

# Significance of Regulatory Technology and its Impact on Banks and Financial Institutions amongst the Growth of Decentralized Finance

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# Significance of Regulatory Technology and its Impact on Banks and Financial Institutions amongst the Growth of Decentralized Finance

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## Abstract

Recently Blockchain, Machine learning, and Artificial Intelligence have taken a great place within technology not limited to the Information Technology domain but it has been implemented within various domains such as Financial, Transport, Education, Supply chain, etc. This report mainly focuses on Banks and the financial sector, Defi i.e., Decentralized finance which is a revolutionary idea within this sector as it uses Blockchain technology to give access to an open and permissible financial ecosystem eliminating the need for intermediaries during any transfers of payments. Traditional banks and financial firms are finding it difficult to cope with technology and the huge volume, Regtech which is Regulatory technology solution helps Bank to provide effective and automated compliance methods to ensure that Banks and the financial sector follow the rules. Regtech solutions make use of cutting-edge technologies like distributed ledger technology and artificial intelligence to boost operational performance, reduce costs, and better manage risk. A survey has been conducted to understand the scope of Regtech and Defi in the Financial sector and its awareness among the people working in corporate to analyse the impact of the new revolutionary.

**Keywords** – Regulatory Technology, Decentralized Finance, Banks, Survey, Financial institutions.

## 1 Introduction

### 1.1 Definition and Explanation of Regulatory Technology (RegTech):

Regulatory Technology is known as Regtech, Regulatory in the financial and Banks always played an important role, however, post the subprime crises regulation has taken a great place within the Banking and financial sectors. Off lately a lot of fintech companies have emerged which has also led to a rise in a lot of Regtech companies as per the survey by Thomson Reuters Regulatory Intelligence (TRRI) (Greggworth, 2023). The term "Regtech" was coined as a result of significant efforts to use information technology to execute compliance-related actions in accordance with governmental regulations. (Bolton and Mintrom, 2023). Banks and financial institutions have found tremendous relief in turning to Regtech as a result of the numerous complicated regulations they must comply with across numerous jurisdictions. (Bolton and Mintrom, 2023)

## **1.2 Overview of the growth of decentralized finance (DeFi):**

Decentralized Finance (DeFi) is positioned as the next-generation Fintech within the financial industry because a significant portion of the world's population lacks access to the banking system and the world is moving toward technology. A blockchain that uses smart contracts for payments and eliminates intermediaries, this technology is called Defi. (Ojog, 2021; Ozili, 2022) Since its inception in 2017, the DeFi ecosystem has swiftly expanded, with new projects being introduced every day. The market for DeFi is anticipated to reach \$1 trillion by 2025, and the total value locked in DeFi protocols has increased from less than \$1 billion in 2020 to over \$100 billion in 2022. DeFi, however, increases a variety of hazards for markets and those who participate in them. Excessive volatility, unregulated leverage and other types of regulatory arbitrage, governance-related risks, market manipulation, the possibility of illegal finance, or outright fraud are some of these hazards. (Auer et al., 2023).

## **1.3 Significance of RegTech:**

In the financial industry, compliance expenses are high; businesses spend around 4% of their sales on compliance, and banks incur hefty fines. According to estimates for the entire economy, regulations may be responsible for about 12% of US GDP and historically more than 10% of UK GDP. Following the Global Financial Crisis (GFC), the speed of regulatory change has quickened, increasing the expense for businesses to navigate various regulatory regimes. The necessity for technology-enabled compliance solutions has been highlighted by the special conditions facing the financial sector. Rapid regulatory changes may make current policies and controls obsolete, making it difficult for top management to keep track of compliance. Additionally, regulators struggle to keep up with a developing financial industry and look for more effective tech-driven supervision solutions. The demand for technology-enabled compliance and supervision in numerous sectors is increased by emerging fields like cybersecurity and data protection. (Schizas et al., 2019)

## **1.4 Benefits of RegTech adoption for banks and financial institutions:**

There are many advantages to integrating RegTech technologies into conventional banking processes. The possibility of increasing the effectiveness of compliance operations is one of the main advantages. Banks and other financial institutions can benefit from RegTech solutions by automating compliance tasks, which lowers the possibility of human error and increases the correctness of compliance documentation. The possibility of lowering compliance expenses is another advantage of integrating RegTech technologies into conventional banking operations. RegTech products can automate compliance procedures and lessen the need for human labor, which can save a lot of money. Banks and other financial companies can benefit from RegTech solutions by staying current with regulatory regulations, which lowers the regulatory risk. (Zetsche, et al., 2020; Kumari & Devi, 2022)

## 1.5 Current development and potential future:

The RegTech market provides solutions for other areas with a high regulatory burden, such as personal data and GDPR compliance, in addition to the banking sector. The majority of businesses in this industry are start-ups that concentrate on certain issues rather than fusing many fields. Following compliance, identity management, risk management, regulatory reporting, and transaction monitoring make up the main group of RegTech enterprises. By 2020, the industry was predicted to account for 34% of all regulatory costs due to its rapid growth. The most affected area in businesses by RegTech solutions is compliance, which is why their use is growing. Effective RegTech system development takes time and testing to make sure all the components are in place. Utilizing efficient data gathering and monitoring systems is essential for a successful RegTech deployment. Businesses that invest in RegTech solutions and recognize their potential value will remain competitive. (Sutinen et al., 2019).

