Navigating Agile: Revolutionizing Banking in Honduras

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Abstract - Due to a variety of factors occurring simultaneously in Honduras, the financial sector is undergoing a profound change in every section of the company, including the ones where they are lacking of technology appliance, forcing organizations to adapt to new working methods. In this thesis, the Honduran financial sector attempts to identify the main challenges and benefits it faces when it applies agile methodologies to digital transformation, its barriers, as well as lessons learned. A survey of the Honduran financial sector confirmed three hypotheses, namely a lack of agility knowledge and focus on process and methods beyond model thinking prevent successful agile project management. Additionally, it was identified that through the leaders, it is possible to obtain cultural change within organizations, thereby making the implementation of agile methodologies easier. The study will assist financial organizations in understanding the obstacles that hinder agility implementation. They will also be able to identify the most important aspects to consider, to achieve a management mindset focused on adding value and meeting customer needs, in a complex, and changing environment.

Keywords — Honduran Financial Sector, Agile Methodologies, Project Management.

I. INTRODUCTION

The development of the financial system worldwide is based on technological models that are situated on the permanent search for the concept of fast value delivery, based on the speed and efficiency of the financial system. “Agile is far from a silver bullet. Simply adopting Agile methods without understanding what means to be Agile, won’t lead your organization to a successful transformation. In addition, such change has its challenges and issues, which, if not addressed correctly, will inevitably lead to another failed transformation.” [1].

Nowadays, the access to products is mostly through omnichannel (digitalization). Customer needs are becoming more and more demanding in terms of user experience. This forces you to deliver continuous value and meet user demands in a clear and efficient way, allowing easy and agile access. Honduras is one of the few countries in Central America that has made little progress in technology, according to the report of the Inter-American Development Bank [1] Honduras is one of the countries that is lagging behind in the development of Fintech activity, being Mexico and Brazil the Latin American countries that have taken the lead in this branch of activity.

A. Approach to problem situation

Technology has allowed many countries to develop innovative business models, Honduras is one of them, in the financial sector there is a great demand to move to the digitization of financial services and financing platforms. However, the lack of project management adapted to an agile methodology has decreased the success rate of these projects and has failed to involve all the institutions of the sector, which makes it more complex to achieve an improvement in the competitivenes of the industry against its competitors. The Honduran financial system increasingly feels the need to digitally transform their organizations and create innovation strategies that allow them to digitize their processes, to have the technical capabilities that the economy needs.

According to the Global Competitiveness Index 2019 presented by the World Economic Forum (WEF), Honduras shows no progress in key indicators for the current economic development such as technology, in the adoption of information technologies, Honduras is in the 124th position of 141 nations [2]. This implies the
existence of a considerable digital lacking, not only in relation to the more developed countries, but also to Latin America and even the other countries of the Central American region.

With the outbreak of COVID-19, this situation has forced many organizations in Honduras to seek opportunities to innovate and reinvent, mainly in the financial sector, the pandemic has forced this sector to seek changes in the way they do business, and to innovate all their banking services. However, agility as the main digital pillar has not been acquired in an efficient way in the financial sector companies, which has helped to decrease their competitiveness in relation to developed economies. Despite the data of the indices shown by the World Economic Forum, Honduras has been positioning itself in a solid way in financial innovation in Central America, which makes the country cannot be left aside these digital skills. Organizations in Honduras are with the goal of achieving their best offer, and the best way to do this, is to adopt a thinking around agile methodologies, thereby improving the delivery of value and interaction models with their customers. This study aims to diagnose the main benefits and challenges that can be presented in the Honduran banking industry, to successfully implement and manage project with an agile method approach.

B. Problem systemization

• From the literature review, what factors are important for agile project management in digital transformation?

• What are the main benefits and challenges of implementing agility in the Honduran financial system?

• What lessons learned have been generated in digital transformation by the implementation of agile methodologies?

• What benefits and challenges are presented in agile methodologies in which projects in the Honduran financial system?

C. Objectives

The work will examine agile methodologies benefits and challenges in Honduran Banking, many industries have included this type of methodologies for process improvements in different areas, this research will be focused directly on adoption of agile software development, the aim of this research is to understand what the benefits and challenges are of adopting this methodology in Honduras banking industry. The initial goal for the agile methods is to reduce the overhead in the software development process with the ability to adopt the changes without risking the process or without excessive rework [3].

OB1: Identifying what differences can be found in Honduran banking when adopting agile methodologies into their process improvement, what approach are they applying.

OB2: Identify the benefits and challenges inside the organization, with personnel experiencing the appliance of this new methodology by collecting different interviews and surveys.

OB3: The literature review will help to identify and understand the factors that contribute to agile adoption success in several industries.

