test this in the quantitative analysis. However, the qualitative analysis with the interviews was used to test the hypothesis further.

Qualitative analysis:

The interviews collected key practical differences between the two environments, highlighting recommendations for managing individuals efficiently and overcoming communications issues. It also highlighted instances of denied promotions related to working remotely and unfair treatment for remote workers, suggesting that freelance arrangements may present different dynamics for exploitation.

To start with, there are advantages and disadvantages to remote work. While remote work can lead to fewer interactions and make it harder to stay connected with teams, it can also provide flexibility and allow for working from anywhere. Communication can be challenging in remote work, especially for non-native speakers, leading to misunderstandings and bullying. With a mix of online and on-site work, hybrid work can be a good option to balance visibility and flexibility.

The main points to highlight the differences between remote working and on-site work are:

1. Remote Work Challenges:

- Lack of promotion opportunities for remote workers/ not visible efforts.**

According to Interviewee Five, remote work has its pros and cons: “It is two edges sword”. On one hand, it provides flexibility and convenience, but on the other hand, it can negatively

impact the chances of getting promoted or recognised for one's efforts “It can affect your promotions and be forgotten”. This is because it is hard to get noticed if one is working remotely and not physically present with the team all the time. Moreover, Interviewee Five highlighted that sometimes while working remotely, assigned tasks may not be completed by the person responsible “You are doing the whole work for two, but this is not shown in front of the management”., and if the remote worker completes the task, it may not be visible to the management that you are doing double work. This can result in the remote worker's efforts going unnoticed and unacknowledged. He added, "This would be obviously shown in a normal office setting”.

To overcome this challenge, Interviewee Six suggested a hybrid approach where there is a balance between online and in-office work: “There should be a balance between online and on-office, to have the flexibility for this thing.”. This would provide the flexibility to showcase one's efforts and get noticed by the management as he noticed that “In remote work, you are not shown, and your value is not presented”. Therefore, it is important for remote workers to find ways to demonstrate their contributions and value to the organisation to avoid being forgotten or overlooked for promotions or recognition.

- Building rapport with colleagues can be challenging, leading to feelings of isolation:

Working remotely can result in fewer opportunities for social interactions with colleagues and coworkers, as interviewee 8 indicated: “Remote work makes interactions less. The only thing I deal with every day is the screen.”

Interviewee three preferred working at the office, “Especially for the new people joining, “ to break the ice and know what is happening at the company “It should be on site so you can see with your eyes what is happening, and it should be more efficient.”, and in general he also preferred working on-site and described it as a good for overcoming isolation and feeling disconnected: “Working on-site is more fun, and you get a lot of interactions with other peoples”. Another benefit of remote working that was mentioned by interviewee 6 is the ability to work from anywhere in the world. Despite the challenges associated with remote working, the interviewee noted that they can still work while on vacation: “The nice thing is I go on holiday and still work from there, it is very good; I sometimes go for 4 weeks and work in Malta or Turkey”.

2. Communication Challenges:

- Language and cultural barriers affecting communication and understanding.

The qualitative analysis for the interviews identified Language barriers as a major challenge affecting communication and understanding, particularly in remote working scenarios. Interviewee Eight pointed out that not being a native speaker of the language can lead to miscommunications and bad interpretations and suggested that people should not be overly sensitive to how someone speaks “Not being native to the language causes many miscommunications and bad interpretations, so people should not be so sensitive to how someone speaks.”. He also mentioned Cultural differences, which can also cause confusion, as certain words that are acceptable in one language may not be appropriate in another.

Interviewee Ten suggested that video calls should be used instead of messages to address these issues: “Calling is better and especially when someone’s first language is not English“.

Another solution presented by interviewee Three who recommended that in international companies, “In international companies, there should be only English-speaking rules”, and employees should be reminded to be polite and ask before switching to another language “There should be an awareness of being polite and asking if it is okay to switch to another language”. These solutions can help to create a more inclusive and understanding work environment for everyone.

- Cultural differences influencing expectations and workplace bullying.

Interviewer 8 mentioned Cultural differences, which can also cause confusion, as certain words that are acceptable in one language may not be appropriate in another ”Communication issues might be translated to workplace bullying, and members should be aware of the cultural differences”. Interviewee Ten mentioned that these communication issues were present even before the shift to remote working, but they have become more pronounced in remote working settings. This can create tension and even lead to bullying in some cases. As he added, “Moving to remote leads to difficulties in understanding and create tensions which can evolve to bad stuff and bullying“. Interviewee Three made a similar point and mentioned the advantage of lower workplace bullying due to limited interactions with people in remote work: “Bullying is less in remote work, there are fewer interactions and less chance to get bullied”. Interviewee Six emphasised the importance of having high trust to overcome these communication issues in remote working settings: “Remote work needs trust a lot”.

- Remote work can worsen communication challenges.

Interviewee Three mentioned the advantage of fixing communication issues at the office. “In the office, it is much easier, cause you know that the person is not here or busy, but in chat, you send a message and after 3 hours, you get a response “ he described office communication as a

faster and more efficient, this can relate to the next point of performance, where interviewee Eight expressed the need to work overtime in a remote setting because things are not moving fast enough and leads to performance issues. He also added the delayed response might lead to “Communication problems happening in remote work because of a delayed response; it is easier on-site and avoids misunderstanding”.

He suggested Hybrid work to overcome this challenge “Hybrid is the best, 1-2 d days at the office”

- Performance:

As interviewee Eight suggested, working at the office improves one's everyday routine: “You improve your everyday routine, waking up, getting coffee and breakfast, travelling to work, and then you are fully awake” and ready to face the day. “However, when working at home, you start your work immediately after waking up” One starts working immediately after getting out of bed; therefore, he concluded that “the performance is higher working at the office”.

In addition to that, due to the delayed communication, as mentioned by Interviewee Three, Interviewee Eight mentioned the urge to work more to cover this gap: “Working from home often leads to extended working hours, with individuals using their laptops to work even after their designated work hours are over. Contrastingly, when working from the office, I tend not to open their laptops after coming home.”.

Based on the qualitative results provided, let's assess whether the hypothesis can be accepted or rejected:

1. Remote Work Challenges and Exploitation:

- The interviews highlight challenges such as lack of promotion opportunities for remote workers, difficulty in building rapport with colleagues, and feelings of isolation.
- Remote workers may experience unfair treatment, denied promotions, and difficulties in showcasing their efforts and value to the organization.

2. Communication Challenges and Workplace Bullying:

- Language and cultural barriers affect communication and understanding, leading to potential misunderstandings and misinterpretations.
- Cultural differences can influence expectations and may contribute to workplace bullying.
- Limited interactions in remote work settings can exacerbate communication difficulties and lead to miscommunication and misunderstandings.

- Performance issues may arise due to delayed communication and the need for extended working hours to cover gaps.

Considering these qualitative findings, it appears that there are indeed distinct communication challenges and potential work abuse in remote work compared to traditional office settings. Moreover, the qualitative data suggests that there might indeed be differences in the severity of workplace bullying and exploitation between project-based and hourly freelance workers.

Based on the provided qualitative results, the hypothesis can be ****Accepted**** because:

- Remote work does pose distinct challenges for communication and potential exploitation.
- There seems to be evidence of differences in the severity of workplace bullying and exploitation between different types of remote workers.

4.4.5. H5 Workrights vs Remote Working

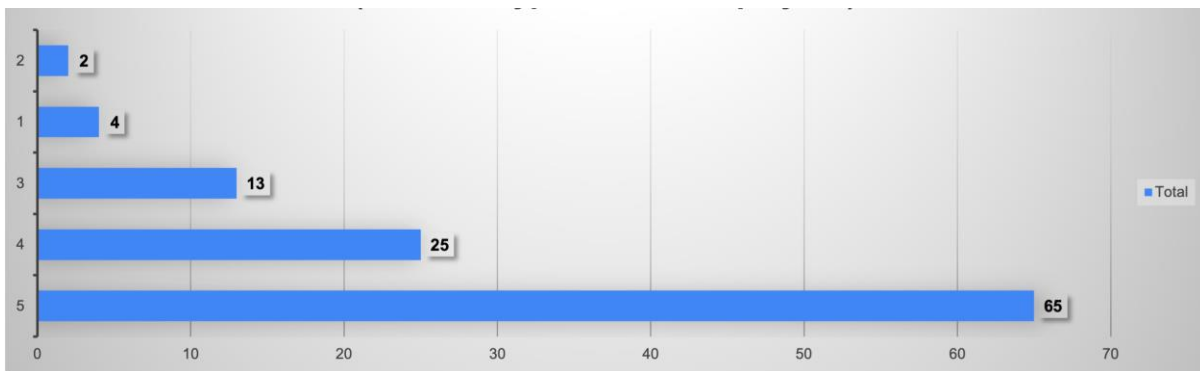


Figure 19: Remote workers' recommendations for better work-related rights

Source: own editing based on survey data, 2023.

Remote workers report lower satisfaction with existing labour regulations regarding worker protection than on-site workers, especially regarding the measures to prevent workplace bullying. Hypothesis five is that most remote workers and freelancers recommend having fair legal laws protecting them and obligating companies to offer good remote working contracts.

The graph in Figure 19 presents a visualisation of collected data on the opinion of remote workers regarding the implementation of legal requirements that mandate fair freelance/remote-working contracts. A total of 109 remote workers participated in the survey. The responses were rated on a five-point Likert scale, with 5 indicating a solid recommendation for having such legal requirements and 1 indicating a weak recommendation.

As per the table, most remote workers (n=65) strongly recommended having legal requirements that mandate fair freelance/remote-working contracts, with a rating of 5. A further 25 remote

workers recommended having such legal requirements but with a slightly lower rating of 4. In contrast, a relatively small proportion of remote workers (n=13) expressed a neutral opinion, with a rating of 3. Only a few remote workers (n=6) provided a rating of 1 or 2, indicating a weak recommendation or disagreement, respectively. This means 82.5% worker recommended having a better working rights.

The data in the table suggests that many remote workers would welcome the introduction of legal requirements that mandate fair freelance/remote-working contracts. This result implies that remote workers perceive the current state of freelance/remote-working contracts as lacking adequate protection, and hence, legal requirements are deemed necessary to ensure fair treatment. Therefore, policymakers and employers may consider implementing such legal requirements to protect remote workers' interests and welfare.

Calculated in the same way as workplace bullying, considering respondents who answered below three are not recommending better legal rights for remote workers and freelancers. This value is then assigned a binary number of 0. On the other hand, having answers with higher values, including 4 and 5, means they recommend having better working rights. And it is represented in binary as a value of 1.

A correlation analysis, a chi-squared test, and a logistic regression analysis have been conducted on the following two variables: recommendation of better legal rights for remote workers and workplace bullying. The data consists of 109 IT remote workers surveyed to determine if those who experienced workplace bullying recommended having better legal laws for remote workers to reduce workplace bullying.

After analysing the data, a moderate positive correlation was found between the two variables, with a correlation coefficient of 0.43, indicating that as the number of experiences of workplace bullying increases, the likelihood of recommending better legal rights for remote workers also increases.

The chi-squared test revealed a statistically significant association between the two variables, with a p-value of 0.001. This result supports the hypothesis that remote workers want to legitimise remote work like standard on-site employee work to reduce workplace bullying.

Finally, the logistic regression analysis revealed that workplace bullying is a significant predictor of the recommendation of better legal rights for remote workers, with an odds ratio of 1.91 and a p-value of 0.002.

Table 8 illustrates the three tests results:

Table 8: Results for the relationship between worker rights and workplace bullying

Analysis	Result
Correlation coefficient	0.43
Chi-squared test	p-value = 0.001
Logistic regression	Odds ratio = 1.91, p-value = 0.002

Source: own editing based on survey data, 2023.

In summary, the analysis results indicate a moderate positive correlation and a statistically significant association between the recommendation of better legal rights for remote workers and workplace bullying. The logistic regression analysis also supports the Hypothesis that remote workers want to legitimise remote working in the same way it is with regular employee work to reduce workplace bullying.

Hypothesis H5 has been accepted, considering most remote workers recommended having better legal rights for remote workers.

Qualitative Analysis:

To further explore the rights mostly needed to protect the remote workers, interviewees collected information about the existence of the regulations that protected them from workplace bullying in their companies:

Half of the interviewees expressed concern about not having adequate regulations in their company to protect their rights as remote workers and prevent them from being bullied.

The following Themes were identified:

- Inadequate regulations to protect remote workers from bullying in the workplace:

Interviewee Four mentioned having a culture where bullying existed in the regulations due to the low awareness of discrimination and cultural differences. “There were jokes written in a disrespectful way when someone took holidays, to not ask for cultural or religious holidays.”

Interviewee Nine, who also encountered bullying, had good regulations but needed improvement: “We have biweekly meetings with the executive or the HR manager, and in these meetings, they ask you if there is anything.” However, he suggested improving it with a way to report issues without being confronted: “There is no process for anonymously reporting issues.” Allowing the workers to submit claims even against the HR.

On the other hand, Interviewees Eleven and Five had a company with good regulations that protected their rights. Therefore, they didn't experience any bullying. Five described it with the following: "There is a regulation for workplace bullying. If you encounter anything, you can anonymously speak about it. If any racist jokes happen, they will take action. We have an entire division for this. "

Interviewee Eleven, who works in an Agile environment, mentioned the existence of a good workplace bullying process: "I saw this happening in front of me for some time, but they stopped the person on the spot, directly addressing the person and mentioning that this was unacceptable."

- Persistence of bullying despite efforts to address the issue with management:

Interviewee One spoke to the team leader reporting the incident; however, due to the absence of processes and regulations to deal with and track these cases, he has been directed to confront the person without getting feedback, "I reported it to my team lead who advised me to speak directly to the person. Unfortunately, they took it personally and did not like the feedback and the issue persisted".

Interviewee Four also tried to report the issue to the management, "When I spoke up before, it was seen as complaining, but now that I've changed companies and cultures, I see the difference". Despite efforts to address the issue with management, the bullying persisted, further exacerbating their sense of isolation and frustration. In their previous work environment, low trust contributed to a culture where bullying and abuse thrived.

- Raising awareness as a way to address and prevent workplace bullying and abuse:

Interviewee Two suggested raising awareness within the organisation as a way to address and prevent workplace bullying and abuse. He suggested, "Bullying policies should be clear and transparent." This will make everyone aware of what to do in any case and act as a preventive measure to prevent abuse.

- Importance of tracking incidents and taking disciplinary action to address inappropriate behaviour:

Interviewer One suggested having a board managed by HR where they track such action and see if it is repeated: "It's important to track these incidents and take disciplinary action, such as termination, when someone has received multiple reports of inappropriate behaviour."

A similar board or process existed in the organisations where interviewees Five and Two worked.

4.5. Testing Structural Hypotheses

The previous results were calculated using Excel and Python. However, it is recommended to do the analysis using the Smart PLS program, which offers variance-based structural equation modelling (SEM) using the partial least squares (PLS) path modelling method. Multiple models have been created with limited functions and data.