**Table 1: Current v/s Future Development**

Company Characteristics	Development	Future
Companies in the Start phase	Yet to implement Regtech by most Companies	Majority funds would be spent on Regtech
Focus on 1 problem	Mix-match strategy	Traditional regulatory The environment does not match
Fast growing sector	Harder to implement	Challenge in finding Long-term solution, investing in solution

## 1.6 Research Objectives and Scope:

This report aims to address the various research question as mentioned below –

“To identify the level of awareness of RegTech and DeFi among working professionals in the financial and related sectors? “

It would also consider below points: -

- The current level of regulatory innovation in the RegTech and DeFi space, and expectations for the future of the respondent?
- Most critical aspects of DeFi operations that can benefit from regulatory technology solutions in terms of regulatory compliance?
- Impact of factors like age, education, and work experience on respondents' views on RegTech and DeFi
- Awareness of any challenges or limitations associated with the adoption of Regulatory technology solutions in the Decentralised Finance ecosystem?

- Which aspects of Decentralised Finance operations can benefit the most from Regulatory technology solutions in terms of regulatory compliance?

The report is structured where section 2 would cover the literature review which would give reference to various literature papers to support the topic and get a better understanding of the concept. Section 3 would highlight the research methodology which has been considered to address the above research question followed by the results, conclusion, and future work in sections 4, 5, and 6.

## **2 Literature Review**

### **2.1 RegTech in the Context of DeFi:**

Although there is not a clear definition for "Decentralized Finance" (DeFi), it typically refers to concepts like decentralization, blockchain technology, smart contracts, disintermediation, and open banking. Decentralized financial services (DeFi) are those that are provided to a number of participants and end consumers dispersed across numerous jurisdictions. While DeFi holds promise, it poses challenges to traditional financial regulation and governance. It has the potential to undermine conventional accountability and regulation, relocating some operations to value chains with less oversight. To maintain efficient oversight and risk management, as well as to safeguard markets from non-decentralized systems looking to engage in regulatory arbitrage, regulatory attention is required. For the decentralization of finance and its regulation, regulation may be integrated into DeFi technology in some futuristic scenarios, giving rise to the idea of "embedded regulation." (Zetsche, Arner and Buckley, 2020)

### **2.2 Regulatory Compliance and Automation:**

“Automation within the Banking and Financial sector has already been in place for the last couple of years, as Banks have implemented bots to handle IT requests which do not need complex code fixing, for example, bots can take care of fixing password issues, with the help of RPA auditing and financial reporting are taken care which is more efficient in terms of errors and cost-effective. The cost of fraud has increased from 3.64% to 4.23%, due to which Cybersecurity places a major role in the Banking sector to ensure Banks are in line with regulatory compliance by making the best use of Automation”. (Putnam, 2023)

### **2.3 Increasing Transparency and Investor Protection:**

Access to foreign equity capital benefits specific businesses and nations, lowering capital costs and fostering economic growth. Due to information asymmetry, foreign investment still falls short of ideal levels despite impediments being removed. The study looks at the relationship between investor protection and whether businesses may draw in overseas investors through open financial reporting. According to the findings, foreign ownership is favorably impacted by firm-level transparency in nations with strong protection, but not in those with weak protection. Foreign equity investment is hampered by the latter's inadequate legal options. Investor protection must be a priority for countries pursuing international

investment. In nations with strong protections, the adoption of IFRS enhances the link between transparency and foreign ownership, but not in nations with weak protections. (Hansen, Miletkov and Wintoki, 2015). The perception of corruption in business is pervasive and complex. Attempts to combat it are challenging, leading to calls for better corporate governance and transparency in financial reporting.( Zarb, Bert J., 2011)

## 2.4 Issues and restrictions related to the application of RegTech solutions

Implementing Regtech solutions within the firm is a huge investment which can be the biggest challenge for small financial institutions (Auer et al., 2023). Coding the complexity of the regulation and frequent changes to meet the market and regulatory requirements is one of the restrictions for banks and financial institutions to implement Regtech Solution. These solutions' complexity can make it difficult to be integrated with existing systems, which might increase the installation cost. Research by the Bank for International Settlements addressed the drawbacks of RegTech alternatives in the context of AML compliance. The study found that the load on compliance officers might be greatly increased by the fact that RegTech solutions can give erroneous findings and are not yet capable of identifying sophisticated money laundering schemes. (Sutinen et al., 2019).

## 2.5 RegTech and Regulatory Innovation

Regtech is nothing new it has been in existence for so many years, it has just been in a different form which keeps on evolving day by day as the technology evolves and the fraud rates increase. According to the Thomas Reuters published in 2019 it states that every 7 mins a regulatory alert is been issued (Sutinen et al., 2019). Currently, the third version of the Regtech is in the market as shown in the diagram below. Today 15-20 % of the cost of any business would comprise risk, compliance, and regulations which have led to a lot of regulations like Basel III, GDPR, PSD2, MiFID II, and BCBS 239, it's not only the number of regulations which is an issue but the complexity of each and every regulation has gone up, hence the regulatory with help of technology like AI, blockchain, Machine learning (Deloitte, 2017).