D. Scope and Limitations

The present study will be limited to Honduran companies in the first level financial sector and to companies that are part of the country's financial infrastructure. This study will not cover the interrelationship that may exist between the implementation of agile methodologies in international financial companies, nor a solution that closes the existing gap between them. Likewise, it is not intended to formulate a solution to the problem that the country and the industry under analysis currently presents.

II. LITERATURE

A. Honduran Financial system

In Honduras, national banking emerged as a response to the cries for help from the economy, since the numery crisis, the instability of dictated policies and the lack of a regulatory body were causing the country to be in trouble for not having a defined structure to guide the financial activity in the country. The general scheme of the Honduran financial system has as its axis the Central Bank of Honduras, around which is coordinated and attached the National Commission of Banks and Insurance, these agencies are designated to evaluate other
institutions. The Central Bank of Honduras, as the monetary authority, has as its primary objective, as can be seen in Figure 1, to regulate the normal functioning of the payment system, the financial institutions such as:

- Commercial banks
- Savings and Credit Associations
- Financial companies
- Second-tier banks
- Financial representative offices

On the other hand, it is designed to regulate insurance and pension companies, which include pension fund administrators, pension institutions and insurance companies. In the same Figure 1, the National Banking and Insurance Commission is shown, which will exercise through the superintendence the supervision, surveillance and control of private and public banks, insurance companies, reinsurance companies, savings and loan associations, financial companies, general deposit warehouses, stock exchange, exchange houses, pension funds, credit card issuing companies and others that carry out financial operations. It will also oversee that these institutions have systems for the prevention of money laundering and financing of terrorism, enforcing the laws that regulate these activities. These two financial regulatory bodies have in common the supervision, regulation and support of the Honduran national financial system.

The Central Bank of Honduras oversees the following institutions as shown in Figure 1:

- Financial Intermediaries: are those entities that perform financial intermediation activities. Commercial Banks, Financial Companies and Savings and Loan Associations: Autonomous institution whose main objective is to channel financial resources for the development of production and productivity in various sectors of the country.

- Insurance and Pensions: These are those commercial companies engaged in the administration of voluntary private pension and severance funds through individual capitalization accounts in favor of third parties.

- Credit card issuers: corporations whose main activity is to carry out credit operations through the issuance of credit cards, where they make available to the cardholder a credit in a current account with a limited amount.
B. Current growth in the Honduran financial system

Currently the financial system in Honduras has standardized the interactions and management of the sector in order to give viability to a regulated and standardized market, as well as having clear the type of stakeholders that make up the system, here we will review how the reality is today so that in this way we can establish the status quo of today and to glimpse the challenge of digital transformation in favor of the current needs of customers given the speed of its growth.

The financial system in Honduras is quite sophisticated compared to what it was in previous years. The market architecture has been specialized so that it can satisfy the financial market, the performance of the National Financial System (SFN as its acronym in Spanish) is characterized by its remarkable dynamism, accentuating the trend of consolidation of the growth of financial intermediation, showing solid financial indicators that demonstrate the stability and solvency of the system.

Honduras has an adequate regulatory framework that guarantees financial intermediation based on sound banking practices and according to international standards such as Basel I and Basel II. According to BIS (2019) the Basel Framework is the full set of standards of the Basel Committee on Banking Supervision (BCBS), which is the primary global standard setter for the prudential regulation of banks. The membership of the BCBS has agreed to fully implement these standards and apply them to the internationally active banks in their jurisdictions. There are 15 commercial banks, 10 finance companies, 2 state-owned banks and one representative office operating in the SFN. This is led by commercial banks, which are distributed in 9 foreign capital banks and 6 national capital banks.

In addition, the level of coverage of financial intermediaries has expanded nationwide. The “Financial inclusion report 2021” published by CNBS (2021) shows that for the year 2020, the points of service of the country's financial institutions grew by 6.2% compared to 2019, totaling 8,560 points nationwide; the highest growth in points of service in the last five years is shown in 2019 as showed in Figure 2, influenced by the growth of correspondent agents.

The year 2020 shows a low growth of service points in relation to the last years, due to one of the greatest challenges currently facing humanity: The COVID-19 pandemic, therefore, the Executive Power, through Executive Decrees declared "State of Sanitary Emergency" throughout the national territory, in order to strengthen surveillance, prevention and control actions, and ensure the care of people before the occurrence of infection by the Coronavirus called COVID-19, and with it, total and gradual restriction of the circulation of the population, as well as the closure and staggered opening of care in the hospitals and clinics of the country and gradual restriction of movement of the population, as well as staggered closing and opening of financial institutions, businesses and shopping malls, complying with biosecurity protocols, which has influenced the low growth of service points in relation to previous years.