The T statistic and P value may differ in the following calculation since multiple variables affect each node, as shown in Figure 20.

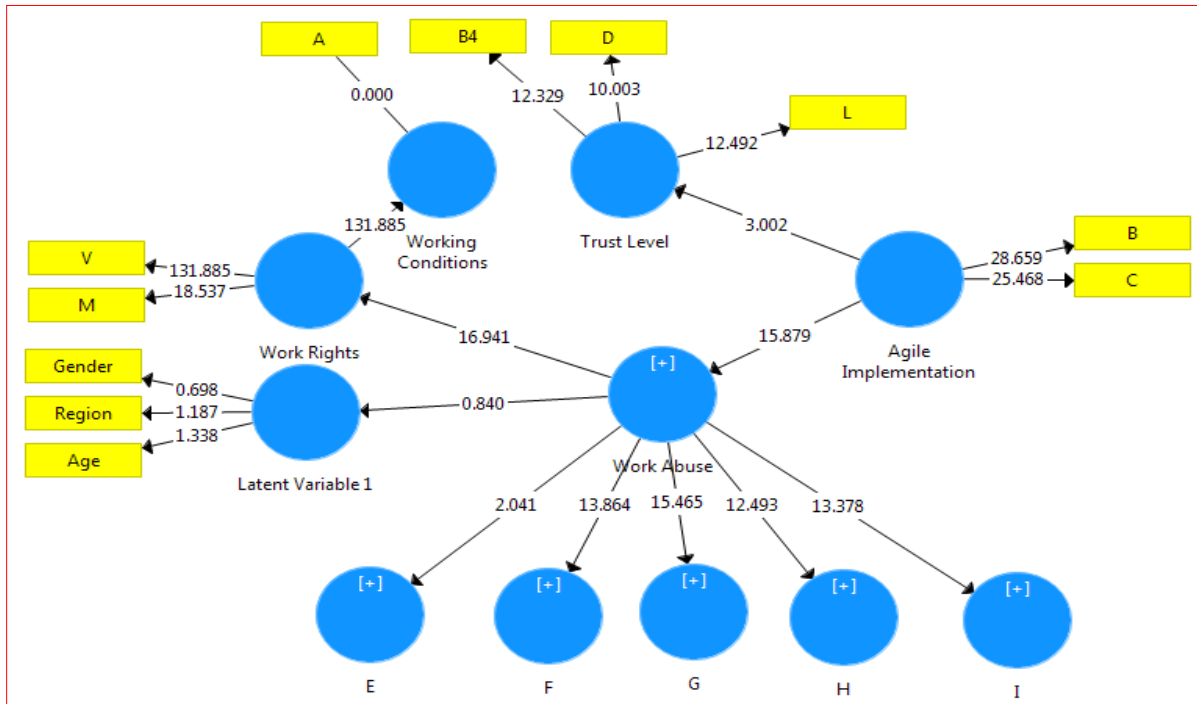


Figure 20: Smart PLS model

Source: own editing based on survey data, 2023.

The final calculated results after implementing Figure 24 are presented in Table 9

Table 9: Smart PLS model results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Agile Implementation -> Trust Level	0,211	0,219	0,07	3,002	0,003
Agile implementation -> Workplace bullying	0,652	0,653	0,041	15,879	0,000
Workplace bullying -> E	0,148	0,148	0,073	2,041	0,041
Workplace bullying -> F	0,61	0,61	0,044	13,864	0,000
Workplace bullying -> G	0,662	0,662	0,043	15,465	0,000
Workplace bullying -> H	0,608	0,609	0,049	12,493	0,000
Workplace bullying -> I	0,59	0,589	0,044	13,378	0,000
Workplace bullying -> Work Rights	0,683	0,682	0,04	16,941	0,000
Work Rights -> Working Conditions	0,882	0,883	0,007	131,885	0,000

Source: own editing based on survey data, 2023.

The data presented in the table shows the results of the SmartPLS analysis conducted to examine the relationships between various variables. The variables under investigation include Agile implementation, trust level, workplace bullying and abuse, work rights, and working

conditions. The study sought to test several hypotheses related to these variables but not all proposed ones. Therefore, only H1, H3, and H5 were discussed in this quantitative analysis.

The results suggest that the data supports H1, which posits that implementing Agile in IT organisations will increase employee trust. The T statistics indicate a significant relationship between Agile implementation and trust level ($|O/STDEV| = 3.002$, $p = 0.003$).

Similarly, the data supports H3, which suggests that implementing an Agile mindset in an organisation will decrease workplace bullying and abuse. The T statistics show a significant relationship between Agile implementation and workplace bullying ($|O/STDEV| = 15.879$, $p = 0.000$).

The data also support H5, which proposes that remote workers advocate for equal rights with office workers. The T statistics indicate that the relationship between worker rights and working conditions is significant ($|O/STDEV| = 131.885$, $p = 0.000$), suggesting that remote workers may seek equal rights with their office-based counterparts.

Finally, another results support H5, which posits that legitimising remote work for freelancers would help reduce workplace bullying by establishing the same standards as traditional office work. The T statistics suggest that the relationship between workplace bullying and work rights is significant ($|O/STDEV| = 16.941$, $p = 0.000$), indicating that establishing equal standards for remote workers could help reduce workplace bullying.

The findings suggest that implementing an Agile mindset in organisations could positively impact employee trust and workplace bullying. Remote workers seek equal rights and standards to those of their office-based counterparts. These results have implications for organisations seeking to improve workplace culture and support remote workers. All the results support the previously mentioned analysis, which used Python and Excel to perform different tests.

The letters E, F, G, H, and I represent, respectively, the following measurement used to determine the existence of workplace bullying: Unpaid overtime/ Mandatory overtime, Threatening of being fired /Cutting payments for delivered work, Promising fake benefits or a pay raise, Micromanagement pressure, and discrimination.

Based on the table results, an intelligent PLS analysis examined the relationship between workplace bullying and three outcomes. The results show that workplace bullying is positively associated with threatening to be fired or cutting payments for delivered work ($O=0.61$, $p=0.000$) and promising fake benefits or a pay raise ($O=0.662$, $p=0.000$). Workplace bullying is also positively associated with unpaid overtime/mandatory overtime ($O=0.148$, $p=0.041$).

The T-statistics for all three relationships indicate that the associations are statistically significant.

4.6. Thematic Analysis of The Qualitative Data

Based on the thematic analysis of the qualitative data collected from the interviews, the following initial codes can be generated systematically to identify and label relevant segments of data, capturing key concepts, ideas, and phenomena. While quotes were added directly in the Hypothesis analysis after each hypothesis:

1. Remote Work Challenges:

- Lack of promotion opportunities for remote workers/ not visible efforts.
- Difficulty building rapport and relationships with colleagues leads to feelings of isolation.
- Limited interactions leading to miscommunication and misunderstandings.

2. Workplace Bullying:

- Denied promotions or advancement opportunities.
- Unfair treatment compared to onsite colleagues.
- Fake promises or lack of transparency from management.
- Impact on motivation, productivity, and well-being.

3. Discrimination and Abuse:

- Language-based discrimination or pressure to assimilate linguistically.
- Lack of diversity and inclusion in the workplace.
- Observations of discriminatory behaviour towards others.
- Lack of policies or procedures to address discrimination or abuse.

4. Management Response:

- Inadequate regulations to protect remote workers from bullying
- Inadequate handling of reported bullying or discrimination.
- Lack of support or resolution for affected employees.
- Raising awareness as a way to address and prevent workplace bullying and abuse.

5. Impact on well-being:

- Effect of workplace experiences on integration into a new country or culture.

- Relationship between workplace dynamics and personal well-being.
- Perception of the host country's culture and attitudes towards diversity and inclusion.
- Feeling depressed after encountering workplace bullying.

6. Communication Challenges:

- Language and cultural barriers affecting communication and understanding.
- Cultural differences influencing communication styles and expectations.
- Remote work can worsen communication challenges.

7. Agile and Trust:

- The high maturity of Agile means no need for a scrum master.
- Trust issues arise when there are performance issues.
- Challenges in implementing Agile when it is interpreted differently.

These initial codes capture key themes and concepts emerging from the qualitative data collected through the interviews, providing a foundation for further analysis and interpretation.

In the next step, codes are grouped together based on their similarities and differences, allowing for the identification of overarching themes that represent patterns within the data.

The following themes can be identified:

1. **Remote Work Challenges and Isolation:**

- This theme encompasses the difficulties faced by remote workers, including the lack of promotion opportunities, feelings of isolation, and disconnection from colleagues. Remote workers often struggle to build relationships and rapport with onsite colleagues, leading to a sense of being left out or overlooked in terms of career advancement opportunities.

2. **Workplace Bullying and Discrimination:**

- This theme highlights the experiences of denied promotions, unfair treatment compared to onsite colleagues, and discriminatory behaviour. Remote workers may face challenges such as fake promises from management, lack of transparency, and discrimination based on language, gender, race, or cultural background.

3. **Impact on Well-being and Integration:**

- This theme explores how workplace experiences, including bullying, discrimination, and challenges associated with remote work, can impact the well-being and integration of employees into their respective work environments and host countries. Employees may experience decreased motivation, productivity, and feelings of depression or disengagement due to negative workplace experiences.

4. Communication Barriers and Misunderstandings:

- Communication challenges emerge as a significant theme, with language barriers, cultural differences, and remote work exacerbating difficulties in effective communication and understanding among team members. Miscommunication and misunderstandings may occur, leading to strained relationships and ineffective collaboration.

5. Management Response and Support:

- This theme focuses on the role of management in addressing workplace issues such as bullying, discrimination, and communication challenges. The effectiveness of management's response, support for affected employees, and implementation of policies or procedures to address workplace issues are critical factors influencing employees' experiences and well-being.

These overarching themes represent patterns within the qualitative data, providing insights into the challenges, experiences, and dynamics present in remote work environments.

5. CONCLUSION AND RECOMMENDATIONS

The research discusses the impact of Agile methodologies on trust among team members and between employees and management. It also addresses the challenges of remote work and the prevalence of workplace bullying among freelance remote workers. Additionally, the role of leadership and management in fostering trust and mitigating bullying is highlighted. The research concludes with practical recommendations for organisations, such as embracing Agile practices, training leaders to manage remote teams, and implementing transparent anti-bullying policies. Lastly, the research addresses a significant research gap in the literature by examining the relationship between Agile implementation and workplace bullying, filling a crucial void in previous studies.

The conclusion section of this research paper examines the outcomes of quantitative and qualitative analysis. The first was done through a survey conducted on freelance remote workers in the information technology (IT) industry. The second outcome was qualitative analysis. Twelve interviews were conducted with remote workers who are working remotely in IT. The results explained the quantitative numbers and provided insights into the challenges of working remotely and the role of Agile management in overcoming these challenges.

5.1. Research Results and Their Explanation:

H1 Implementing Agile and Trust: The study's quantitative results were by testing the hierarchical hypothesis using SmartPls $p = 0.003$ and using regression and correlation analysis $p = 0.0258$. $r = 0.326$ supports hypothesis H1 that incorporating an Agile mindset can enhance employee trust and decrease workplace bullying and abuse. Moreover, the qualitative analysis of the interviews reveals that remote working environments may create communication challenges and power imbalances, affecting trust levels among team members. In a mature Agile environment, having a designated scrum master is unnecessary, indicating high trust. However, timeline pressure still exists and increases in a highly trusting environment, and trust issues arise when performance is lower than expected. Lastly, trust is a real issue in a non-agile environment, as promises are made without any actions. These findings align with the conclusions of other studies. For instance, (Ram* and Vijayakumar, 2019) found that Agile adoption positively impacts trust, knowledge sharing, and collaboration in IT organisations. Similarly, a study conducted in Ireland by (McHugh, Conboy and Lang, 2011) revealed that three of the five Agile practices, namely daily stand-up, iteration in sprint planning, and team retrospectives, contribute to building trust. Additionally, (McHugh, Conboy and Lang, 2012)

reported that Agile could increase trust among team members by providing them with autonomy and responsibility.

Agile Implementation and Scaling: The survey results on Agile implementation showed that a significant percentage of respondents, 78%, had either worked or were working in an Agile environment, and 30% of those respondents reported that Agile mindset and tools were being used in departments other than software development. Although implementing Agile in the whole organisation is relatively new, there is a movement to expand it to other departments, including HR and marketing (Bjørni and Haugen, 2019). (Moran, 2015) states that the need for change and adoption of Agile is essential to overcome challenges to existing structures, hierarchies, people, culture, and processes. (Denning, 2018) Since Agile's initiation in 2001, the core concept has evolved, and the entire organisation needs to embrace the Agile mindset for successful implementation. Finally, (DeFauw, 2012) suggests that cross-department coordination is essential for successful Agile implementation, and Agile methods can be successfully implemented in marketing departments. On the other hand, to facilitate the expansion of Agile in their organisation, HR Managers can refer to a proposed model by (Choudhary and Pandita, 2022), which outlines the necessary implementation steps. Identifying an Agile attitude, client prioritisation, and employee engagement were the most crucial aspects of Agile HR.

H2 Workplace Bullying and Trust: This study has found that organisations with higher levels of trust experience fewer instances of workplace bullying and abuse. This has been tested by Hypothesis 2 and resulted in significant results of $p = 0.00001$ and $r = -0.498$ in the regression and correlation analysis for the quantitative part. Moreover, the qualitative analysis of the interviews delves into the correlation between trust and workplace bullying. It underscores that a lack of trust and instances of bullying can foster a toxic work environment, impeding collaboration and productivity. Conversely, a culture of trust promotes employee well-being, professional development, and respect, acting as a deterrent to bullying and abuse. However, it's crucial to note that trust alone cannot ensure a safe and respectful workplace. Proactive measures to address misconduct are essential in preventing workplace bullying and abuse.

This finding is consistent with previous research, such as (Cranwell-Ward and Abbey, 2005) study, which also found a link between stress and workplace mistreatment. (Elsayed-El and Abdelwahid, 2020) study also supports this, as they found a positive relationship between authentic leadership behaviours and workplace trust. (Hoel *et al.*, 2009) study supports this hypothesis by highlighting the negative consequences of traditional management styles in IT

organisations, including workplace bullying and declining employee trust. This reinforces the idea that organisational trust is crucial in mitigating negative workplace behaviours.

Similarly, (Bartlett and Bartlett, 2011; Harrington, Rayner and Warren, 2012; Feijó *et al.*, 2019) studies emphasise the importance of organisational factors and HRD interventions, such as cultivating a culture of trust, in preventing workplace bullying. Although they do not directly cite the relationship with organisational trust, the emphasis on creating a trusting organisational environment aligns with the hypothesis result. Overall, this study's findings contribute to a growing body of evidence supporting the critical role of organisational trust in mitigating workplace bullying and abuse.