**Table 2: Different phases of Regtech**

	<b>Regtech 1.0</b>	<b>Regtech 2.0</b>	<b>Regtech 3.0</b>
<b>Period</b>	From 1960-2008	Post Global Crisis till date	The future
<b>Driven by</b>	Large Institutions	Financial Markets	Technology
<b>Focus on</b>	Internal Risk management & monitoring,	Compliance solutions, technology Reporting, New Technology	All sectors

## **2.6 Regulatory and Legal Frameworks for RegTech and DeFi**

The value of regulatory technology (RegTech) in ensuring compliance and oversight in the financial sector. By providing justifications for classification choices and guaranteeing fairness to prevent discrimination, it satisfies the need for RegTech applications to be both predictive and transparent. The study suggests new design principles and features that incorporate theory-based feature engineering to explainability and specialized classifiers for fairness in order to anticipate the result of financial consumer complaints. By highlighting the value of explainability and fairness in RegTech applications and addressing research gaps, the paper makes a contribution to the area. (Siering, 2022) Since the 1980s, numerous policy, legal, and regulatory methods have shaped financial integration in Europe. The 1992 Maastricht Treaty creating the European Union and the single currency, the 1999 Financial Services Action Plan and Economic and Monetary Union (EMU), the 2001 Lamfalussy Report, the 2009 de Larosiere Report following the 2008 Global Financial Crisis, and the Banking Union following the 2010 Eurozone Crisis are important turning points. (Zetzsche et al., 2019)

## **2.7 Summary**

A lot of research and studies have been done by various researchers, and corporates like Grant Thornton, Deloitte, and Thomas Reuters to understand the impact of Regtech with increasing growth in the DeFi and how it has overall support in reducing the cost of the firm and support to deal with various regulatory requirements. (Grant Thornton UK LLP, n.d.) The survey has been done by Grant Thornton firm on Regtech to understand the priorities for the firm, it clearly shows how companies are more willing to move towards Regulatory Technology to cope with various regulations. (Deloitte, 2017).

# **3 Research Methodology**

This part would contain the details of the strategy and the methods used to address the research question emphasis on data collection, sampling analysis, etc. For this research Qualitative survey has been performed. Without providing frequencies or methods, qualitative surveys concentrate on examining the diversity of a particular topic of interest within a population. Instead, then measuring the number of persons who share a particular trait, they find significant variations and important dimensions within the sampled population. (Jansen Harrie, 2010)

## **3.1 Introduction / Research Design**

The main aim of this research is to understand the level of awareness and public perception in regards to Regtech and DeFi from the working professional across the globe, with the main focus on 2 countries that is India and Ireland, as India is one of the huge markets for Fintech and Ireland being a Silicon Valley which is growing. (Engel, 2015) Due to Ireland's reliance on MNCs, macroeconomic factors like wage rate, exchange rate, and FDI play a considerable effect in the dynamics and sustainability of its IT service exports. Second, the growth of



indigenous businesses, a sectoral system of innovation, and improved technological ability are credited with India's leadership position. (Tiago Couto Porto, Lee and Mani, 2021)

### **3.2 Data Collection**

Data are collected via Google form which was sent to respondents via LinkedIn and WhatsApp and the responses are collected in Google sheet itself. In order to get the respondent's perspective on Regtech and their view on implementation in various areas. Additionally, to get a glimpse of how many companies have already implemented Defi within their organization. The survey form contained 10 questions that take into consideration various parameters like Awareness, Implementation, Regulatory Areas, Challenges, factors, etc. (Turki et al., 2020)

### **3.3 Sampling Size and Technique**

#### **Targeted Location**

As Regtech and Defi are more to do with regulations and finance which does not cater to one single country and it has an impact across the globe due to globalization where payment and regulations have been a major concern for companies and countries as well. DeFi has seen a rise in interest across the US, Asia, Europe, and Oceania. Regulatory restrictions in Asia and bans on crypto assets in several African nations, however, might potentially restrict DeFi's expansion in those areas. (Ozili, 2022). Hence the survey considers respondents across the globe with a major focus on India & Ireland.

#### **Sample Size**

A survey was conducted on 111 firms in order to identify RegTech enterprises based on facts and figures, set industry standards for their size and growth, and gather knowledge of the global RegTech ecosystem and its important players. (Schizas et al., 2019). For this report, 102 responses from working professionals or people who have worked in Banks or financial intuitions have been considered across the globe. (Turki et al., 2020)

#### **Target Audience**

The target audience for this survey was the age group between 18-65 years who are working in Regtech or sectors which are directly or indirectly related to Regtech or finance or payments. (Turki et al., 2020).

### **3.4 Data Preparation & Analysis Methods**

The qualitative Survey was converted into quantitative data (numeric values) i.e. in order to work on various analyses, Data preparation also takes into consideration cleaning the data and removing unnecessary data from the file. Questions of the survey were renamed as per the requirement for the various analysis methods.

Mentioned below are the few analyses method which is conducted for this survey and report

- **Descriptive Analysis** - Descriptive analysis provides valuable insights into the distribution and central tendencies of the responses, which is essential for better understanding and interpreting the survey findings. A thorough overview of the fundamental characteristics of survey data, including means, medians, frequencies, and percentages. (Turki et al., 2020)
- **Chi-Square Test** – this test is a statistical method conducted to determine a significant relationship between 2 variables, it is useful for this survey data as the data is not in the continuous order.
- **Factor analysis** -Factor analysis identifies latent factors and underlying constructs that explain relationships between variables, giving important insights into the interdependencies among the survey responses. (Jansen Harrie, 2010)
- **Fisher Exact Test** – Fisher test is more accurate than the Chi-square test on small sample data, the relationships between categorical variables were analysed, to determine whether particular characteristics, like respondents' gender or educational background etc, have a substantial impact on how they view decentralized finance and regulatory technologies.