The performance of the financial activity through the expansion of financial products and services, through the use of traditional channels and more recently in the evolution of technological transformation, has allowed the strengthening of inclusion in the national financial ecosystem, manifesting itself in part in the growth of the Honduran economy. Digital tools are alternatives that have been rapidly developed after the pandemic.
spread globally, driven by the challenge of continuing to make sure the interrupted flow of internal and external financial resources between the economic agents of the countries. In this regard, the entities in charge of executing financial policies and supervision in Honduras have designed and undertaken various initiatives of inclusion and digital financial education during the first half of 2021, among which stand out according to [4]: The Financial Innovation Forum (MIF), which is working on the presentation of the Fintech Entrepreneurship Work Plan. The CNBS undertook the implementation of the Women's Financial Inclusion Plan (IFM), with the purpose of improving and strengthening the supervision and regulation capacities to promote the financial inclusion of Honduran women.

C. Agile methodologies in comparison with traditional methodologies

 Agile methodologies were designed at the beginning of the 21st century and are characterized by their flexibility and adaptability to customer requirements, through the management of their projects. It was designed at the beginning of the century to adapt to constant change, they can adjust to all types of customer requests quickly and there is the possibility of delivering value early, due to their minimum viable product models. From the above, a company could get a 50% higher return if it makes a rapid introduction of its product, making a rapid onboarding of personnel to deliver a rapid evolution of its product [5].

Traditional methodologies on the contrary, the objectives and activities are defined and detailed from the very beginning of the project. One of the possible reasons for using this type of management is time and budget constraints. Also, these traditional methodologies are generally used today by industries such as construction, engineering, oil and gas industries, among others.

However, traditional methodologies present several problems when dealing with a big amount of industrial projects in the environment of satisfying the customer in the shortest possible time and among them we can highlight the following: They perceive the capture of project requirements as a phase prior to project development which, once completed, must provide an accurate picture of what the customer wants. They try to avoid at all costs changes in the initial set of requirements, since as the project progresses it becomes more costly to solve the detected errors or to introduce modifications[6], and they try to delegate all economic responsibility to the customer in case these changes in requirements occur. For this reason, they are also known as predictive methodologies. However, the effort, both in cost and time, involved in making a detailed capture of all the requirements of a project which at the beginning of the project is enormous and is rarely justified by the result obtained. In addition, the customer often does not know his own needs in sufficient depth to define them accurately a priori, and these needs and their priorities often change during the life of the project. Establishing control mechanisms is one of the options available to protect against such changes, although to protect against these changes, although they often lead to dissatisfaction on the part of customers, who perceive the clients, who perceive the development of the project as inflexible and not adapted to their needs. The project development is perceived as inflexible and does not adapt to their needs, and if it does, it has negative repercussions in terms of costs added to the project's budget.

On the other hand, in terms of agile frameworks, there is SCRUM, which is one of the most used models today worldwide and is the most accepted for being the lightest of all frameworks and the one that contains the basis of agile methodologies itself. As mentioned before, SCRUM is one of the most applied agile methodologies nowadays. It is mainly intended for the development and maintenance of software projects. Scrum is a framework within which people can address complex adaptive problems, while productively and creatively delivering products of the highest possible value [7]. It uses an iterative process that divides the development of a product into cycles of duration (sprints). In each of the cycles, the team works on a prioritized list of requirements, resulting in a deliverable product at the end of each cycle, which optimizes predictability and risk control.
The main benefits of SCRUM are delivery of priority results working and already completed; the management of customer expectations and the achievement of tangible results is essential; anticipated results; flexibility and adaptation to customer needs, market changes, etc.; systematic management of return on investment; systematic mitigation of project risks; increased productivity and quality; alignment between the customer and the development team.

**D. A review of Agile methodologies**

Although the agile manifesto is the cornerstone on which all agile methodologies are based, each one has its own characteristics and emphasizes some more specific aspects. In this section we describe, in broad strokes, the fundamental particularities of some of the agile methodologies that are currently available and widely accepted in the market, such as eXtreme Programming, Crystal, Dynamic Software Development Method (DSDM), Feature-Driven development and Lean Software Development.

The eXtreme Programming methodology, also known as XP, is an agile methodology focused on leveraging interpersonal relationships as the key to success in software development. Aspects such as teamwork, developer learning and fostering a good working environment are pillars in this methodology. It was officially created in 1999 by Kent Beck, with the publication of his book *Extreme Programming Explained*. In his book explains that XP focuses on continuous communication between the customer and the team in charge of developing the software, fluid communication between everyone involved in the project or product, implementing simple solutions and facing challenges with courage [8]. It is defined as a methodology that works efficiently on projects with highly changing and imprecise client needs, where there is a high risk of having technical problems. As a pragmatic methodology, it gathers what it considers best practices for software development, whose disciplined application aims to reduce the exponential curve of the cost of change throughout the project.