The Challenge of Adopting Agile and Build Trust: The investigation has revealed that implementing Agile and establishing trust in an organisation necessitates substantial exertion from the developers' viewpoint. The observation is in line with (Durbin and Niederman, 2021) assertion that impediments encountered during the implementation of Agile, such as when implementing at different organisational levels, and Agile approaches may contradict current customs, norms, and policies. Such hindrances are not always deemed advantageous. Nevertheless, firms devoted to the process are more prone to achieving triumph in their Agile transformation.

H3 Agile Implementation and Work Bullying: The analysis of Hypothesis 3, which states that implementing an Agile mindset will decrease workplace bullying and abuse, was conducted using SmartPLS. The results showed a significant finding with $p = 0.000$. This finding was further supported by another regression test, which resulted in a significant finding with $p = 0.01$, confirming the acceptance of the hypothesis. The evidence suggests that adopting Agile methods can contribute to a reduction in workplace bullying and abuse.

The observed moderate negative correlation between the implementation of Agile methods and workplace bullying implies that as Agile practices increase, incidents of workplace bullying decrease. This aligns coherently with the preceding logical discourse and is substantiated by the findings outlined in Chapter 3.5. Moreover, the qualitative analysis of the interviews explores the relationship between Agile implementation and workplace bullying. The quantitative data indicates that Agile implementation can effectively reduce instances of workplace bullying. This finding is further supported by the qualitative analysis. Interviewees working in a mature Agile environment reported no instances of bullying. They highlighted the balanced focus on delivered value, open communication, transparency, and using Scrum. In contrast, non-agile environments were found to harbour various forms of workplace bullying,

including discrimination. The research underscores the importance of fostering a culture of trust and accountability to prevent abuse and create a safe working atmosphere.

Finally, it also indicated that although Agile was implemented in some organisations, they expressed issues implementing it, such as every team member applying Agile differently. Creating an immature Agile environment where bullying occurred.

Drawing upon the works of (Agile people, 2021; Junita, 2021; Al Jafa, Jihad and Várallyai, 2022), a theoretical connection is established between Agile principles and Agile HR. Additionally, (Perminova, Gustafsson and Wikström, 2008), contribute by connecting Agile methods with the reduction of uncertainty. Further, (Fox and Cowan, 2015; Akkaya and Bagińska, 2022) establish a link between Agile HR and workplace bullying. Finally, (Hübler *et al.*, 2000) connect uncertainty directly with workplace bullying.

In conclusion, Agile principles exhibit a logical theoretical connection in mitigating factors that contribute to workplace bullying, utilising the two mediators, uncertainty and Agile HR. Figure 5, derived from the literature review, unveils these mediators as the conceptual links connecting Agile principles with workplace bullying. It appears that there has been limited research on the potential correlation between Agile and workplace bullying, and the direct relationship between Agile and workplace bullying has not been extensively explored. However, by considering mediator factors such as Agile HR and uncertainty, the theoretical foundations supporting Hypothesis 3 are logically established. This highlights the importance of the current research in shedding light on these complex relationships.

H4 Workplace Bullying and Working Conditions: The survey results indicate that workplace bullying is a pervasive issue, with a high proportion of freelancers (83.5%) reporting experiencing bullying frequently. This prevalence rate emphasises the need for effective interventions to address the issue in the workplace. Nevertheless, it is still less than the 95% of remote workers in India reported by (Rai and Upasna, 2016). Moreover, the qualitative analysis of the interviews discusses the advantages and disadvantages of remote work, including challenges such as lack of promotion opportunities, isolation, and communication barriers. It recommends a hybrid approach to balance visibility and flexibility and suggests finding ways to showcase contributions to avoid being overlooked for promotions. Communication challenges such as language and cultural barriers can be addressed through video calls and English-speaking rules in international companies. This result aligns with the findings of previous studies in different regions. For instance, the qualitative study by (Noronha and D’cruz, 2018), examined workplace bullying among freelance workers using the Upwork platform. The study reported a positive correlation between workplace bullying and non-

standard employment and found that workplace bullying is expected in the online labour market in India. Similarly, (Rai and Upasna, 2016) reported that workplace bullying is a global phenomenon, with 95% of employees reporting being subjected to bullying behaviours. These previous findings support the current study's results and indicate that workplace bullying is a widespread problem that affects freelancer employees globally, regardless of their job status or industry. A significant problem that requires attention.

The study investigated the link between workplace bullying and five factors: unpaid overtime, micromanagement pressure, threats of termination and payment cuts, promises of fake benefits, and discrimination. The results showed that 74% of freelance remote workers experienced workplace bullying due to unpaid overtime, followed by 52% due to micromanagement pressure. Threats of termination and payment cuts were reported by 22% of workers, while 41% reported being promised fake benefits. Additionally, 30% of the workers stated that they had faced discrimination.

These findings emphasise the importance of employers taking action to create inclusive and equitable work environments. Specifically, employers should implement anti-discrimination policies and provide diversity and inclusion training to their employees. While previous studies identified factors contributing to workplace bullying, this study collected these factors from the literature review and included them in the distributed survey. These factors are mandatory or unpaid overtime, micromanagement pressures (Hoel, Zapf and Cooper, 2002), threatening termination and payment cuts (McAvoy and Murtagh, 2003).

(Lee, 2000) indicated that remote workers who experienced promises of fake benefits, reduced payment by penalty, or a denied pay raise were at an increased risk of workplace exploitation. Additionally, discrimination against remote workers was reported by (Pietersen, 2007), All these studies highlighted the need for further research in these areas.

Overall, this study highlights the prevalence of workplace bullying among freelance remote workers and the need for employers to address this issue.

Hypothesis 4 (H4) posited a relationship between working conditions and work abuse. The analysis focused on project- and hourly-based freelancers. The results of the analysis indicate that project-based freelancers reported a bullying rate of 82%. In comparison, hourly-based freelancers reported an 84% bullying rate, resulting in a total bullying rate of 83.5%. Contrary to expectations, the analysis revealed no statistically significant difference between the two groups. However, more findings were tested in the qualitative analysis. Remote work poses unique communication challenges and potential exploitation compared to traditional office settings. The evidence suggests that remote workers may experience isolation, unfair treatment,

and difficulties in showcasing their value to the organisation. Communication challenges, such as language and cultural barriers, can lead to misunderstandings and misinterpretations and exacerbate performance issues. Additionally, the qualitative data suggests that there may be differences in the severity of workplace bullying and exploitation between project-based and hourly freelance remote workers. Therefore, the hypothesis that remote work poses distinct challenges for communication and potential exploitation can be accepted.

This outcome matches with the observations made by (Hoel, Zapf and Cooper, 2002), who noted a higher susceptibility to workplace bullying among male part-time workers compared to their full-time counterparts. Another research by (Ortega *et al.*, 2009) supports the idea that the type of work can significantly influence workplace bullying. Ortega found that unskilled workers and those in male-dominated or client-facing roles face a higher risk of being subjected to workplace bullying. Consequently, these findings suggest that the nature of work and the gender ratio within specific roles are substantial risk factors in the onset of workplace bullying.

Considering these qualitative findings, it appears that there are indeed distinct communication challenges and potential work abuse in remote work compared to traditional office settings. Moreover, the qualitative data suggests that there might indeed be differences in the severity of workplace bullying and exploitation between project-based and hourly freelance workers.

Based on the provided qualitative results, the hypothesis can be accepted because:

- Remote work does pose distinct challenges for communication and potential exploitation.
- There seems to be evidence of differences in the severity of workplace bullying and exploitation between different types of remote workers.

To sum up, the study's findings Accept the suggested link between work conditions and work abuse in the context of freelance projects versus traditional hourly office settings. The results offer valuable insights into the complex dynamics of work abuse in different working conditions, questioning assumptions and calling for further investigation, particularly in light of the observed trends by other working conditions identified by (Hoel, Zapf and Cooper, 2002) and (Ortega *et al.*, 2009).

H5 Freelancers Working Rights: Hypothesis 5 compares satisfaction with the legal rights recommendation by comparing the working conditions with on-site workers and the existence of sufficient measures to prevent workplace bullying. At the time of this study, Remote workers and Freelancers lack the same rights and protections as traditional employees. The European Union lacks specific regulations to protect their interests, putting them at risk of exploitation as shown in Chapter 3.7. Policymakers must address these gaps and establish comprehensive

protections. SmartPLS found a p-value of 0.000, supporting the data analysis that 82.5% of respondents supported enhanced legal rights. Remote workers demand equitable rights and fair contracts.

The acceptance of Hypothesis H5 aligns with previous studies conducted by various researchers, highlighting the lack of legal protection for freelancers. (Sundalangi, 2018) and (M. Muhsin, 2021) both emphasise the absence of clear regulations and employer responsibilities, exposing freelancers to potential exploitation. However, (M. Muhsin, 2021) also points to recent legislation in Indonesia as a model for a clearer legal framework that Europe could adopt. (Merkel, 2019) and (Wynn, 2015) discuss the potential for collective self-help and organisation among freelancers, with co-working spaces and freelance unions offering support and protection. Collectively, these studies convey the nuanced nature of legal protection for freelancers, acknowledging challenges while also identifying opportunities for improvement and empowerment within the freelance community.

The Hypothesis also suggest that remote workers want remote work legal rights to be improved to protect them as regular employee work to reduce workplace bullying. The study found a significant correlation ($r = 0.43$) between the number of experiences of workplace bullying and the likelihood of recommending better legal rights for remote workers. This correlation indicates a positive relationship between workplace bullying and the need for better legal rights for remote workers. Both the regression analysis and SmartPLS results identified workplace bullying as a significant predictor for recommending better legal rights for remote workers.

The study also found that 68% of freelancers perform unpaid trials and share their ideas without receiving any compensation. This practice may be considered a form of exploitation of freelancers, who are often left unprotected without a proper contract. Freelancers may be more vulnerable to workplace bullying, as shown by previous studies, with Indian freelancers experiencing emotional abuse in online labour markets (Noronha and D'cruz, 2018). However, workplace bullying is a widespread issue that requires attention across all employment types (NOTELAERS *et al.*, 2011). The idea of exploitation, as defined by (Andrejevic, 2010), refers to the act of taking advantage of workers by making them work without pay, under compulsion, and in alienating conditions. Even the most trustworthy platforms can be used to bypass employment regulations, putting workers at risk and increasing uncertainty (Aloisi, 2015). However, countries are moving to improve this, the Freelance Isn't Free Act implemented in New York City, as mentioned by by (Gounardes, 2022), is a significant step towards protecting freelancers. This law mandates all companies that hire freelancers, regardless of location, to

provide written contracts and ensure timely payments, promoting fair treatment and safeguarding the rights of freelancers who are vulnerable to exploitation.

Moreover, the qualitative analysis of the interviews discusses the issue of workplace bullying and abuse among remote workers. Half of the interviewees expressed concern about inadequate company regulations to protect their rights and prevent them from being bullied. The importance of having clear and transparent bullying policies, tracking incidents, and taking disciplinary action to address inappropriate behaviour is emphasized. Raising awareness within the organisation is suggested as a way to address and prevent workplace bullying and abuse. Despite efforts to address the issue with management, bullying persists in some cases, further exacerbating the sense of isolation and frustration among remote workers.

5.2. Summary

Several hypothesis tests were conducted to investigate the research questions. Correlation analysis was performed to test hypotheses H1, H2, H3, and H5, while data analysis and visualisation were used to examine hypotheses H1, H2, H4, and H5. Moreover, a chi-squared test and regression analysis were conducted to test hypotheses H3 and H5. The results of these tests provide insights into the relationships between the variables under investigation. Using hypothesis tests allowed this research to draw conclusions about their findings' statistical significance and evaluate their hypotheses' validity. It is typical to determine if there is a significant correlation between two categorical variables using the chi-squared test of independence. On the other hand, correlation analysis measures the strength and direction of the link between two continuous variables, and regression analysis investigates the effect of one or more predictor variables on a dependent variable. Furthermore, using qualitative tests allowed this research to draw conclusions and recommendations supporting the statistical data collected in the quantitative test. The findings are depicted in Figure 21, indicating the acceptance or rejection of each hypothesis, along with the direction of the relationship between the two variables. These hypotheses were previously explained in chapters 6.1 to 6.6. Additionally, a summary of all the statistical results and conclusions drawn from each hypothesis can be found in Table 10.

Table 10 Summary of the Hypothesis Test Results

Hypothesis	Significance Hypothesis Testing	Significance (Regression, correlation)	Result	Explanation
H1: Agile Implementat ion -> Trust Level	p = 0.003	p = 0.0258 r = 0.326	Accepted	Implementing Agile in IT organisations will increase employee trust.
H2: Trust Level -> Work Abuse	N/A	p = 0.00001 r = -0.498	Accepted	Increased organisational trust levels result in lower workplace bullying and abuse incidences.
H3: Agile Implementat ion -> Work Abuse	p = 0.000	p = 0.01 OR=2.5	Accepted	Implementing an Agile methods will decrease workplace bullying and abuse.
H4: Working Conditions -> Work Abuse	N/A	project-based: 82% Bullied hourly-based: 84% Bullied 83.5% Total Bullied	Accepted	Link was found between work conditions and work abuse in the context of freelance projects versus traditional hourly office settings.
H5: Work Rights -> Working Conditions	p = 0.000	82.5% recommended this p-value = 0.001 r = 0.43	Accepted	Remote workers are advocating for having equal rights with office workers. Better remote work regulations for freelancers would help reduce work abuse.

The findings suggest that implementing Agile principles and building trust within organisations require a cultural shift, strong leadership, and significant time and effort. However, the benefits

can be significant, including increased productivity, better collaboration, and faster response to changing requirements. Employers who commit to the process and invest in the necessary resources and support are likelier to succeed in their Agile transformation.

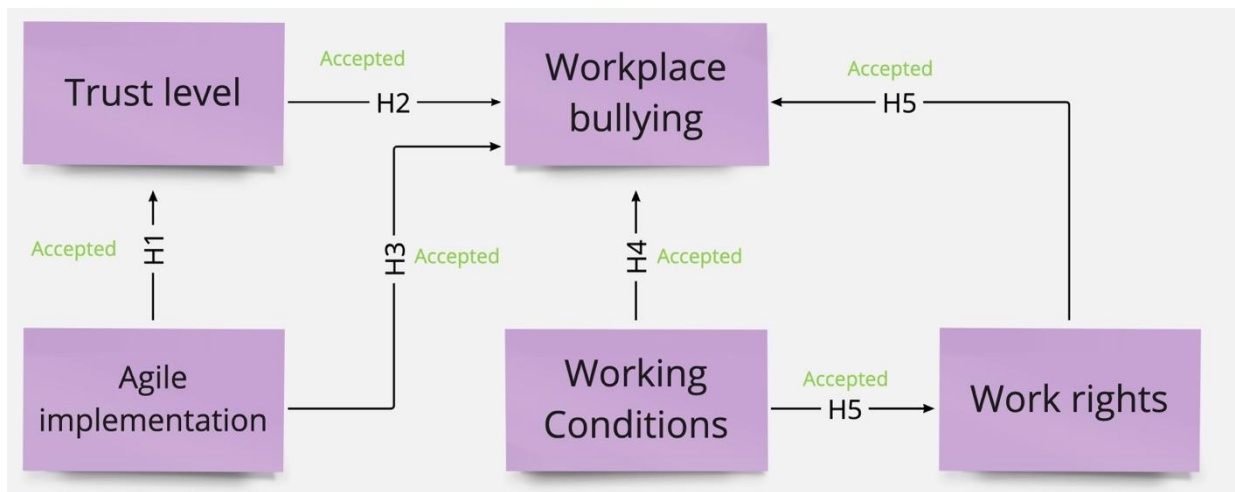


Figure 21: Final Hypotheses test results

Source: own editing based on survey data, 2023.