### 3.5 Ethical Considerations

All the respondents were made aware of the purpose of the data and the information collection, it was a voluntary choice for everyone to participate in the survey. Additionally, a note was provided on the survey form stating the information is secured and will be deleted post the purpose of the survey is met.

### Limitations

The survey result considers that each and every individual who has filled in the form has a basic understanding of Regtech and Defi as the survey was conducted focusing on the respondent who is working in various sectors which would likely to get impacted. Efforts were made to ensure diversity in terms of age, gender, experience, and technical background when collecting the survey data from a particular pool of respondents, there could be a possibility that the sample does not accurately reflect the overall population working in the field of regulatory technology and decentralized finance (DeFi). The poll participants' opinions and attributes might not be entirely representative of the state of the industry as a whole. Regtech topic is more popular recently due to a great increase in technology within the financial sector resulting in the fintech domain, it's not necessary that each and every person working in new technology or the financial sector is aware of this terminology or the scope of the Regtech and DeFi.

When assessing the relevance to a larger sector or population, the study's, findings and conclusions should be evaluated cautiously. The intrinsic limits of the sample may have an

impact on the external validity of the findings, thereby restricting how broadly the conclusions can be applied to other contexts, organizations, or demographics.

## 4 Results

This session provides a detailed description and interpretation of the various model which has been considered for this project to understand the level of awareness of the respondent who has provided their views on a survey which was conducted on Regtech in relation to Decentralised finance.

### 4.1 Descriptive Analysis

Descriptive Analysis is a very useful analysis as it summarises the data in a simple form for everyone to understand and those who are not aware and do not understand the complex statistical model. This Analysis provides a great base helping in understanding the data and exploring the data structure, it also helps identify the similarities and differences in responses. Understanding the data is the first step for any analysis and descriptive analysis is one such tool to get a deep understanding of responses.

**Table 3: Respondents' Demography Static**

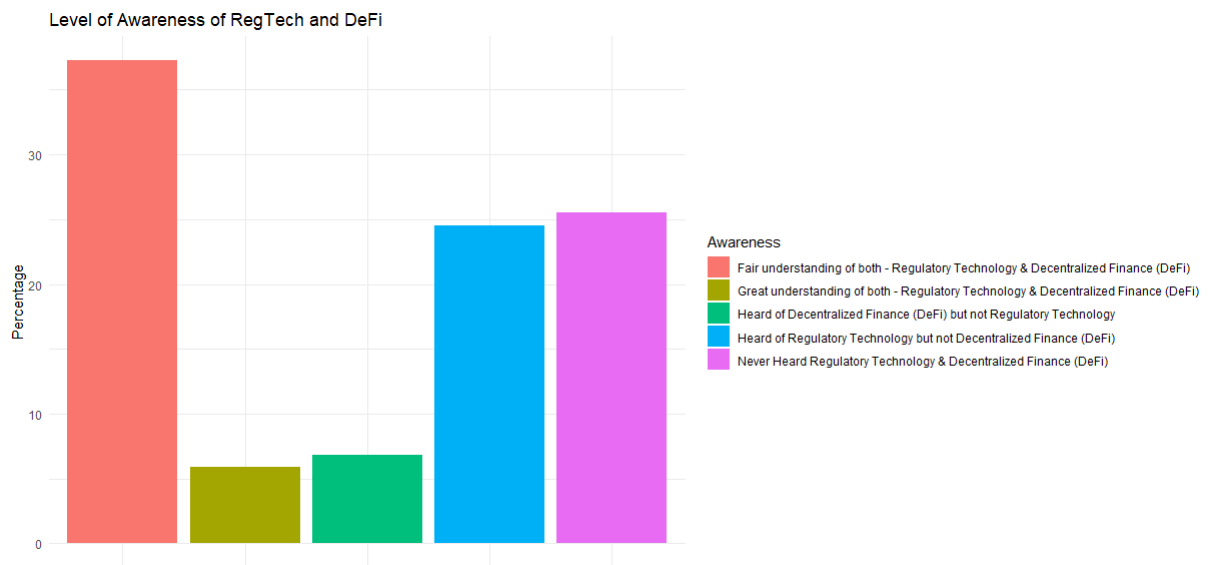
Parameters	Responses	Count	%	Parameters	Responses	Count	%
<b>Gender</b>	Female	22	21.57	<b>Qualification</b>	Non-Technical	62	60.78
	Male	80	78.43		<b>Background</b>	Technical	40
<b>Age</b>	< 30 years	35	34.31	<b>Location</b>	Ireland	44	43.14
	30-40 years	51	50.00		India	42	41.18
	41-50 years	13	12.75		UK	06	5.88
	> 50 years	03	2.94		USA	03	2.94
<b>Experience</b>	0-5 years	32	31.37	Canada	02	1.96	
	<b>Level</b>	6-10 years	20	19.61	Saudi Arabia	01	0.98
		11-15 years	30	29.41	U.A.E	01	0.98
		16 -20 years	13	12.75	Athens	01	0.98
		21 years +	07	6.86	Scotland	01	0.98
				Singapore	01	0.98	

Table 3 indicates most of the surveys are taken or answered by Males, most of the respondents are from a non-technical background which consists of 60.87 %. Also, the majority of the responses are from the residents of Ireland and India. As per the output, most of the working population belongs to the experience level between 0-15 years with an age up to 40 years.