The Crystal methodology is a set of agile methodologies for teams of different sizes and with different criticality characteristics. It was promoted by one of the fathers of the Agile Manifesto, Alistar Cockborn, where in his book "Crystal clear: a human-powered methodology for small teams" [9] he considered that the methodology should be adapted to the people who make up the team using different policies for different teams. These policies will depend on the size of the team, establishing a classification by color:

- Crystal Clear (3-8 members).
- Crystal Yellow (10-20 members)
- Crystal Orange (25-50 members)
- Crystal Red (50-100 members)
- Crystal Blue (100+ members)

For example, Crystal clear, the lightest of this set of methodologies is aimed at the communication of small teams that develop software whose criticality is not high. They have 7 associated features: frequent release of functionality, better reflective, osmotic communication, personal security, attentiveness, easy access for expert users and requirements for the technical environment. Dynamic Software development method (DSDM) can be considered a framework for the software production process, rather than a methodology. It was born in 1994 with the objective of creating a unified RAD (Rapid application development) methodology. It divides the project into three phases: pre-project, project life cycle and post-project, specifying in a rigorous way the architecture and management of the project. Thus, it proposes five phases in the development of the project:
1.      Feasibility study
2.      Business case study constituting the pre-project stage.
3.      Functional modeling
4.      Design and construction
5.      Implementation

Its main characteristics are interaction with the user, empowerment of the development team, frequent releases of functionality, being driven by business needs, iterative and incremental development, adapting to reversible changes, setting the scope level at the beginning of the project, testing throughout development, and efficient and effective communication [10].

Feature-driven development this methodology, devised by Jeff De Luca and Peter Coad, combines model-driven development with agile development. It focuses on the design of an initial model, whose development is divided according to the features that the software must fulfill, and, iteratively, each of these features will be designed. Therefore, each iteration consists of two parts, design and implementation of each feature. This type of methodology is aimed at the development of applications with a high degree of criticality [11]. Lean Software Development, is a methodology especially aimed at the development of systems whose characteristics are constantly changing. In the book "Lean software development: an agile toolkit" [12] explains that it was defined by Bob Charettes from his experience in industrial projects, constituting an adaptation for software development of the lessons learned in the industry, in particular, in the Japanese automotive system of Toyota. The methodology establishes that every change in software development involves risks, but if properly managed, they can become opportunities that improve the client's productivity. It consists of seven principles aimed at managing change: elimination of everything that does not add value to the business, incremental knowledge, decision making as late as possible, deliberate functionality as early as possible, team empowerment, incremental product construction and global perspective of the project.

E. Digital transformation projects

Digital transformation is a complex process that needs to involve and align all areas of the organization and the company's own culture, especially management. The latter must be part of the organizational strategy to make the adoption and implementation much easier. At its core, digital transformation is “the integration of digital technology into all areas of a business, fundamentally changing how you operate and deliver value to customers.” [13]

Digital transformation projects can help companies in the financial sector to keep pace with market and customer demand. This creates challenges not only at the technological level but also at the cultural level. Large financial groups and banks in the country have had to develop digital transformation projects, as they have understood that leaving aside the technological revolution would leave them lagging behind in the sector and the region. Generating competitive advantage, not only for the financial sector, but also for any company that understands that technological modernization favorably impacts their strategic objectives by creating better synergies and productivity improvements of its staff. But these synergies must also be transmitted to customers, since it is a new culture and a new way of relating and satisfying investment, savings, and financing needs.

According to Wrike [14] there are 4 ways digital transformation is changing project management:

1. More efficient and strategic communication among teams and companies. Technology has changed the way teams communicate, the digital transformation is leaving all the traditional tools aside, for example email, this tool affects the continuous communication with someone in the team. A more direct communication is needed, where collaborators can communicate in real time. "When team members are freed from filtering through hundreds of emails a day just to keep up with a project’s status, they’re able to spend more time talking project strategy — which is precisely where you want the bulk of your team’s conversation focused" [14]

2. More collaboration within teams. With the right tools, everyone on a team can handle everything related to the project. Giving everyone on the project the opportunity to feel that they are part of the collaborative effort.

3. More focus on results rather than process. “With more digital tools and automated processes at their disposal, project managers are homing in on the best ways to align each project with their business’ strategies and goals — and delivering more successful outcomes in the process, with a customer centric project management approach” [14]
4. More analytics for improved PM processes, outcomes, and return of investment. Finally, digital transformation helps project managers make better decisions, separate them into different sectors and then apply changes to improve the project's purpose. Thus, mitigating costs and having a clear report when communicating with stakeholders.