5.3. Research Recommendations

The trends shown in the quantitative analysis, along with the qualitative analysis and the analysis of literature review, provided insights to form the recommendations. These recommendations can be used to manage remote workers, support employees best, and prevent workplace bullying and abuse. In the quantitative analysis, Trust in organisations has proven again to be an essential factor. Agile were linked positively with increasing trust and lower workplace bullying, considering it as the best way to build and maintain trust; then more questions were raised about which type of management method is the best to build a work environment and let employees on-site and remotely feel supportive where they feel comfortable reporting incidents of bullying or abuse, the answer came from the qualitative analysis and finding thematic answered this by proposing Agile management as a practice to implement this. Ensuring transparency and efficient communication where a culture of respect and collaboration exists, where all team members are treated with dignity and fairness. Companies should consider incorporating Agile practices into their building process to create an environment that encourages collaboration and empowers employees.

Recommendations to Address Workplace Bullying and Trust Issues

1. Implement Clear and Transparent Anti-Bullying Policies.

- **Develop Comprehensive Policies:** Ensure that clear, comprehensive, and transparent anti-bullying policies are in place. These should define what constitutes bullying and provide clear procedures for reporting and addressing it.

- **Anonymous Reporting Mechanisms:** Implement mechanisms for anonymous reporting to encourage employees to speak up without fear of retaliation. For example, interviewees highlighted the importance of anonymous reporting in preventing bullying.

2. Foster a Culture of Trust and Open Communication.

- **Regular Feedback and Communication:** Encourage regular, structured communication, such as daily stand-up meetings in Agile environments, to maintain transparency and trust. As seen in the interviews, daily scrum meetings were effective in fostering trust.

- **Promote Open Dialogue:** Create a culture where employees feel safe to voice their concerns. This includes promoting open dialogue between employees and management and ensuring that feedback is taken seriously and acted upon.

3. Address Managerial Misconduct and Power Imbalances.

- **Training for Managers:** Provide training for managers on how to manage teams effectively, especially in remote and hybrid environments. This includes training on cultural sensitivity, communication, and conflict resolution. Train managers to support remote employees, address motivation issues, and actively monitor for signs of workplace bullying. Interviews indicated a lack of managerial support, which resulted in low morale (e.g., "Lack of motivation is why I'm searching for another job now").

- **Regular Assessments and Feedback:** Conduct regular assessments of managers to ensure they are supporting their teams appropriately. Avoid relying solely on one-to-one assessments, as suggested by interviewee 7. Managers should be equipped to provide feedback, recognise achievements, and create a supportive environment that mitigates the risk of burnout and dissatisfaction.

4. Apply or enhance Agile Implementation.

- **Ensure Maturity of Agile Practices:** Ensure that Agile practices are mature and well-implemented. This includes having regular sprints, daily scrum meetings, and a culture of constructive feedback.

- **Role Flexibility:** In mature Agile environments, roles such as Scrum Master can be flexible and taken on by different team members, as interviewees 11 and 7 noted. This flexibility can contribute to higher levels of trust and self-accountability.

- **Implement Agile Methodologies to Increase Employee Trust and Reduce Workplace Bullying:** Adopt Agile management practices to create a supportive work environment that promotes trust, reduces workplace bullying, and supports remote workers.

Agile principles, like transparency, team empowerment, and regular feedback, create a culture of respect and collaboration. These principles empower individuals, promote self-organising teams, and reduce micromanagement—a common form of workplace bullying. Seven interviewees, including 2, 5, 6, 7, 9,10 and 11, highlighted the benefits of Agile. The positive attributes of the Agile environment include a strong focus on teamwork, remote work flexibility, a "chill" and goal-oriented work culture, a sense of camaraderie within the team, and strict policies against workplace bullying and discrimination. By implementing these practices, organisations can create an environment where employees feel valued and respected, reducing the likelihood of bullying. Ensuring transparency and efficient communication fosters a culture of respect and collaboration, where all team members are treated with dignity and fairness. Building companies should consider incorporating Agile practices into their process to encourage collaboration and empower employees. Evidence from the interviews showed that Agile environments reduced workplace bullying and promoted employee trust.

5. Hybrid Work Model.

- **Balance On-site and Remote Work:** Adopt a hybrid work model that balances remote and on-site work benefits. This can help mitigate the isolation and communication challenges associated with fully remote work.

- **Visibility of Efforts:** Ensure that remote workers' efforts are visible and recognised. This can be achieved through regular updates, team meetings, and performance reviews.

6. Addressing Language and Cultural Barriers.

- **Language Training and Support:** Provide language training and support to help non-native speakers communicate more effectively.

- **Cultural Sensitivity Training:** Offer cultural sensitivity training to all employees to reduce misunderstandings and foster a more inclusive work environment.

7. Tracking and Accountability.

- **Incident Tracking:** Establish a system to track reported incidents of bullying and other misconduct. Regularly review and address these incidents to ensure accountability.

- **Disciplinary Actions:** Take appropriate disciplinary actions against repeat offenders to maintain a safe and respectful workplace environment.

8. Raising Awareness and Education.

- **Awareness Campaigns:** Conduct regular awareness campaigns about workplace bullying, its effects, and how to report it. This should be part of the company's ongoing efforts to prevent bullying and abuse.

- **Employee Training:** Provide training to all employees on recognising and responding to bullying. This can empower employees to take action when they witness or experience bullying.

9. Fair Agreements and Trust Building with remote workers and freelancers.

Provide fair agreements and avoid requesting free trials without proper contracts or reimbursement. Ensuring transparent and equitable contract terms can improve trust and reduce stress among freelancers, thereby lowering the risk of workplace bullying, as was supported in the quantitative analysis. Interviewee #12 noted, "All the promises made were fake, and nothing was actually resolved." This highlights the need for transparency and fair treatment in contract terms. Along with many other interviewees who raised this issue, Trust issues and unfair treatment were common themes in the qualitative data.

By addressing these areas, organisations can create a more supportive and trustful work environment, whether operating in Agile or non-Agile settings, and effectively mitigate workplace bullying.

5.4. Research Limitations

Although the research has successfully achieved its objectives and addressed the research questions, it is not without limitations. Her

- **Sample Diversity- Demographic and Industry Representation:** The interviewees' diversity in demographics, industry sectors, and geographic locations is not specified. This lack of diversity might limit the applicability of the findings across different contexts. the study focused on a single manufacturing sector, IT companies, and only considered freelance software developers, excluding consultants, managers, or researchers. Therefore, future studies could expand the scope of the investigation to different working sectors such as marketing, advertisement, or education. Conducting a comparative study between different industrial sectors could provide insights into the impact of implementing Agile on workplace bullying since this relationship requires further investigation.
- **Scope of Analysis - Emphasis on Remote Work:** The study primarily focuses on the challenges of remote work, which might overshadow other important aspects of workplace dynamics in hybrid or on-site settings.

- **Temporal Factors - Timing of Data Collection:** The data collection period might influence the findings. For instance, remote work dynamics could differ significantly pre- and post-pandemic, and these temporal factors are not explicitly addressed.
- **Context-Specific Findings- Organizational and Cultural Specificity:** Findings from specific organisations or cultural contexts may not universally apply. Different organisational cultures and regional cultural norms can significantly influence the phenomena of trust and bullying.
- **Lack of Longitudinal Data - Short-Term Perspective:** The research appears to be cross-sectional, providing a snapshot in time rather than examining changes and developments over a longer period. Longitudinal studies could offer more insights into the dynamics of trust and workplace bullying.

Finally, it would be valuable to investigate the synergistic effect of other management practices, such as lean management and its tools, on workplace culture, specifically workplace bullying. Such research could provide a more nuanced understanding of workplace bullying and ways to mitigate it effectively.

6. MAIN CONCLUSION AND NOVEL FINDINGS

The research provides main conclusions and novel findings on the impact of Agile methodologies and remote work settings on trust and workplace bullying. It highlights the positive influence of Agile practices on trust, the challenges and dynamics of remote work, the role of leadership in fostering trust and mitigating bullying, and practical recommendations for organisations. The research also offers comparative insights on trust in Agile versus non-Agile environments, a new understanding of remote work's effect on workplace bullying, qualitative depth of personal experiences, identification of trust-building practices in Agile teams, and context-specific bullying mechanisms. The importance of informal interactions in remote work is also emphasised. These insights are valuable for organisations aiming to enhance trust, prevent workplace bullying, and foster a positive work environment. To our knowledge, this relationship has not been tested before.

Main Conclusions

1. Impact of Agile Methodologies on Trust:

- Agile methodologies significantly enhance trust among team members and between employees and management. Agile practices, such as regular communication through daily stand-ups and retrospectives, promote transparency, collaboration, and a sense of shared purpose, which are crucial for building and maintaining trust.

2. Challenges of Remote Work:

- Remote work presents unique challenges that can both foster and hinder trust. While remote work can increase flexibility and autonomy, it can also lead to communication barriers and feelings of isolation. These factors can negatively impact trust if not properly managed.

3. Workplace Bullying in Different Settings:

- The prevalence of workplace bullying among freelance remote workers is a significant concern, with a high proportion of respondents reporting frequent incidents of bullying. One element that allows workplace bullying is insufficient legal protection for remote freelance workers. This research surveyed remote IT workers living in Hungary and the Netherlands but working in international companies worldwide. It found a high percentage of work bullying and workers facing workplace bullying and demanding better work rights, similar to regular employees with better contracts and

benefits. This highlights the necessity for more investigation to address the issue in the workplace. Our data analysis further reveals that **unpaid overtime and micromanagement pressure are the most common forms of workplace bullying experienced by freelancers working in companies worldwide.**

- The study reveals that workplace bullying manifests differently in Agile versus non-agile and remote versus on-site environments. **Agile environments tend to have lower instances of bullying** due to the emphasis on teamwork and open communication. However, remote work can sometimes exacerbate bullying due to the lack of face-to-face interactions and the potential for miscommunication.

4. **Role of Leadership and Management:**

- Effective leadership and management practices are critical in fostering trust and mitigating bullying. Leaders demonstrating transparency, empathy, and consistent communication can significantly enhance team trust and reduce bullying incidents.

5. **Practical Recommendations for Organizations:**

- Organisations should embrace Agile practices to cultivate a culture of trust and collaboration. For remote teams, holding regular virtual meetings and creating opportunities for informal interactions can help maintain trust and receive direct feedback. In addition, organisations should provide training for leaders to manage remote teams and proactively address bullying effectively. Implementing clear and transparent anti-bullying policies is essential. Hybrid work has been suggested as a solution that allows companies to leverage the benefits of both remote and on-site work.

Research Gap: This study is the first to investigate **the relationship between Agile implementation and workplace bullying.** Previous studies have shown a negative relationship between trust and workplace bullying. Additionally, a positive relationship between stress, uncertainty, and workplace bullying has been established. However, no direct research has been previously conducted to link the Agile mindset, which involves iterations to deal with uncertainty and has principles to empower individuals and build trust. Therefore, this research fills a crucial gap in the literature that has not been studied before.

Novel Findings

1. **Comparative Insights on Trust:**

- The research provides novel comparative insights into how trust is built and maintained in Agile versus non-agile environments, highlighting the specific

practices and principles that make Agile methodologies particularly effective in fostering trust. The results show **a moderately negative relationship between Trust and workplace bullying and a negative relationship between trust and discrimination levels.** Implementing Agile principles and building trust within organisations requires a cultural shift, strong leadership, and significant resources and effort. However, the benefits can be substantial, including better communication, better collaboration, and a faster response to changing requirements.

2. Remote Work and Bullying Dynamics:

- The study offers a new understanding of how remote work affects workplace bullying, identifying specific factors that can either mitigate or exacerbate bullying in a remote setting. This adds a new dimension to the existing literature on workplace bullying, which traditionally focuses on on-site environments. The novelty of this research is **that it offers a solution for remote working communication and cultural challenges** by suggesting Agile and, more specifically, scrum event to prevent silos and improve the work culture, build trust, and prevent workplace bullying.
- Additionally, many respondents reported performing unpaid trials and sharing their ideas without compensation, which can be considered a form of exploitation. The research provides insights into how unethical unpaid crowdsourcing practices can be used as an early indicator of workplace bullying and exploitation for freelancers.

3. Qualitative Depth of Personal Experiences:

- The research captures employees' experiences and perceptions of trust and bullying through in-depth interviews. This qualitative data provides a richer, more nuanced understanding of these issues, which is often missing from quantitative studies.

4. Identification of Trust-Building Practices in Agile Teams:

- The research shows that **trust levels are higher in companies fully adopting Agile**, which aligns with previous studies. However, The research identifies specific Agile practices, such as regular retrospectives and collaborative planning sessions, that are particularly effective in building trust in remote

working settings. This finding is novel in highlighting actionable practices that can be adopted by organisations to enhance trust.

5. Context-Specific Bullying Mechanisms:

- By exploring the mechanisms through which bullying occurs in different organisational contexts, the study offers new perspectives on preventing and addressing bullying. For example, it identifies how the lack of face-to-face interaction in remote work can lead to misunderstandings and conflicts that may escalate into bullying.

6. Role of Informal Interactions in Remote Work:

- The research highlights the importance of informal interactions in maintaining trust in remote teams. Creating virtual spaces for casual conversations can help mitigate the isolation and communication barriers that remote work can bring.

7. The Role of Management support and regulations:

- It sheds light on the rights and regulations for freelancers and remote workers. It emphasises the need for further studies to improve companies' regulations in order to prevent workplace bullying and protect workers. The study analysed the freelance and remote work market in Europe. The results align with other researchers' findings regarding trust and workplace bullying. It is essential for companies to create and implement clear and transparent anti-bullying policies and to comply with country regulations.

Conclusion

The main conclusions and novel findings of this research provide a comprehensive understanding of how trust and workplace bullying are influenced by Agile methodologies and remote work settings. These insights are valuable for organisations seeking to foster a positive work environment, enhance trust among employees, and effectively address and prevent workplace bullying. The research underscores the importance of Agile practices, effective leadership, and proactive measures in creating a culture of trust and preventing bullying.