**Table 4: Descriptive chart of all Questions**

	vars	n	mean	sd	median	min	max	range	skew	Kurtosis	Se
<b>Awareness</b>	1	102	2.95	1.68	3.5	1	5	4	-0.07	-1.73	0.17
<b>Importance</b>	2	102	3.61	1.73	5	1	5	4	-0.58	-1.48	0.17
<b>Implemented</b>	3	102	3.12	1.2	3	1	5	4	0.21	-0.94	0.12
<b>Reg -Areas</b>	4	102	5.13	3.44	4	1	11	10	0.59	-1.25	0.34
<b>Confidence</b>	5	102	2.49	1.46	2	1	5	4	0.54	-1.23	0.14
<b>Challenges</b>	6	102	2.53	1.23	2	1	4	3	0	-1.62	0.12
<b>Factors</b>	7	100	8.25	5.59	6.5	1	15	14	0.01	-1.78	0.56
<b>Improvements</b>	8	102	2.56	1.09	2	1	4	3	0.24	-1.37	0.11
<b>Aspects</b>	9	102	6.93	5.59	3.5	1	16	15	0.62	-1.38	0.55
<b>Criteria</b>	10	100	5.23	3.07	7	1	8	7	-0.5	-1.64	0.31

The above table no 4. clearly states that the respondents have a fair understanding of the area and its implementation and various other factors relating to Regtech & Defi that were asked in the survey, as the standard deviation is lower. A quick glance at the awareness level can be seen below in Fig no 1.



**Fig :1 Level of Awareness of Regtech and Defi**

## 4.2 Chi-Square Test

A chi-Squared Test was conducted to identify the significance between the various variables. Chi-Squared test help to understand if any of the 2 variables have a significant relation and also helps to identify if the respondent is not reverting randomly and if the responses have some connection. In order to get the desired result, it is very important to understand if the survey has not been randomly responded to, if a researcher is unable to make any sense of the data then the purpose of the survey gets nullified.

**Table 5: Relationship between factors using Pearson Chi-Square test**

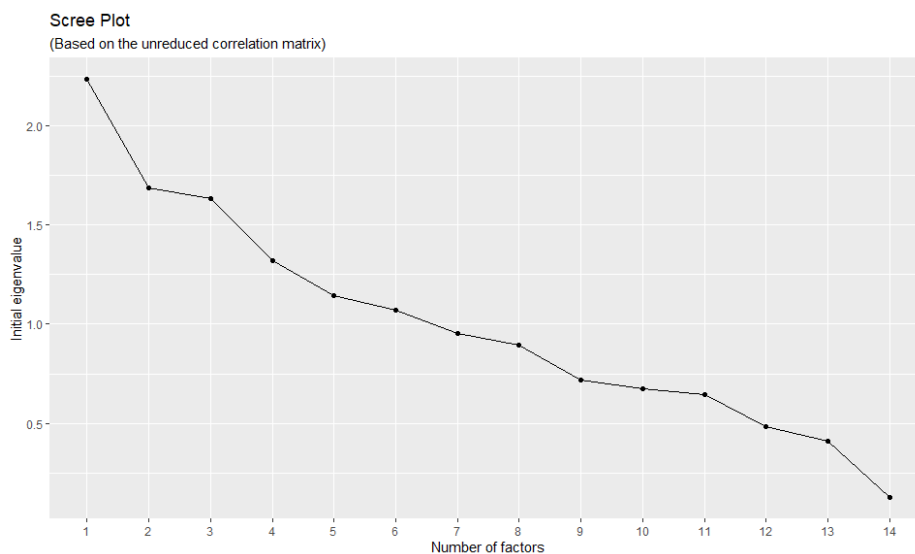
Combination of factors	Chi-squared value	Degrees of Freedom	p-value
Gender and Experience	05	04	0.2873
Gender and Qualification	00	01	1.000
Gender and Awareness	05	04	0.2873
Experience and Qualification	05	04	0.2873
Experience and Awareness	20	16	0.2202
Qualification and Awareness	05	04	0.2873

The chi-squared test has been conducted to identify the degree of association between different variables. The test was conducted between multiple combinations like Gender and Experience, Gender and Qualification, Gender and Awareness, Experience and Qualification, Experience and Awareness, and Qualification and Awareness. Based on the output which has been represented in Table 5(the result of only a few examples are presented in Table5.), states that the p- values are great than 5% which does not reject the null hypothesis which clearly indicates that there is no relationship between the variables.