III. METHODOLOGY

The financial sector in Honduras has many impediments when thinking about agile methodologies, in order to analyze and identify these problems and to be able to implement these agile work methods and transform the culture of their organizations towards a new model of thinking, a cross-sectional study that seeks to know the opinion of experts in the area of development in the financial sector, the opinion was made to 10 experts in agile methodologies and software developers, through a survey that will be divided into several sections. To arrive at a more accurate assessment of this research, a quantitative method was applied to this research, a "Quantitative research involves the interaction between variables after they have been operationalized, allowing a researcher to measure the results of the study" [15]. In order to carry out this research, different stages were defined in this research:

• Stage #1: Based on the literature review, considering different evaluation variables, the questions to be included in the survey were elaborated.
• Stage #2: Definition of the target population and implementation of the measurement method (survey).
To determine the sample, an estimated population of 10 people, a margin of error of 5% and a confidence level of 90% were considered. This data was applied to the following formula to calculate the population:

\[ n = \frac{k^2 \times p \times q \times N}{(d^2 \times N - 1) + k^2 \times p \times q} \]

\[ n = \frac{1.65^2 \times 0.5 \times 0.5 \times 10}{(0.05^2 \times (10 - 1)) + 1.65^2 \times 0.5 \times 0.5} = \approx 9.91803278689 \]

Figure 4: Formula Calculation of Sample by Author

The formula is explained as follows:
• \( n \) = Estimated population size
• \( P \) = Proportion of elements in the population that possess the characteristic under study. If unknown, the maximum dispersion value \( p=0.5 \) will be applied.
• \( Q \) = Proportion of elements that do not have the study characteristic in the population. If unknown, the maximum dispersion value \( q=0.5 \) will be applied.
• \( d \) = Absolute accuracy between 0.01 and 0.09
• \( k \) = Constant depending on the confidence level (\( Z \)) assigned
• \( N \) = Expected sample size

• Stage #3: Data collection and data consolidation
• Stage #4: Data analysis and data reliability analysis
• Stage #5: Results and conclusions

A. Data gathering

After conducting a thorough research and defining the methodology to be used (quantitative method), we took as a basis what was found in the literature summary, where different variables were found that helped in the design of the measurement tool, which is composed of 15 structured questions with Likert scale. To have a clearer idea about this type of scale, [16] in their study about this psychometric method define "Likert Scale" as follows: "The original Likert scale is a set of statements (items) offered for a real or hypothetical situation under study. Participants are asked to show their level of agreement (from Always disagree to Never agree) with the given statement (items) on a metric scale”.

B. Statistical processing of data

Using the following questions, the survey was applied to 10 people, including heads of systems development or experts in agile methodologies and software developers in the financial sector, the following respondents are people who have been directly or indirectly related to agile projects in 1 or more banks in Honduras. The following results were obtained.
C. Validation of measurement instrument

In order to validate whether the survey was a reliable instrument used for measurement, the Cronbach's Coefficient alpha was applied to the 15 questions, the Cronbach’s coefficient alpha “is another widely used index of the reliability of measurements in the social science literature” [14]. The survey applied to the participants as mentioned in the data collection section, the participants in their answers chose between 5 options that are categorized in numerical value from 1-5, being 5 the highest value and 1 the lowest value. Based on these numerical values the evaluation of the validation instrument will be carried out, in order to obtain the veracity of the instrument put into practice.

<table>
<thead>
<tr>
<th>Non-Binary to Binary values</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Always</td>
<td>5</td>
</tr>
<tr>
<td>Almost Always</td>
<td>4</td>
</tr>
<tr>
<td>Sometimes</td>
<td>3</td>
</tr>
<tr>
<td>Almost Never</td>
<td>2</td>
</tr>
<tr>
<td>Never</td>
<td>1</td>
</tr>
</tbody>
</table>

*Table 1: Value of answers in results*

The following formula was used to perform the calculation:

\[
\alpha = \frac{k}{k - 1} \left( 1 - \frac{\sum V_i}{V_t} \right)
\]

*Figure 5: Cronbach Alpha*

In order to understand the formula, it is necessary that it is exposed in different parts, where:
- \( K \) = Items (Number of questions)
- \( \Sigma V_i \) = Sum of individual variables
- \( V_t \) = Total variance
- \( \alpha \) = Cronbach's coefficient alpha

To identify if the measurement instrument is reliable, once we have the answer to the formula, there is a table to interpret the results and this scale can be observed as follows:

<table>
<thead>
<tr>
<th>RANGE</th>
<th>RELIABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.53 or Less</td>
<td>Null reliability</td>
</tr>
<tr>
<td>0.54 - 0.59</td>
<td>Low reliability</td>
</tr>
<tr>
<td>0.60 - 0.65</td>
<td>Reliable</td>
</tr>
<tr>
<td>0.66 - 0.71</td>
<td>Very reliable</td>
</tr>
<tr>
<td>0.72 - 0.99</td>
<td>Excellent reliability</td>
</tr>
<tr>
<td>1</td>
<td>Perfect Reliability</td>
</tr>
</tbody>
</table>