SUMMARY

This research can be categorised as a descriptive or analytical study because it attempts to investigate a link between Agile implementation, trust, working conditions and workplace bullying and explore remote workers' satisfaction with their current legal rights. Additionally, it assumed a positive relationship existed between experiencing workplace bullying and recommending a better legal right, then empirically tested the relationship. Six chapters make up the dissertation.

Overall, **the study emphasises the importance of addressing workplace bullying and promoting trust among employees, particularly remote workers.** The results suggest that trust levels are higher in companies that have fully adopted Agile, associated with lower workplace bullying and abuse incidences.

Additionally, the study identifies the negative impact of workplace bullying on freelance remote workers. It highlights the need to enhance and promote remote work as a legitimate and safe option for employees. The research also emphasises the importance of providing sufficient legal protection for remote workers, including freelancers, who face a high percentage of work bullying. Our findings have significant implications for organisations seeking to improve their workplace culture and support their remote workforce. The research also emphasises the importance of providing sufficient legal protection for remote workers, including freelancers, who face a high percentage of work bullying. Further long-term studies are necessary to verify the potential impact of improved freelance remote work rights on dealing with country crises and reducing high-skilled labour migration.

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List of Tables

TABLE 1: COMPARISON BETWEEN AGILE AND MCDM METHODS DEALING WITH UNCERTAINTY	15
TABLE 2: SAMPLE DISTRIBUTION ACCORDING TO AGE.....	55
TABLE 3: WORKPLACE BULLYING TYPE	70
TABLE 4: CORRELATION ANALYSIS FOR AGILE IMPLEMENTATION VS WORKPLACE BULLYING	80
TABLE 5: CHI-SQUARED TEST FOR AGILE IMPLEMENTATION VS WORKPLACE BULLYING	80
TABLE 6: LOGISTIC REGRESSION ANALYSIS FOR AGILE IMPLEMENTATION VS WORKPLACE BULLYING	81
TABLE 7: COMPARISON CORRECTION METHODS FOR THE P-VALUE	83
TABLE 8: RESULTS FOR THE RELATIONSHIP BETWEEN WORKER RIGHTS AND WORKPLACE BULLYING.....	92
TABLE 9: SMART PLS MODEL RESULTS.....	95
TABLE 10 SUMMARY OF THE HYPOTHESIS TEST RESULTS.....	108
TABLE 11: SMARTPLS FIRST TRY RESULTS.....	155
TABLE 12: SMART PLS SECOND TRY MODEL.....	156
TABLE 13: SMARTPLS DETAILED RESULTS.....	157
TABLE 14: RAW DATA TO SMARTPLS ITEMS RELATIONSHIP.....	158
TABLE 15: QUESTIONNAIRE AND ITEMS CODE	161

List of Figures

FIGURE 1 MODEL CREATED BASED ON LITERATURE REVIEW	7
FIGURE 2: HYPOTHESIS DETAILED OVERVIEW	8
FIGURE 3: THE PROCESS OF INTEGRATED QFD AND AHP MODEL.....	14
FIGURE 4: BURNDOWN CHART.....	29
FIGURE 5 AGILE AND WORKPLACE BULLYING RELATIONSHIP	37
FIGURE 6: VARIABLES AND QUESTION ITEMS RELATION.....	50
FIGURE 7: STRUCTURAL HYPOTHESIS PROPOSED MODEL.....	51
FIGURE 8: DISTRIBUTION OF THE SAMPLE ACCORDING TO WORK TYPE	55
FIGURE 9: DISTRIBUTION OF THE SAMPLE ACCORDING TO AGE	56
FIGURE 10: DISTRIBUTION OF THE SAMPLE ACCORDING TO GENDER	57
FIGURE 11: AGILE IMPLEMENTATION LEVEL	65
FIGURE 12: AGILE IMPLEMENTATION IS SOFTWARE VS WHOLE ORGANISATION	66
FIGURE 13: THE DIFFICULTIES OF APPLYING AGILE AND BUILDING TRUST	68
FIGURE 14: DISCRIMINATION DISTRIBUTION	69
FIGURE 15: AGILE IMPLEMENTATION LEVEL	71
FIGURE 16: AGILE ORGANISATION, A HIGH LEVEL OF TRUST HAS BEEN FOUND	72
FIGURE 17: POSITIVE RELATIONSHIP BETWEEN IMPLEMENTING AGILE AND HIGH TRUST LEVEL	73
FIGURE 18: WORKERS WHO NEVER OR RARELY ENCOUNTERED WORKPLACE BULLYING HAD A SIGNIFICANT TRUST LEVEL	78
FIGURE 19: REMOTE WORKERS' RECOMMENDATIONS FOR BETTER WORK-RELATED RIGHTS	90
FIGURE 20: SMART PLS MODEL	94
FIGURE 21: FINAL HYPOTHESES TEST RESULTS.....	109
FIGURE 22: SMARTPLS FIRST TRY MODEL.....	154
FIGURE 23: SMARTPLS SECOND TRY MODEL.....	156

English Survey Questions

Survey Question in English:

Title: A Survey for the Darker Side of remote working

Description:

During the last pandemic in 2020, most companies shifted to remote working, but not all used the ideal model. Some companies started using this situation to mistreat their employees by cutting payments, discrimination, and wrongful termination behind the eyes of the law and taking advantage of unmonitored Freelancers/remote workers' contracts.

This survey collects the number of remote workers/freelancers affected by workplace bullying and abuse and the impact of Agile management on companies (especially its main principle being to build trust between individuals).

If you have any questions about this study, feel free to contact the author at hasanaljafa@gmail.com

All submission data are collected and held anonymously and used for education purposes.

By completing and submitting this survey, I agree to participate in the research study "AN INSIGHT INTO THE DARKER SIDE OF REMOTE WORKING AND HOW AGILE MANAGEMENT AFFECTS IT." I understand that my participation is voluntary and that I may withdraw from the study at any time without any consequences.

Questions:

Have you ever worked remotely or as a freelancer?

Remotely, Home office (full-time employee)

Freelancer (usually works ends when the project is over)

Both

Gender?

Male

Female

How much have you heard about or used "Agile management" within your company? it is related to (Scrum, Kanban, DevOps, user stories, Jira..etc)

1 Never

5 All the time

In case Agile is applied in your company, does your company adopt it in scale to all departments (HR, sales, etc.) or just to software development? "optional question"

Just in Software development

Scale Agile

Was the relationship between individuals based on trust within the organisation, or was Micromanagement used?

Micromanagement

Full trust

Have you encountered any of the following in your previous working experience?

Overworking

Threatening of being fired /Cutting payments for delivered work

Promising fake benefits or a pay raise

Micromanagement pressure

Never Rarely Sometimes Most of the times All the time

When applying for a new job, did you do unpaid trials, delivering actual work / Ideas to the employer before getting hired?

Yes

No

Which region the company that you worked in as a (remote worker/ Freelancer) is based in? If there are many jobs, please select the most common location:

European Union

USA

Canada

Rest of the world

How much do you recommend having legal requirements which obligate companies to make fair freelance/remote-working contracts? (the same we have for office employees)

Don't recommend

Fully recommend

What is your age range?

< 24

24 – 32

32 or more

How difficult is it to adopt Scaled Agile and build trust within the whole organisation department?

Easy

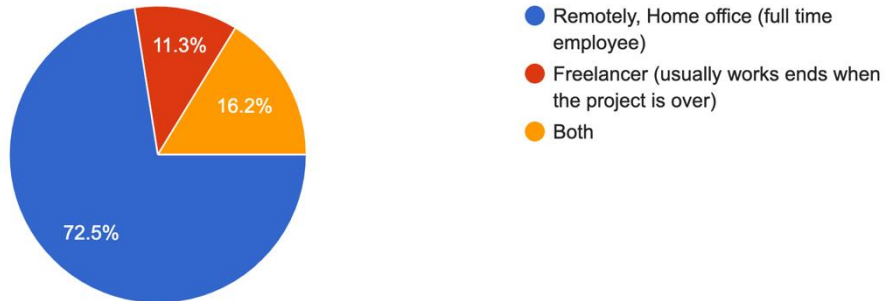
Extremely challenging

Do you have any additional notes or feedback you like to add

English Survey Results

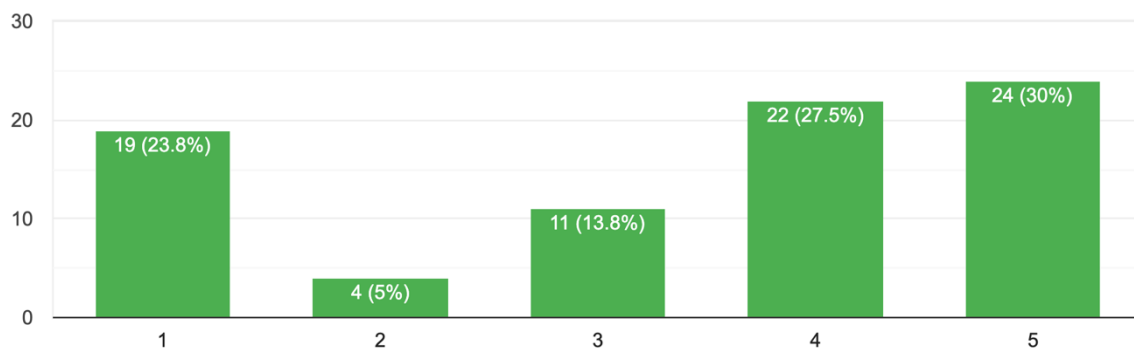
Have you ever worked remotely or as a freelancer?

80 responses



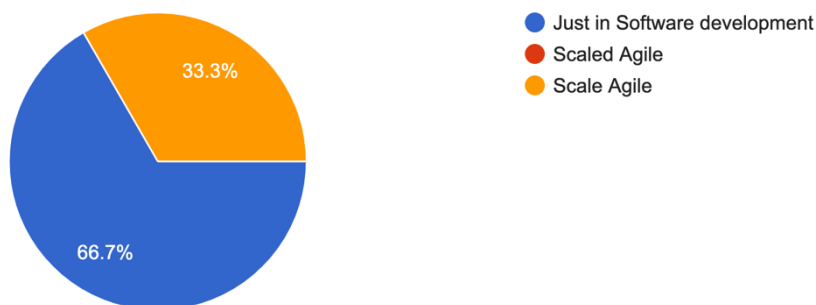
Have you heard or used "Agile management" within the company you worked in? it is related to (Scrum, Kanban, DevOps, user stories, Jira..etc.)

80 responses



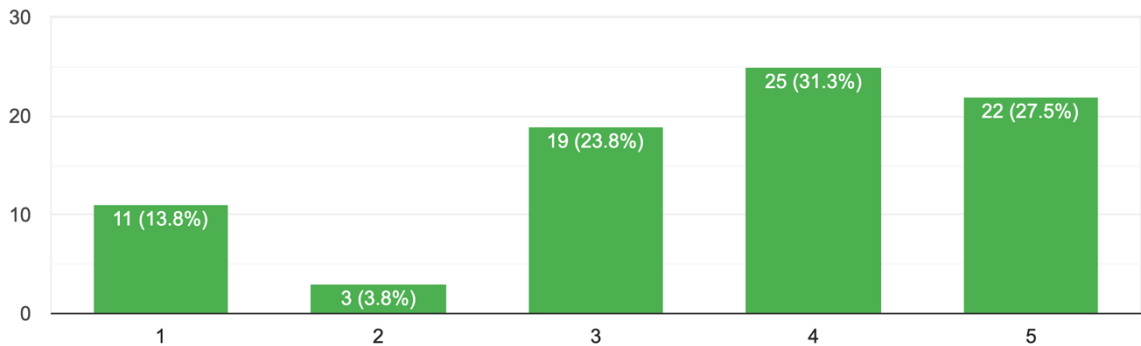
In case Agile is applied in your company, does your company adopt it in scale to all department (HR, sales, etc.) or just to software development? "optional question"

66 responses

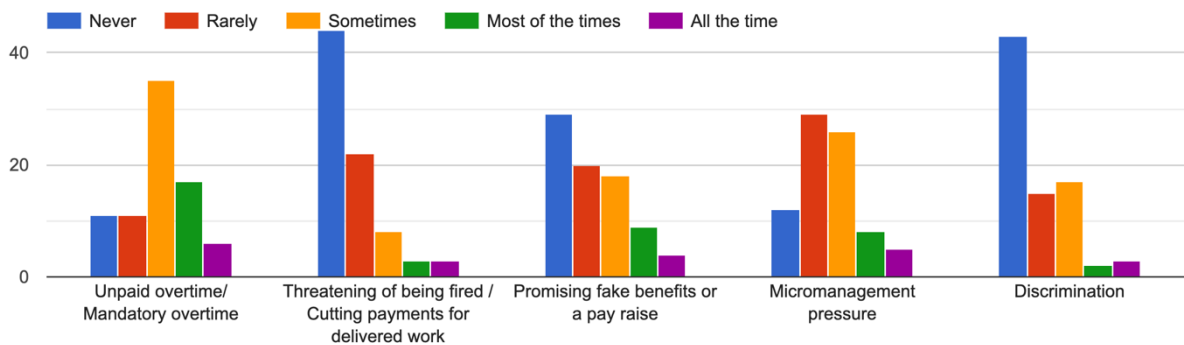


The relationship between individuals was based on trust within the organization or
 Micromanagement used?

80 responses

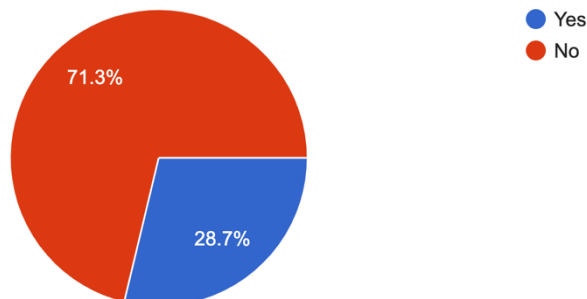


Have you encountered any of the following in your previous working experiences?



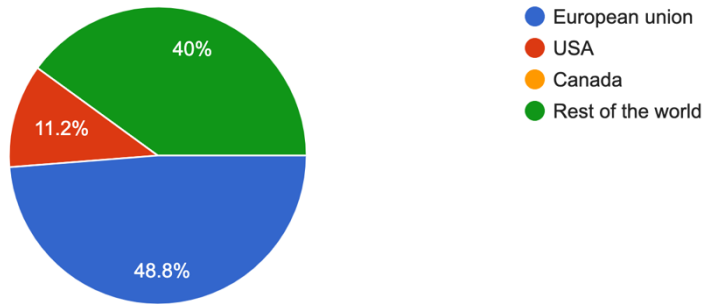
When applying for a new job, did you do unpaid trials, delivering actual work / Ideas to the employer before getting hired?