### 4.3 Factor Analysis

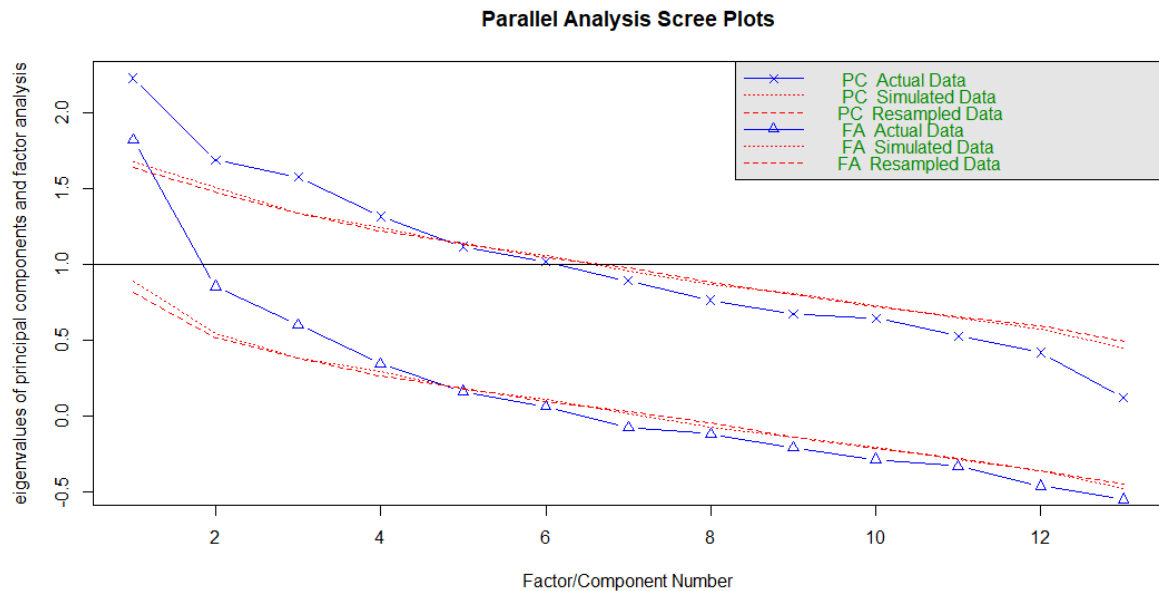
The survey contains various factor that aims to get similar output and Factors Analysis identifies a common factor that explains the correlation between common variables, by reducing the dimension of the data it becomes much easier to focus on a smaller set of factors instead of analyzing the whole variables.

A two-dimensional graph called a scree plot (Fig 2) has eigenvalues on the y-axis and factors on the x-axis. The analysis generates a measured amount of variance accounted for by a factor which can be helpful to determine the no of factors that needs to be considered for factor analysis. In Fig, a total of 14 factors are been plotted however only 6 factors can be considered as they are above value 1, to figure out the exact number of factors that need to be considered for more clarification on number.



**Fig 2 – Scree Plot**

As per Fig 2, it was clearly identified that 6 factors can be considered for factor analysis, but Fig 3, provide more clarification on the actual number of factors that should be considered for analysis as it can be clearly seen in fig 3 that only 4 factors which are above value 1 and do not intersect with simulated data or resampled data. The parallel analysis graph (Fig 3) suggests that the number of factors = 4 and the number of components = 4 would provide the best result with 4 factors taken into consideration. Figure 3 shows a graphical representation of the scree plot and provides a clear picture stating the number of factors that need to be considered for analysis.



**Fig 3 – Parallel Analysis Scree Plot**

Table 6 and Fig 4 provide a detailed output of the factors and variables that need to be considered as part of factor analysis. Table 6 is a tabular representation of the variables which clearly states the loading of which variables are considered in which factor and Fig 4 represents the same data in graphical form. Description of the various loadings under different factors is been briefly described below.

**Table 6: Factor Analysis**

<b>Uniqueness's:</b>					
Age	0.121	Qualification	0.005	Experience	0.091
Importance	0.966	Implemented	0.446	RegulatoryAreas	0.916
Challenges	0.913	Factors	0.598	Improvements	0.637
Criteria	0.892	Awareness	0.892	Confidence	0.907
Aspects	0.787				

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<b>Loadings:</b>					
	<b>Factor1</b>	<b>Factor2</b>	<b>Factor3</b>	<b>Factor4</b>	
<b>Age</b>	0.916	-0.13	0.11	-0.103	
<b>Qualification</b>	0.133	0.909	-0.106	-0.373	
<b>Experience</b>	0.949				
<b>Awareness</b>		-0.198	0.252		
<b>Importance</b>		-0.175			
<b>Implemented</b>		0.415	0.156	0.594	
<b>RegulatoryAreas</b>	0.247		0.107		
<b>Confidence</b>		-0.287			
<b>Challenges</b>		0.287			
<b>Factors</b>		0.628			
<b>Improvements</b>	0.192	-0.13	0.549		
<b>Aspects</b>	0.16	0.41	0.119		
<b>Criteria</b>	0.116	-0.303			

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	<b>Factor1</b>	<b>Factor 2</b>	<b>Factor 3</b>	<b>Factor 4</b>
<b>SS loadings</b>	1.879	1.199	1.04	0.709
<b>Proportion Var</b>	0.145	0.092	0.08	0.055
<b>Cumulative Var</b>	0.145	0.237	0.317	0.371

Test of the hypothesis that 4 factors are sufficient.  
 The chi-square statistic is 28.32 on 32 degrees of freedom.  
 The p-value is 0.653

Fig 4 is a graphical representation and it is a dimension reduction technique that helps to identify patterns and relationships between variables by transforming them into a set of uncorrelated principal components.