*Table 2: Likert Scale*

For our specific research the final result for the Cronbach's Alpha calculation was 0.91, which indicates a high level of reliability according to the scale shown above, in addition to showing a correlation between the 150 responses obtained for the 15 questions used in the measurement instrument. The information of the results obtained will be shown below:

<table>
<thead>
<tr>
<th>Reliability Level</th>
<th>Questions #</th>
<th>Total Variance</th>
<th>Cronbach Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15</td>
<td>86.64</td>
<td>0.91</td>
</tr>
</tbody>
</table>

*Table 3: Reliability Level*
The managers of your organization would be willing to promote a cultural change in the way in which cultural change in the way projects are managed? 0.84
2 The organizational culture of your company is prepared to face the digital transformation that is digital transformation that is required today in the Honduran financial sector? 1.09
3 The values and competencies that your organization has are aligned with any agile methodology? 0.69
4 Is your organization ready to implement agile concepts? 0.44
5 In your experience, is the implementation of agile focused on processes and methods? 0.61
6 Do you think that through agile, digital transformation projects can be more successful? 1.44
7 Do you believe there is a need to adopt agile practices in baking institutions? 0.84
8 Does your organization promote the use of new technologies in project management? 0.64
9 Do you think that your organization has state of the art technological tools that allow you to have a successful project management? 0.56
10 Do you think that new technologies can influence agile project management? 0.16
11 Are there people in your organization who hinder agile-based project management? 0.84
12 The expectations and behaviors of customers change at an increasingly accelerated pace, do you think that companies in the financial sector are prepared to respond to the changing needs of customers? 1.36
13 Is agile adoption making work easier? 1.01
14 Is the commitment of developers high when using this type of agile methodologies? 1.44
15 Would you suggest another framework instead of agile methodologies? 0.76

Table 4: Questions in Research

IV. RESULTS & ANALYSIS

Once we finished determining the level of reliability of our instrument, we can analyze the results obtained. We were able to confirm that the work culture is a key factor for the successful implementation of agile methodologies, for this analysis we took into account the 4 variables with 15 questions asked to 10 people with expertise in the area of agile methodologies and software development of banks in Honduras that helped us to determine a sufficient and varied sample with respect to the diversity of entities that comprise the financial sector in Honduras. The analysis of the results of the surveys and interviews is presented below.

A. Key factors for successful implementation of agile methodologies

According to our interview with the experts, although 90% of them think that digital transformation can be successful through agile methodologies (see Appendix F), as shown in Appendix H 30% of them say that only sometimes organizations promote the use of new technologies as agile methodologies, but more interestingly in Appendix D 10% of the interviewees think that the organization is not ready to implement agile concepts in their organization.
Figure 6: Appendix A-O (generated)
Organizations in the financial sector in Honduras, today, are struggling to choose between speed and flexibility of their projects, preventing them to direct all stakeholders as collaborators and team leaders, towards a culture where agile methodology should be seen as a positive tool. Every company does not necessarily have to change a structure from zero, but they must ensure that this structure is dynamic, that they are able to face new technological trends that bring challenges and opportunities, that are directly involved in the objectives of the organization, and creating cross-functionality to achieve iterative and incremental developments, that allow partial deliveries focused on the speed of customer needs, which can be improved, up to the point of being able to meet the needs of the customer.

It is of utmost importance to consider that every financial institution in these times will have to change their way of working for a more agile and flexible one to adapt to the changing environment. But in order to have a successful transition, leaders are essential to encourage and promote this type of agile practices within the financial sector. Managers are the first to set an example and propose a change in the pillars, empowering their teams, and thus generate a transformation that allows to reach customers faster, giving value and creating products and services according to their needs.

Traditional leadership focuses on making a radical decision in the face of unexpected changes, usually leaving aside the path that this entails, and putting above the hierarchies defined within the organization, where only a few make the final decisions. Leaders with agile thinking are empirical, they usually base their decisions on experiences and mistakes made in the past, and even when senior managers continue to make some important decisions, they always do so based on the opinions and arguments of their expert teams, who live closely what happens on a daily basis; these leaders are flexible and are able to adapt to a changing world, with increasingly complex demands.

According to Appendix A 60% of managers in the organization will be willing to promote this change always, 30% almost always and 10% almost never, definitely when changing to a new methodology within a company is sometimes hard, but first as mentioned before the leaders of an organization are the ones who need to give example at first. The Honduran financial sector faces a major challenge in implementing agile thinking, as its leaders tend to be more traditional and bureaucratic, companies are governed by rules, policies, and fixed processes that hinder their ability to move quickly, but at the same time, the demands of the environment, forces them to work on digital projects, which allow them to adapt to a new era, commercializing their products and services without delays, and always looking to create a competitive advantage in the market. Undoubtedly, the digital transformation faced by the sector, goes hand in hand with the agile, since the latter allows a quick adaptation to the market, as well as to know the customers and the market in time. However, the results show that 40% of the people surveyed feel confident that their organization is ready to face a change that requires a transformation in the way their employees think and work (see Appendix B).