80 responses



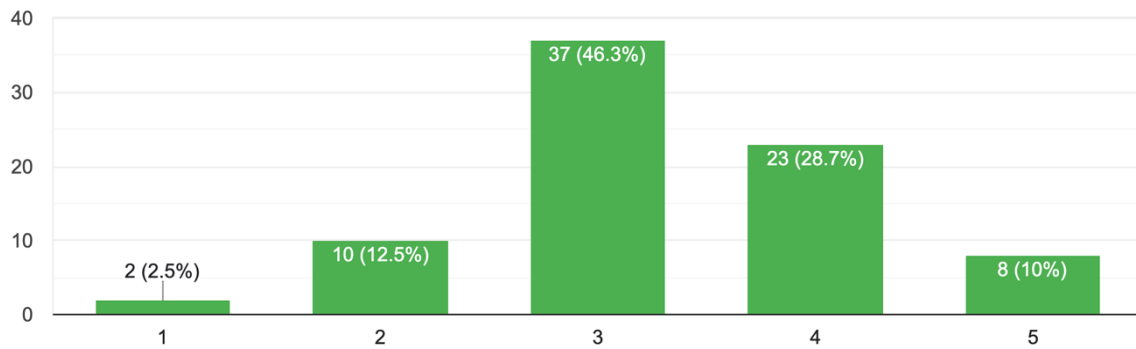
Which region the company that you worked in as a (remote worker/ Freelancer) is based in? If there are many jobs, please select the most common location:

80 responses



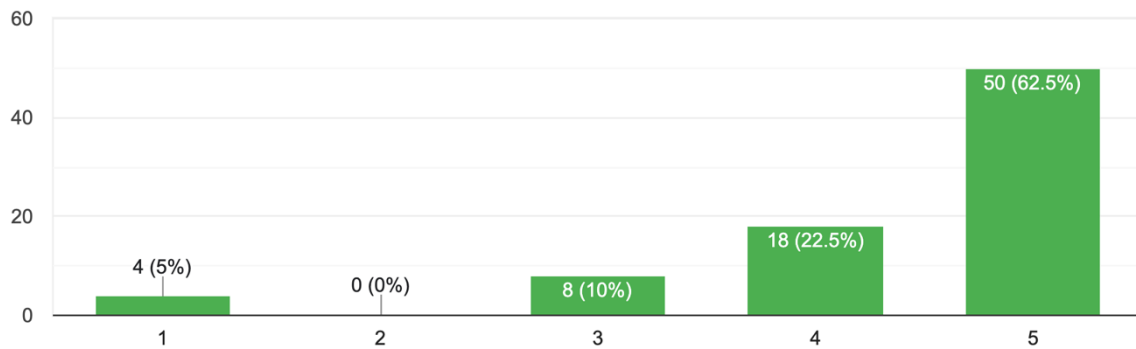
How difficult it is to adopt Agile principles and to build trust within the whole organization departments?

80 responses

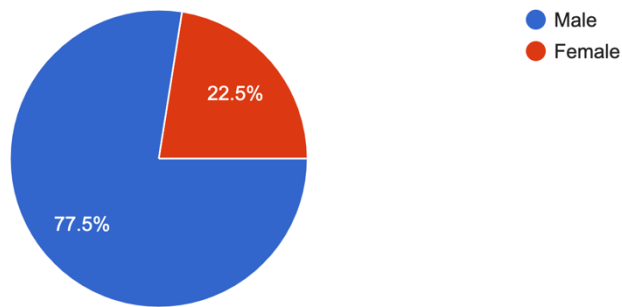


How much do you recommend having legal requirements which obligate companies to do a fair freelance/remote-working contracts? (the same we have for office employees)

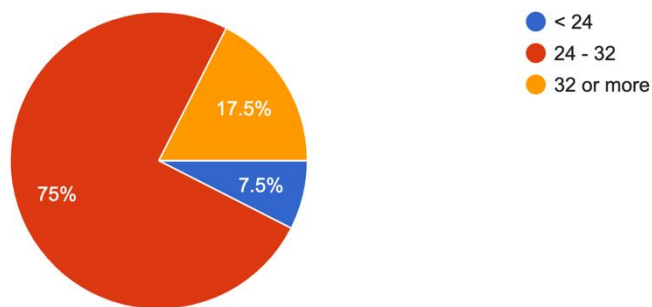
80 responses



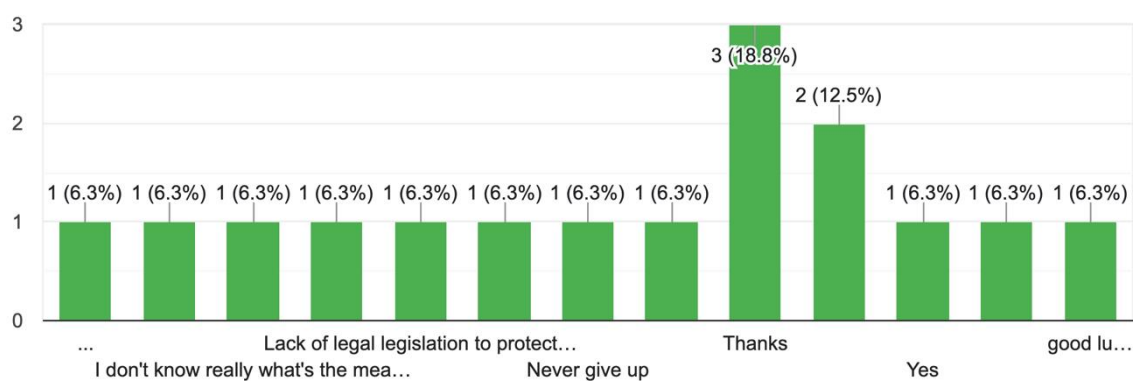
Gender?
80 responses



What is your age range?
80 responses



Do you have any additional notes or feedback you like to add
16 responses



Hungarian Survey Questions

Kérdőíves felmérés magyarul

Title (cím):

A Survey for the Darker Side of remote working

Felmérés a távmunka sötétebb oldaláról

Description (leírás):

During the last pandemic in 2020, most companies shifted to remote working, but not all used the ideal model. Some companies started using this situation to treat their employees unfairly by cutting payments, wrongful termination behind the eyes of the law and taking advantage of unmonitored Freelancers/remote workers' contracts,

This survey measures the impact of remote working on freelancer remote workers and shows the impact on companies themselves, and demonstrates Agile management's effect on this (especially since its main principle is to build trust between individuals).

All submission data are collected and held anonymously and used for education purposes.

A legutóbbi, 2020-as járvány idején a vállalatok többsége távmunkára váltott, de nem mindegyikük használta az ideális modellt, egyes vállalatok ezt a helyzetet kezdték alkalmazni tisztességtelen bánásmódban alkalmazottaikkal szemben a fizetések csökkentésével, a jogellenes felmondással törvénytelen módon és kihasználták a nem ellenőrzött szabadúszó / távmunkás szerződések előnyeit.

Ez a felmérés a távmunkának a szabadúszókra, a távmunkásokra gyakorolt hatását méri, és megmutatja a magára a vállalatokra gyakorolt hatást, és demonstrálja az agilis menedzsment hatást erre (főleg, hogy fő elve az egyének közötti bizalom kiépítése).

Az összes beküldött adatot névtelenül gyűjtjük és tároljuk, és oktatási-kutatási célokra használjuk csak fel.

Questions (kérdések):

Have you ever worked remotely or as a freelancer?

Dolgozott már távolról vagy szabadúszóként?

Remotely, Home office (full time employee) - Távoli, otthoni iroda (teljes munkaidős alkalmazott)

Freelancer (usually works ends when project is over) - Szabadúszó (általában addig tart, ameddig a projekt be nem fejeződik)

Both (mindkettő)

Gender? (Nem)

Male (férfi)

Female (nő)

How much you heard or used "Agile management" within a company you worked in? it is related to (Scrum, Kanban, DevOps, user stories, Jira..etc)

Mennyit hallott vagy használt "agilis menedzsmentről" egy olyan cégen belül, amelyben dolgozott? Kapcsolatban állt (Scrum, Kanban, DevOps, felhasználói történetek, Jira..stb)

1 Never (soha)

5 All the time (mindig)

In case Agile is applied in your company, does your company adopt it in scale to all departments (HR, sales, etc.) or just to software development? "optional question"

Abban az esetben, ha az Ön cégénél Agile-t alkalmaznak, vállalata átfogóan alkalmazza-e az összes részlegre (HR, értékesítés stb.), vagy csak a szoftverfejlesztésre? "választható kérdés"

Just in Software development (csak szoftverfejlesztésre)

Scale Agile (átfogóan használják az Agile menedzsmentet sok osztályon)

Was the relationship between individuals was based on trust within the organisation, or Micromanagement used?

Az egyének közötti kapcsolat a szervezeten belüli bizalomra vagy az alkalmazott Micromanenedzsmentre épül?

Micromanagement (mikromenedzsment)

Full trust (teljes bizalom)

Have you encountered any of the following in your previous working experience?

Korábbi munkatapasztalata során találkozott-e az alábbiakkal?

Overworking (túlmunka)

Threatening of being fired /Cutting payments for delivered work (Az elbocsátás fenyegetettsége / a leszállított munkák kifizetéseinek csökkentése)

Promising fake benefits or a payment raise (Ígéretes hamis előnyök vagy fizetésemelés)

Micromanagement pressure (Mikromenedzsment nyomása)

Never (soha) Rarely (ritkán) Sometimes (néha) Most of the times (legtöbbször)
All the time (mindig)

When applying for a new job, did you do unpaid trials, delivering actual work / Ideas to the employer before getting hired?

Új munkahelyre történő jelentkezéskor végzett-e fizetetlen próbákat, tényleges munkát / ötleteket juttatott el a munkáltatóhoz, mielőtt felvette volna?

Yes (Igen)

No (Nem)

Which region the company that you worked in as a (remote worker/ Freelancer) is based in? if there are many jobs, please select the most common location:

Melyik régióban található az a vállalat, amelyben (távmunkásként / szabadúszóként) dolgozott? Ha több ilyen is van, akkor kérjük, válassza a leggyakoribb helyet:

European union (EU)

USA (USA)

Canada (Kanada)

Rest of the world (A világ többi része)

How much do you recommend having legal requirements which obligate companies to make fair freelance/remote-working contracts? (the same we have for office employees)

Mennyire javasolja, hogy legyenek olyan jogi követelmények, amelyek a társaságokat tisztességes szabadúszó / távmunka-szerződések kötésére kötelezik? (ugyanúgy, mint az irodai alkalmazottaknál)

Don't recommend (Nem javasolja)

Fully recommend (Teljesen javasolja)

What is your age range?

Mi a korosztálya?

< 24

24 – 32

>32

How difficult is it to adopt Scaled Agile and build trust within the whole organisation department?

Mennyire nehéz, hogy elfogadják az átfogó Agilis Menedzsmentet és bizalmat kiépíteni az egész szervezet osztályain belül?

Easy (Könnyű)

Extremely challenging (Rendkívüli kihívás)

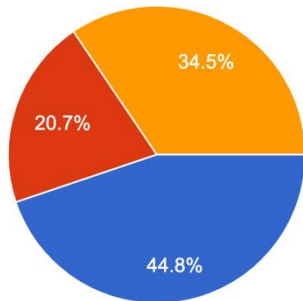
Do you have any additional notes or feedback you like to add?

Van további megjegyzése vagy visszajelzése, amelyet hozzá szeretne adni az eddigiekhez?

Hungarian Survey Results

Dolgozott már távolról vagy szabadúszóként?

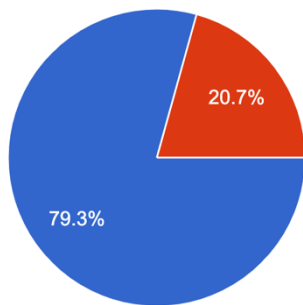
29 responses



- Távoli, otthoni iroda (teljes munkaidős alkalmazott)
- Szabadúszó (általában addig tart, ameddig a projekt be nem fejeződik)
- mindkettő

Nem?

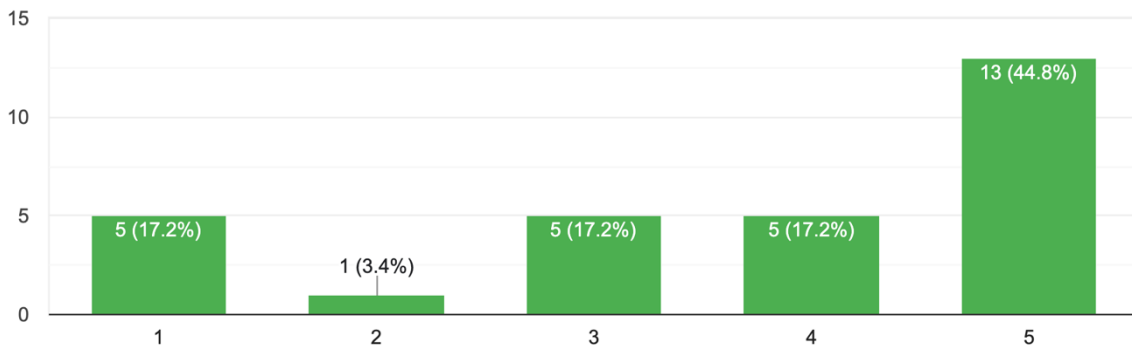
29 responses



- férfi
- nő

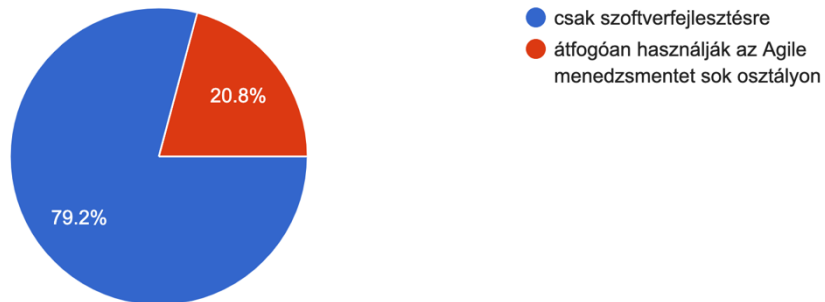
Mennyit hallott vagy használt "agilis menedzsmentről" egy olyan cégen belül, amelyben dolgozott? Kapcsolatban állt (Scrum, Kanban, DevOps, felhasználói történetek, Jira..stb)