As per the below Plotting it can clearly be stated that Factor 1 represents the demographic factor which is related to variables such as Experience and Age of an individual. Factor 2 represents the understanding of an individual on the topic with reference to their qualification. Factor 3 represents Regtech attributes which consist of variables like factors that define Regtech, improvement areas, and other aspects which is important for the growth or implementation of Regtech in Defi. Last Factor 4 states the challenges which can be measured in terms of variables such as Implementation, Criteria, and awareness of the topic to identify the huddle in the implementation of the technology with the Banking or financial sector.

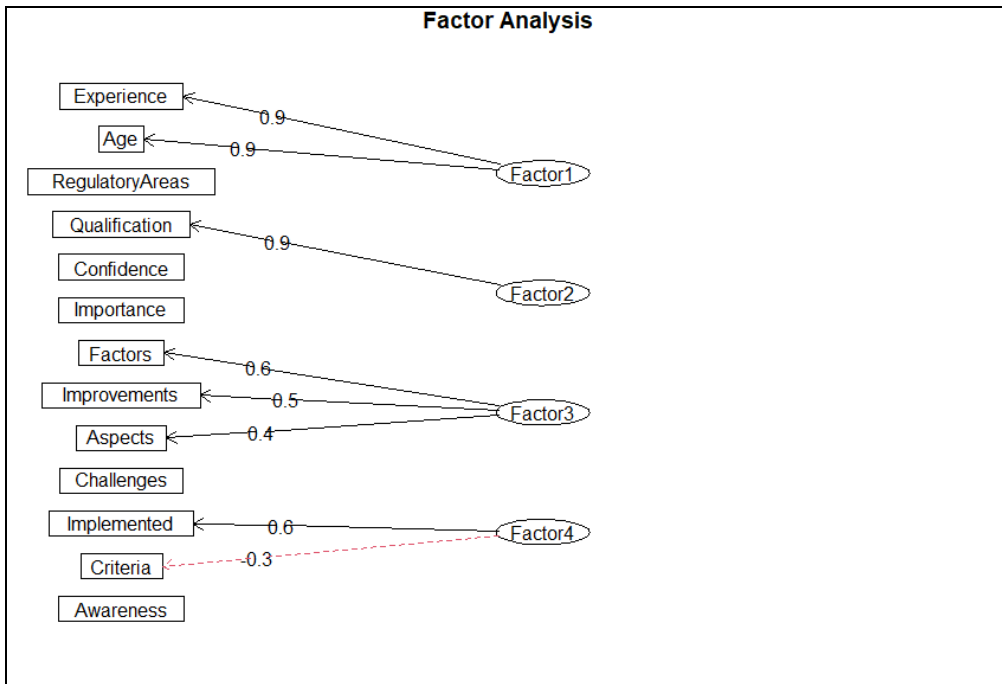


Fig 4 – Factor Analysis

#### 4.4 Fisher Exact Test

The Fisher Exact test is more accurate than the Chi-square test considering the population of the world, the sample size of 102 is a small number which proves performing this test justifies. The precise likelihood of detecting the specified data distribution under the null hypothesis of independence is determined via Fisher's exact test. This is accomplished by thoroughly listing all potential distributions that could result in the observed table, making it appropriate for small samples.

Table 7. Contingency Table Result

<u>Parameter - Gender &amp; Technical Background</u>	
p-value	1
Odds Ratio	2.069959
95% CI	(0.1060478, 51.7634048)
Alternative Hypothesis	True odds ratio is not equal to 1
<u>Parameter - Age &amp; Technical Background</u>	
p-value	0.3016
Alternative Hypothesis	two.sided
<u>Parameter - Technical Background &amp; Awareness</u>	
p-value	0.5981
Alternative Hypothesis	two.sided
<u>Parameter – Awareness &amp; Importance</u>	
p-value	0.008095
Alternative Hypothesis	two.sided



Table 7 is the result of the Fisher exact test which was run on various parameters, as the p-value is greater than 0.05, it clearly states that the technical background of a person does not have any statistical significance to their Gender, Age, and Awareness.

## 5 Data visualization

A heat map is a graphical representation of data, it is a very easy way to view the correlation between various factors of the survey components. When the graph is labeled with correct Correlation values and color gradients, the interpretation becomes very easy for anyone who views the data to identify the correlation between factors and understand what relationship factors have, whether is it a positive correlation or negative correlation. The correlation status label helps the reader interpret the graph much more easily.