Accordingly [17] “The financial services industry is a large consumer of IT services, with its IT spending in North America expected to reach $71 billion, and to continue to grow at a four year compound annual growth rate (CAGR) of 4.1 percent”, this can give a clear idea on how financial services will be working in the future as they are all facing this huge changes in technological platforms, and the only way they can keep on track is to be updated with all trends. Appendix C shows us that 10% of the interviewees identified that the values and competencies of the organizations almost never are aligned with agile methodologies, 30% say that they are aligned. Although these results show us that the percentage of organizations that are ready and willing to adopt agile methodologies in their organizations to improve is very high, there is still a lack of organizational and structural strategies that allow an evolution in the way people work, where agile thinking does not become a methodology, but part of their daily work.

Another important factor to achieve this transformation towards agile methodologies, is to develop people, cultivate a mindset of openness to change, and show them the positive results that generate value to lead a more productive day to day. Since all the areas involved must be on the same page, because if one fails to adapt, it can generate obstacles to achieve a successful implementation of the methodology.

The new generations of workers are innovative and are in search of new learning and constant changes, which generates an impact on the development of agile competencies and become key talents for the applicability of these working methods. However, there are also teammates, which can become a barrier to achieve an agile
culture within the organization, as evidenced by the survey results, where 10% of the participants think so. (See Appendix K).

It is essential that people stop working on isolated objectives, and through their leaders, focus their efforts directly on the objectives of the organization, allowing them to favor customers, obtaining products and services faster and without neglecting the quality and value delivered. Through this culture, organizations get people to learn to work in a different way and begin to change their traditional concepts and paradigms. It is not enough to create strategies to achieve the implementation of agile practices, if we do not work on achieving a cultural transformation within the organization, for which it is necessary to understand its objectives, pillars, and basic principles, as well as the leadership styles and personalities of its employees. There is no perfect recipe to achieve an agile strategy and culture; it is a continuous learning process that requires adaptation, transformation, and reinvention.

B. Process and work method approach- Obstacles to successfully implement agile methodologies

Digital transformation arises from the new needs of the financial market, since during the fourth revolution, consumers have endless opportunities at their fingertips, since they can satisfy their needs just by having a connection from their smartphones or tablets. Companies in the sector have been focusing their efforts and investments in information systems and development of new products that allow Hondurans to access in an agile, simple, and safe way. This has led to the search for agile working methods that allow them to meet the demand for modern financial services, as shown by 90% of the experts surveyed, who believe that there is truly a need of adoption of agile methodologies to improve services (See Appendix G).

The institutions that make up the financial system must evaluate their technological potential and its contribution to the business. This is based on the current state of the company, creating a baseline, and modeling the route of action towards digital transformation. To achieve this, it is important to consider the frameworks for business agility such as Scrum, Kanban, Scrumban, SAFe, among others, as they allow the development of initiatives involving from the different stakeholders of the organization to the end customer. “These strategies enable organizations, many of which are being upended by innovation, to expand agility throughout the organization for sustainable business growth and transformation success” [18]. Although all these methodologies and strategies substantially help a company in different sectors, the principles are often unknown, and this creates barriers to a successful implementation of the methodology. Nowadays, information about agile methodologies and their principles can be easily found through the internet, general reference pages or even academic search systems such as databases of universities worldwide, allowing access to knowledge of these models of thinking. However, as Appendix E shows, almost 73% of the respondents mistakenly think that agile methods have a focus on processes and methods.

One of the constant problems we find in organizations in the financial sector and sometimes in underdeveloped countries, is that they do not have enough knowledge to implement this type of methodologies, and this tends to cause obstacles that prevent the agile methodology to be applied effectively. Being an institution that is responsible for customer satisfaction, the constant planning and acceptance of requirements allows to improve the customer experience, through "agile" thinking models, which help the deliverables are built correctly, with application of effective and modern practices that ensure product quality, improving the quality of customer service and also the quality of teamwork. However, as the survey results indicate, only 60% of the experts in the area believe that the company is ready to respond to customer needs. (See Appendix L).

It is also necessary to be clear that there is no guide or manual that can tell an organization how to correctly implement agile methodologies. But it is extremely important to know that learning will be done along the way, when you have an organization focused on the construction of new ideas through thoughts such as agile, allows to provide value in a systematic way, adapting the way of working to the conditions of any project, allowing opportunities for sustainability and organizational growth. This will not only achieve an impact on a specific initiative but will also allow a process of constant change of the organization, adding value to the solutions demanded by customers.