29 responses



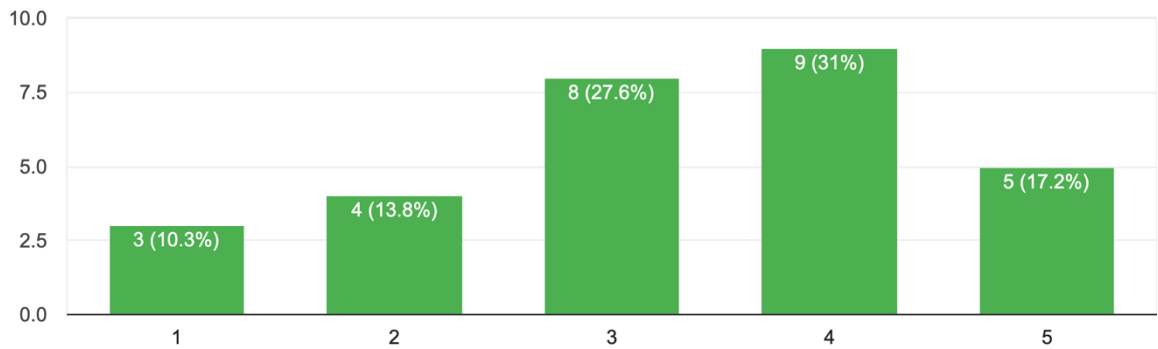
Abban az esetben, ha az Ön cégénél Agile-t alkalmaznak, vállalata átfogóan alkalmazza-e az összes részlegre (HR, értékesítés stb.), vagy csak a szoftverfejlesztésre? "választható kérdés"

24 responses

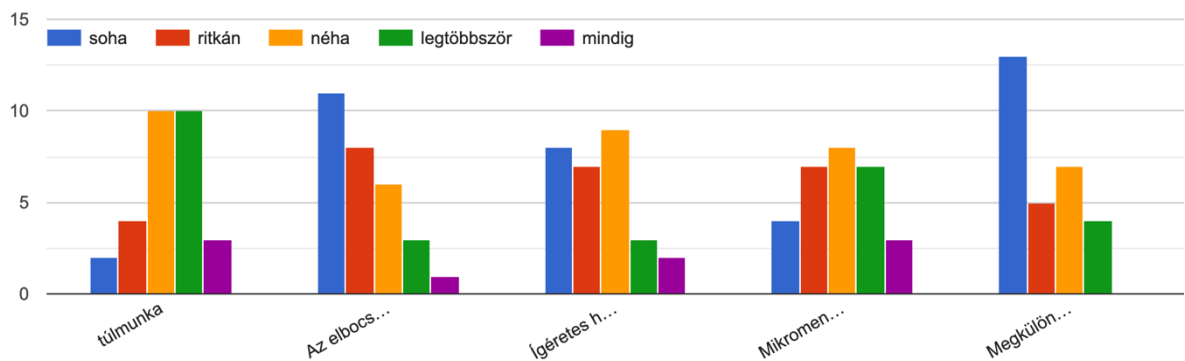


Az egyének közötti kapcsolat a szervezeten belüli bizalomra vagy az alkalmazott Micromanedzsmentre épül?

29 responses

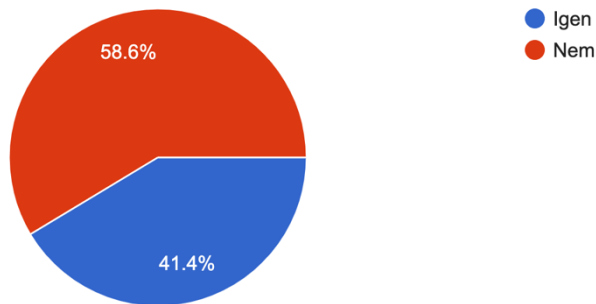


Korábbi munkatapasztalata során találkozott-e az alábbiakkal?



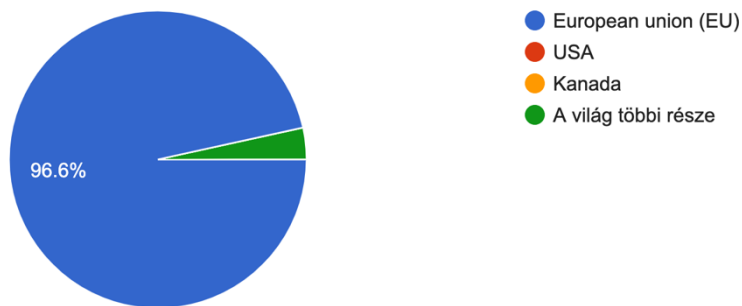
Új munkahelyre történő jelentkezéskor végzett-e fizetetlen próbákat, tényleges munkát / ötleteket juttatott el a munkáltatóhoz, mielőtt felvette volna?

29 responses



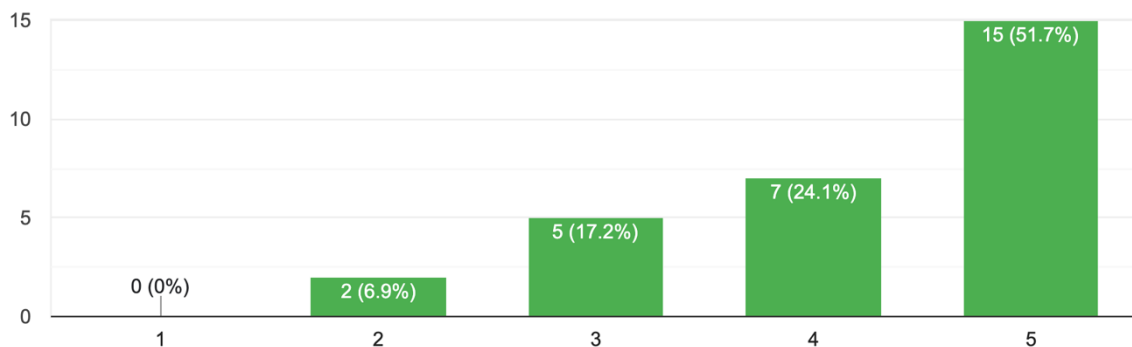
Melyik régióban található az a vállalat, amelyben (távmunkásként / szabadúszóként) dolgozott? Ha több ilyen is van, akkor kérjük, válassza a leggyakoribb helyet:

29 responses



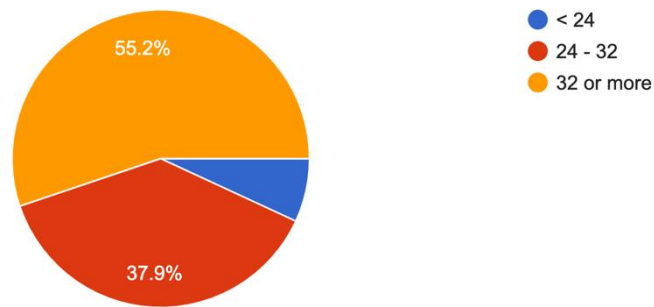
Mennyire javasolja, hogy legyenek olyan jogi követelmények, amelyek a társaságokat tisztességes szabadúszó / távmunka-szerződések kötésére kötelezik? (ugyanúgy, mint az irodai alkalmazottaknál)

29 responses



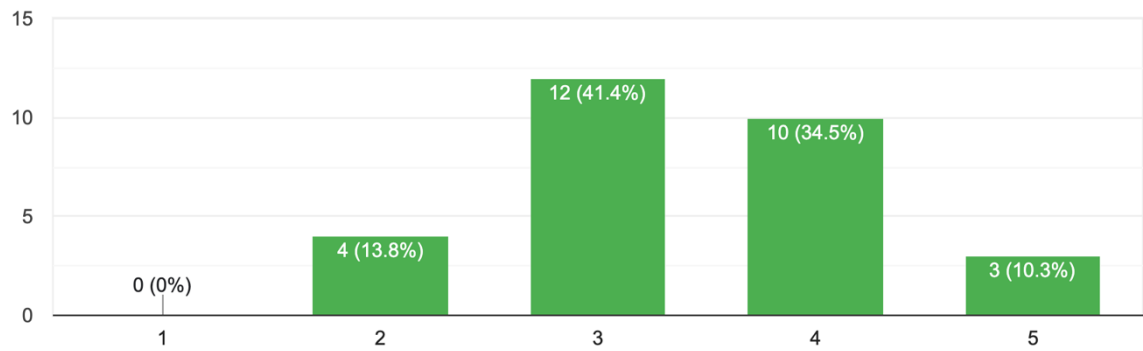
Mi a korosztálya?

29 responses



Mennyire nehéz, hogy elfogadják az átfogó Agilis Menedzsmentet és bizalmat kiépíteni az egész szervezet osztályain belül?

29 responses



Interview Questions

Introduction:

The proposed research aims to investigate the challenges faced by remote IT workers. Specifically regarding accessing job opportunities and the potential for workplace bullying and discrimination. No matter what type of mistreatment it is from others. During the last pandemic in 2020, most companies shifted to remote work, but not all used the ideal model.

This 60-minute interview collects information about remote work and how it affects communication in companies, challenges and possibilities of encountering workplace bullying and abuse. It also covers which Agile practices are present and their impact of it on companies environment. The questions are used as guidelines, and participants are free to add any relevant information that can help the study.

All submission data are collected and held anonymously and used for education purposes.

The participant agrees to participate in the research study by completing and submitting these questions or scheduling an interview. The participants understand that their participation is voluntary and that they may withdraw from the study at any time without any consequences. The participant can keep their identity private, and mentioning specific information like the person's name or company is not mandatory.

Submitting your answers:

If you are interested in participating in the study or have questions, please get in touch with the researcher Hasan Al jafa, at hasan.aljafa@econ.unideb.hu Or hasanaljafa@gmail.com.

You can schedule an appointment for the interview virtually or in person. If you prefer to fill out the answer to the question in written form, you can forward the responses by forwarding this filled word file directly to the researcher.

Questions of the interview:

- Can you tell me about your background and where you were initially from?
- How old are you?
- Can you describe your gender identity?
- What languages do you speak?
- What is your field of work or study?
- Can you describe your work environment?
- Have you ever worked in an Agile environment?
- Have you encountered workplace bullying or abuse while working remotely?
- Was the encountered accident consistent and repeated for a long period?

H1: Questions:

- How do you believe implementing agile methodologies can prevent workplace bullying and foster better communication among team members?
- Can you share specific examples of how your current workplace promotes employee trust and how this has impacted the overall work environment?
- In your experience, how has adopting agile methodologies influenced the level of interaction and collaboration within your team or organisation?

H2: Questions:

- Can you share specific examples of how your current workplace promotes employee trust and how this has impacted the overall work environment?
- How do you think addressing motivation-related issues and workplace satisfaction can improve overall employee retention and organisational success?

H3: Questions:

- How do you believe implementing agile methodologies can prevent workplace bullying and foster better communication among team members?
- What differences have you observed in the level of care and attention given to remote workers compared to on-site employees in your current or previous workplace?
- How should the organisation address and prevent workplace bullying and abuse?

H4: Questions:

- Could you elaborate on your experience balancing discipline and flexibility as a freelance worker, and how this dynamic has influenced your productivity and well-being?

H5: Questions:

- Are you aware of any policies or procedures to address workplace bullying or abuse in your organisation?
- Have you observed any other colleagues experiencing similar issues?
- Have you reported the bullying to your manager or any other authority?
- How did the management/authority handle the issue?
- Have you faced any retaliation for reporting the bullying?
- How do you think addressing motivation-related issues and workplace satisfaction can improve overall employee retention and organisational success?

LIST OF PUBLICATIONS

12/03/2023, 13:23 MTMT2: publication list

etc

[Library of Hungarian Scienti152c Works](#)

1. Al Jafa, Hasan ; Várallyai, László

Using Agile in Implementing Agriculture AI Projects and Farm Management

AGRICULTURAL INFORMATICS / JOURNAL OF AGRICULTURAL Vol. 14. No. 1. 2023

Article (Journal Article) | Scienti152c

[] [Public]

2. Al Jafa, Hasan ; Jihad, Fraij ; Várallyai, László

The Role of Agile Management in HRM Environment Change

AGRICULTURAL INFORMATICS / JOURNAL OF AGRICULTURAL INFORMATICS 12 : 2 p.

37 (2021)

[DOI](#) [Other URL](#)

Article (Journal Article) | Scienti152c

[32073210] [Public]

Public Summoner Total: 4, Independent: 0, Dependent: 0, Not Candidate: 4

3. Al Jafa, Hasan [✉](#)

Improving ERP Software Selection Process by Integrating QFD with AHP Approach

NETWORK INTELLIGENCE STUDIES 8 : 16 pp. 157-167. , 11 p.m. (2020)

[Other URL](#)

Article (Journal Article) | Scienti152c

[31849096] [Public]

Public Summoner Total: 1, Independent: 1, Dependent: 0, Not Candidate: 0

4. Al Jafa, Hasan

A Case Study for the CRM Software Selection Process in a Transportation Company

Using an Integrated AHP and QFD Approach

SEA: PRACTICAL APPLICATION OF SCIENCE 8 : 24 pp. 337-351. , 15 p. (2020)

[Other URL](#)

Article (Journal Article) | Scienti152c

[31849095] [Public]

Public Summoner Total: 2, Independent: 0, Dependent: 0, Not Candidate: 2

2023-03-12 13:23

<https://m2.mtmt.hu/api/publication?cond=published;eq:true&cond=core;eq:true&cond=authors.mtid;eq:10076518&sort=publishedYear,desc&sort=firstAuthor,a... 1/1>

Consent Form

Informed Consent Form for Interviews in the Research Study on An Insight Into the Darker Side of Remote Working and How Agile Management Affects It

Purpose of the Study:

This study aims to gain insight into the experiences of remote workers and freelancers affected by workplace bullying and abuse and to examine the impact of applying an Agile mindset on companies.

Procedures: The survey will consist of questions related to your experiences as a remote worker or freelancer and your opinions on Agile management. The survey should take approximately 10-15 minutes to complete and will cover topics such as your background, work environment, and experiences of workplace bullying and discrimination. A researcher will conduct the survey, and the data collected will be kept confidential.

Risks and Benefits: There is a minimal risk of emotional distress associated with remembering past experiences of workplace bullying and discrimination. However, the study may provide an opportunity for you to share your experiences and contribute to understanding the challenges faced by freelancers and remote workers.

Confidentiality: All information collected through this survey will be confidential and anonymous. The data will be kept in a secure location, and only the researcher can access the information. The data will be analysed using the PLS and Excel programs, and any publications or presentations resulting from the study will not include any identifying information.

Participation and Withdrawal: Your participation in this study is voluntary. You may choose not to participate or to withdraw from the study at any time without any consequences.

Contact Information: If you have any questions about the study, don't hesitate to contact the researcher, Hasan Al jafa, at hasan.aljafa@econ.unideb.hu. If you have any concerns about your rights as a participant in this study, don't hesitate to contact the university of Debrecen at info@edu.unideb.hu.

By signing below, you acknowledge that you have received a copy of this informed consent form and that you have had the opportunity to ask questions and have them answered to your satisfaction. You also indicate that you agree to participate in the study.

Participants' signature is collected through the google form.