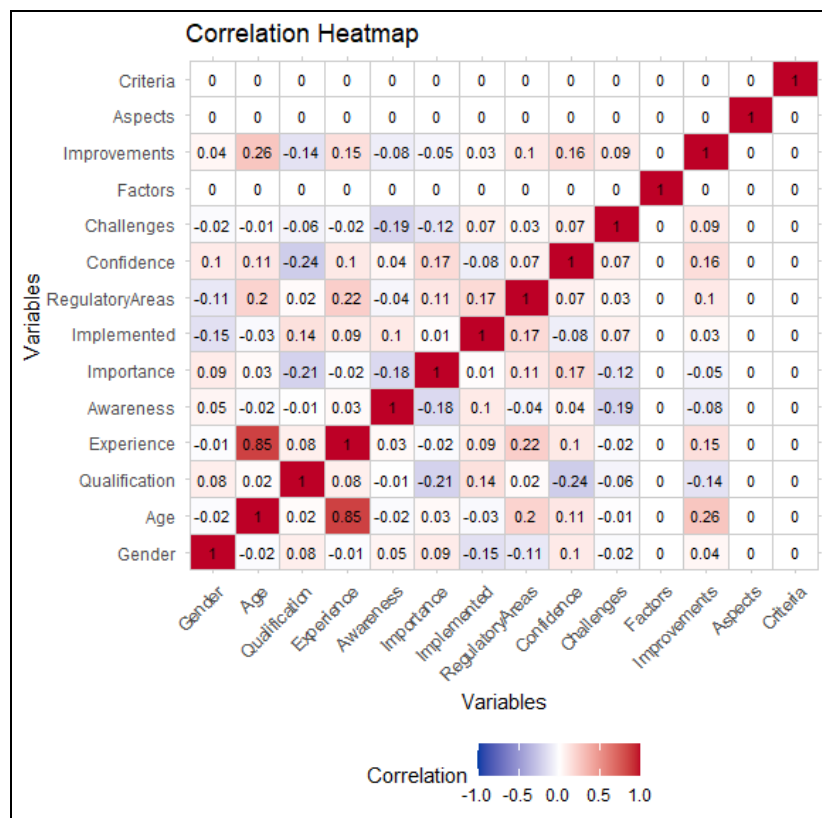


Fig :6 Correlation Matrix

As per Fig 6, the graph represents that age and experience are correlated and no other factor has any relationship with each other. It can be interpreted that any of the factors like awareness, implementing the Regtech in the organization or any challenges faced by the organization has nothing to do with any factors as they would not have any impact on each other. Graph states that Age and experience have a positive co-relation which is true in the normal case as the age of the person within the organization increase will have a direct impact on his experience as well. As other variables are not correlated it can clearly be stated that no variables can act as a hurdle for implementing any aspect of the Regtech and Defi, which means Awareness, Age, and technical background have nothing to do with the Challenges faced by Regtech implementation or expansion of the regulatory areas.

## 6 Conclusion

All the analysis based on the respondent responses clearly states that the majority of the respondent resulting around 37% just have a fair understanding of Regtech & Defi, which is one of the roadblocks for the industry to growth, as nearly 50% of the participant who took the survey are with a work experience between 0-10 years and around 61% respondent are from the non -technical background. In this digital era where Banking and financial sectors are moving towards technology very fast, it becomes more important for companies to encourage employees to upgrade their skills in the technology domain to some extent. The biggest challenges that organizations face in order to implement new technology to be in line with the competitive world are cost, scalability, and User-friendly technology to implement which results in around 55% of the population as per the survey. This can be backed by the survey conducted by company Grant Thornton as well. Additionally, according to the poll, 31% of participants said that Regulatory Technology might really benefit AML as a field.

Even Grant Thornton AML's corporate industry study came out on top, emphasizing the crucial roles that AML and KYC play in the success of the Regtech sector. According to the survey, respondents' understanding of Regulatory Technology and Decentralized Finance (DeFi) differed. Regulatory technology was foreign to some people, despite the fact that a sizable percentage had a good understanding or in-depth awareness of both concepts. It was shown that factors including implementation, awareness, and other decision-making criteria affected how significant RegTech was seen to be in managing regulatory risk and compliance in the DeFi industry.

Based on the survey and the various analyses, Regtech in Defi has a lot of scope for expansion, in order to meet the required result with the corporate and to implement within any of the space, various factors and the aspects of Regtech and Decentralised Finance needs to be considered like anti-money laundering, compliance reporting, data privacy, and market manipulation detection.

The Respondent of the survey and the result of the analysis clearly state that experience and technical background of the person has no relation with the individual which could state the awareness of Regtech and Defi. Being aware of new technology would mostly be based on the interest level of the person, where the person states how keen an individual is to learn new things and how eager a person is to gain and upgrade ones' knowledge

## **7 Future Work**

As the world is moving towards technology and for an organization to sustain itself in this competitive world, it is very much important that each and every person is upgraded and aware of the new technology, and it also becomes the responsibility of the companies to conduct various training programs and encourage their team to learn and upskill in various like Blockchain, AI, Machine learning backed by some coding understanding, to further expand regtech solution. Within Banking or Financial intuition, most of the transactions are related to payments and KYC which becomes a primary concern for Regtech, Having a standardized regulatory policy within the industry across the globe will provide ease to every sector where Regtech is or would be implemented.

To further improve RegTech solutions, it is advised to investigate the possibilities of artificial intelligence, machine learning, and blockchain technology. Additionally, performing more empirical research on DeFi and RegTech will help to understand the dynamics of the industry and the effects of using cutting-edge technologies.

Creating awareness among the people within an organization is very important as most of the regulatory technology are directly or indirectly connected to Banking and financial institution. As per the result published by Grant Thornton in one of the reports, it states that the Regtech would boom within Europe markets in the coming year, hence it is more important for everyone working profession to understand the various aspects of technology and keep them updated as well. Researchers could also look into how legal and regulatory frameworks affect the adoption of RegTech and DeFi. It will be essential to comprehend the regulatory environment if RegTech solutions are to be used successfully and widely in the financial sector.

Overall, this thesis has established a solid framework for comprehending the convergence of RegTech and DeFi and its effects on the financial industry. Increased regulatory compliance, financial innovation, and the development of a more robust and effective financial ecosystem are all benefits of additional research in this area.

The thesis emphasizes the need for a greater study to fully comprehend the difficulties and dangers involved with DeFi, carry out more in-depth empirical investigations into RegTech, and critically assess the potential effects of DeFi adoption.

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