[Researcher's signature]

[Date]

Structural Hypothesis Results

First Try using SmartPLS:

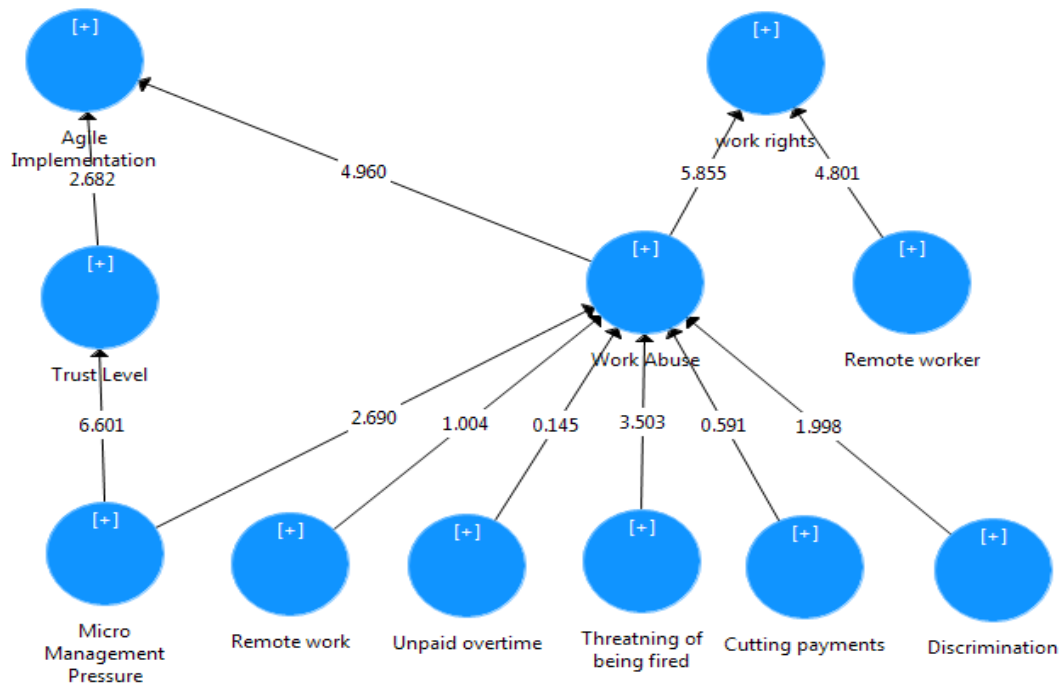


Figure 22: SmartPLS first try model

Table 11: SmartPLS first try results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Hypothesis test
Cutting payments -> Work Abuse	0,055	0,055	0,093	0,591	0,554	h0: fail to reject
Discrimination -> Work Abuse	0,15	0,146	0,075	1,998	0,046	Accepted.
Micro Management Pressure -> Trust Level	0,35	0,348	0,053	6,601	0,000	Accepted
Micro Management Pressure -> Work Abuse	0,249	0,25	0,092	2,69	0,007	Accepted
Remote work -> Work Abuse	-0,057	-0,057	0,057	1,004	0,315	h0: fail to reject
Remote worker -> work rights	0,314	0,316	0,065	4,801	0,000	Accepted
Threatning of being fired -> Work Abuse	0,273	0,27	0,078	3,503	0,000	Accepted
Trust Level -> Agile Implementation	0,183	0,183	0,068	2,682	0,007	Accepted
Unpaid overtime -> Work Abuse	0,01	0,014	0,07	0,145	0,884	h0: fail to reject
Work Abuse -> Agile Implementation	0,339	0,337	0,068	4,96	0,000	Accepted
Work Abuse -> work rights	0,303	0,301	0,052	5,855	0,000	Accepted

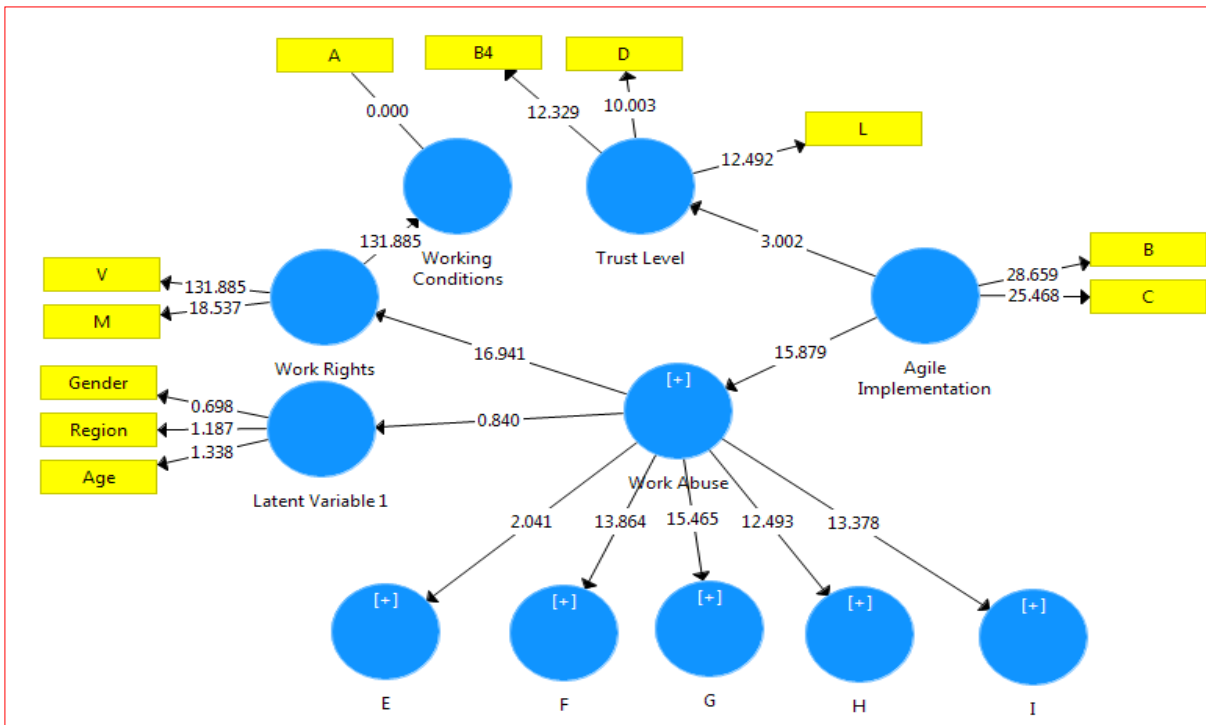


Figure 23: SmartPLS second Try model

Table 12: Smart PLS second try model

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Agile Implementation -> Trust Level	0,211	0,219	0,07	3,002	0,003
Agile Implementation -> Work Abuse	0,652	0,653	0,041	15,879	0,000
Work Abuse -> E	0,148	0,148	0,073	2,041	0,041
Work Abuse -> F	0,61	0,61	0,044	13,864	0,000
Work Abuse -> G	0,662	0,662	0,043	15,465	0,000
Work Abuse -> H	0,608	0,609	0,049	12,493	0,000
Work Abuse -> I	0,59	0,589	0,044	13,378	0,000
Work Abuse -> Work Rights	0,683	0,682	0,04	16,941	0,000
Work Rights -> Working Conditions	0,882	0,883	0,007	131,885	0,000

Table 13: SmartPLS detailed results

Name	No.	Type	Missing s	Mean	Median	Scale min	Scale max	Observ ed min	Observ ed max	Standard deviation	Excess kurtosis	Skewne ss	Cramér -von
Work-rights2	16	MET	0	1.232	1.000	1.000	5.000	1.000	5.000	0.874	13.006	3.762	0.000
Age	15	MET	0	2.172	2.000	1.000	3.000	1.000	3.000	0.533	0.150	0.138	0.000
Gender	14	0 1	0	1.242	1.000	1.000	2.000	1.000	2.000	0.429	-0.521	1.221	0.000
Work-rights1	13	MET	0	4.384	5.000	1.000	5.000	1.000	5.000	0.992	3.524	-1.910	0.000
T-level2	12	MET	0	3.333	3.000	1.000	5.000	1.000	5.000	0.910	-0.129	0.018	0.000
Region	11	MET	0	2.091	1.000	1.000	4.000	1.000	4.000	1.379	-1.567	0.609	0.000
Work-ab6	10	0 1	0	1.687	2.000	1.000	2.000	1.000	2.000	0.464	-1.358	-0.818	0.000
Work-ab5	9	MET	0	1.929	1.000	1.000	5.000	1.000	5.000	1.103	-0.027	0.921	0.000
Work-ab4	8	MET	0	2.596	3.000	1.000	5.000	1.000	5.000	1.053	-0.332	0.348	0.000
Work-ab3	7	MET	0	2.253	2.000	1.000	5.000	1.000	5.000	1.158	-0.596	0.561	0.000
Work-ab2	6	MET	0	1.838	1.000	1.000	5.000	1.000	5.000	1.061	0.928	1.258	0.000
Work-ab1	5	MET	0	3.000	3.000	1.000	5.000	1.000	5.000	1.064	-0.370	-0.307	0.000
T-level1	4	MET	0	3.556	4.000	1.000	5.000	1.000	5.000	1.289	-0.401	-0.729	0.000
Agile-imp2	3	MET	0	1.616	1.000	1.000	3.000	1.000	3.000	0.762	-0.855	0.783	0.000
Agile-imp1	2	MET	0	3.414	4.000	1.000	5.000	1.000	5.000	1.544	-1.206	-0.555	0.000
Work-type	1	MET	0	1.495	1.000	1.000	3.000	1.000	3.000	0.796	-0.386	1.175	0.000
#	0	MET	0	50.000	50.000	1.000	99.000	1.000	99.000	28.577	-1.200	0.000	0.022

Table 14: Raw data to SmartPLS items relationship

Items	Answer	scale	Related to hypothesis	Meaning
A Work-type	Remotely, Home office (full-time employee)	1	Categorical question	
	Freelancer	2		
	Both	3		
		Likert		
B Agile-imp1	Never	1	H1 & H3	H1 & H3: Negative
	All the time	5	H1 & H3	H1 & H3: Positive
C Agile-imp2	Just in Software development	1	Consistency question related to B H1 and H3	This means Agile is implemented, Matches the answers to questions B: 2 to 4
	Scaled Agile	2		This means Agile is implemented, Matches the answers of questions B: 4 to 5
	Empty	3		This means Agile is not implemented, Matches the answers of questions B: answers: 1 or 2

Table 14: (Continued)

Items	Answer	Likert	Related to hypothesis	Meaning
D T-level1	Micromanagement	1 to	H1 and H2	H1 & H2: Negative
	Full trust	5		H1 & H2: positive
		Likert		
Work-ab			H2 & H3 H4 & H5	
E Work-ab1	Never	1	H2 & H3 H4 & H5	H2 & H3: Positive H4 & H6: Negative
	All the time	5		H2 & H3: Negative H4 & H6: Positive
F Work-ab2	Same		Consistency questions related to E H2 & H3 H4 & H5	Same
G Work-ab3	Same		Consistency questions related to E H2 & H3 H4 & H5	Same
H Work-ab4	Same		Consistency question to E & D H2 & H3 H4 & H5	Same
I Work-ab5	Same		Consistency questions related to E H2 & H3 H4 & H5	Same
J Work-ab6	Yes	1	H2 & H3 H4 & H5	H2 & H3: Positive H4 & H5: Negative
	No	2		H2 & H3: Negative H4 & H5: Positive

Table 14: (Continued)

Items	Answer	Likert scale	Related to hypothesis	Meaning
K Region	European union	1	Categorical question	
	USA	2		
	Canada	3		
	Rest of the world	4		
		Likert		
L T-level2	Easy	1	H1	H1: Positive
	Extremely challenging	5	H1	H1: Negative
		Likert		
M Work-rights1	Don't recommend	1	H5	H5: Negative
	Fully recommend	5	H5	H5: Positive
N Gender	Male	1	Categorical question	
	Female	2		
O Age	< 24	1	Categorical question	
	24 - 32	2		
	32 or more	3		
		Likert		
V Work-rights2		1	Doesn't add value /empty	
		5	Add value to one of the Hypothesis	

Source: based on Own work

Table 15: Questionnaire and items code

Items	Question
A Work-type	Have you ever worked remotely or as a freelancer?
B Agile-imp1	Have you heard of or used "Agile management" within your company? It relates to (Scrum, Kanban, DevOps, user stories, Jira.etc.)
C Agile-imp2	In case Agile is applied in your company, does your company adopt it in scale to all departments (HR, sales, etc.) or just to software development? "optional question"
D T-level1	Was the relationship between individuals based on trust within the organization, or was Micromanagement used?
Work-ab	Have you encountered any of the following in your previous working experiences?
E Work-ab1	Unpaid overtime/ Mandatory overtime
F Work-ab2	Threatening of being fired /Cutting payments for delivered work
G Work-ab3	Promising fake benefits or a pay raise
H Work-ab4	Micromanagement pressure
I Work-ab5	Discrimination
J Work-ab6	When applying for a new job, did you do unpaid trials, delivering actual work / Ideas to the employer before getting hired?
K Region	Which region the company that you worked in as a (remote worker/ Freelancer) is based in? If there are many jobs, please select the most common location:

Table 14: (Continued)

Items	Question
L T-level2	How difficult is adopting Agile principles and building trust within the organisation?
M Work-rights1	How much do you recommend having legal requirements which obligate companies to make a fair freelance/remote-working contract? (the same we have for office employees)
N Gender	Gender?
O Age	What is your age range?
V Work-rights2	Do you have any additional notes or feedback you like to add

Source: based on Own work



Nyilvántartási szám: DEENK/360/2024.PL
Tárgy: PhD Publikációs Lista

Jelölt: Al Jafa, Hasan

Doktori Iskola: Ihrig Károly Gazdálkodás- és Szervezéstudományok Doktori Iskola

MTMT azonosító: 10076518

A PhD értekezés alapjául szolgáló közlemények

Folyóiratcikkek, tanulmányok (4)

- Al Jafa, H., Várallyai, L.:** Using Agile in Implementing Agriculture AI Projects and Farm Management.
Journal of Agricultural Informatics. 14 (1), 1-12, 2023. EISSN: 2061-862X.
DOI: <https://doi.org/10.17700/jai.2023.14.1.684>
- Al Jafa, H., Fraij, J. K. I., Várallyai, L.:** The Role of Agile Management in HRM Environment Change.
Journal of Agricultural Informatics. 12 (2), 37-45, 2021. EISSN: 2061-862X.
DOI: <http://dx.doi.org/10.17700/jai.2021.12.2.606>
- Al Jafa, H.:** A Case Study for the CRM Software Selection Process in a Transportation Company Using an Integrated AHP and QFD Approach.
SEA-Practical Application of Science. 8 (24), 337-351, 2020. EISSN: 2360-2554.
- Al Jafa, H.:** Improving ERP Software Selection Process by Integrating QFD with AHP Approach.
Network Intelligence Studies. 8 (16), 157-167, 2020. EISSN: 2344-1712.

A DEENK a Jelölt által az iDEa Tudóstérbe feltöltött adatok bibliográfiai és tudománymetriai ellenőrzését a tudományos adatbázisok és a Journal Citation Reports Impact Factor lista alapján elvégezte.

Debrecen, 2024.06.14.