For the implementation of agility in the projects of the financial sector in Honduras to have the impact and efficiency desired, it is necessary that the people involved have sufficient knowledge about agile methodologies, and this can be done through certifications or training that allows the progressive development of the products demanded by the end customer.
C. Learned lessons when implementing agile methodologies

As Appendix M shows, 80% of the respondents are convinced that the work is made easier through the use of similar methodologies. When we move to an agile environment, this requires not only technological changes, but also changes in culture and business vision, to adapt to the changing behavior of consumers in the financial sector. Agile methodologies allow companies to learn faster from their customers and their competitors, achieving a faster and more efficient adaptation. Although Appendix N shows us that 10% of software developers do not have the commitment when it comes to using agile methodologies, it is important to understand that it is important to align all these objectives with all the staff that is part of the organization, because if everyone is on the same page it allows to develop projects more efficiently and in constant evolution as demanded by customers today.

The most important lesson learned to achieve a successful implementation of projects in the financial sector through agile methodologies, is that you must start by generating a behavioral transformation in the leaders of high and medium level of the organization. These are the ones in charge of encouraging agile methodologies in internal projects as an added value and a differentiator in the culture of the organization and as an improvement in the quality and effectiveness of the work of its employees. As mentioned [19] “Be prepared for the moment that your culture actually changes. An Agile leadership team has a lot of impact on the Agile culture on the work floor. This means the Agile leadership team has to stay aligned with that culture”.

On the other hand, it is necessary to have adequate technological tools that allow a more efficient collaborative work, adapted to a model of agile methodologies. As shown in Appendix I, about 80% of those surveyed think that their organization has the right tools to be able to have a successful project management. Accordingly [20] as long as tools are implemented in the right context, tools are important for the following reason: “Agile projects are very dynamic and fast-moving, and coordination of the efforts can be a challenge especially with distributed teams”.

Finally, among the lessons learned, it is recommended to involve and empower all people in the organization, to achieve an agile culture, but at the same time with a technological and digital approach, allowing to transform the way of working from all levels of the company.

V. CONCLUSIONS

Recommendations to the Honduran financial sector: given the market architecture, the entities belonging to this system must take into account that the information and documentation, present in the projects, is mostly focused on the mitigation of operational risk of the implementations and not on the efficiency of value delivery. It is, therefore, important to refer to documentation of the same sector in more liberal economies in their regulation, as is the case of European or North American regulations. On the other hand, it is recommend to the institutions of the Honduran financial sector:

- To count with an expert coach in agile methodologies, and at the same time to count with an expert and influential team, that helps to transform the culture and keep the organization focused on the adoption of agile methodologies. It is always recommended to start with the leaders, since they are the ones who should encourage change and set an example to other employees. If the top management of an organization does not believe in such a transformation, the change to an agile thinking model is unlikely to be successful.

- The projects focused on digital transformation that are generated in the coming years in the financial sector, will mark the line of action of these organizations as contemporary customers are demanding connectivity with their banks through new technologies. This is achieved from the delivery of results in a fast, effective, and incremental way, for which it is recommended to use projects under agile frameworks, always accompanied by trained personnel in the implementation of the principles of agile methodologies.

From this research we can conclude that there are several main factors that hinder the implementation of agile systems in the Honduran financial sector:

1. Knowledge of the theoretical framework
2. Cultural management
3. Management of the thinking of a company's employees.

Turning these 3 factors into transformational pillars within the organization, a significant increase in the success of this implementation will be achieved and will help to achieve the digital objectives that are required today.

The first factor that hinders the implementation of agile thinking, is the efficient training of the meaning of agile methodologies. It is the clear management of the knowledge of the principles that frame the Agile Manifesto to everyone in the organization. Knowledge is not a concept that only the leaders of a project should have, but it should be something that embraces the organization as its own, so that, in this way, everyone speaks the same language of customer-centric value, the gestation of production based on early delivery of value and that better leverage the model culture of the organization.

The second factor that hinders the implementation of agile methodologies in a financial sector organization in Honduras is based on not having a focus on processes, but on a model of thinking. Agile methodologies, unlike traditional project methodologies, do not foresee detailed processes for their execution, but have interaction principles that people must have so that, based on them, they can overcome the impediments in the executions and have a higher speed of value delivery. Focusing on changing the interaction model of people beyond the process will increase the success of the implementation since it will break management and leadership paradigms brought from previous interaction models such as Deming. Additionally, it will allow not only to impact the project interactions but the whole project in general.

Finally, is the efficient management of cultural change, this must be conceived as a transversal factor to the first two, since it is the one that unites the knowledge and interactions of people in a different way of managing projects, focused on the delivery of continuous value to the customer through the delivery mechanism of values prioritized by the end user and in favor of a maximization of the experience and satisfaction. Organizations in the financial sector are rethinking the way they work, given the dynamics of the financial market, where customers are finding new and better products that are migrating to the digital world. For example, there are products and services 100% digital, where customers do not have to go to a physical office to perform procedures, thus forcing them to make quick decisions and offer added value to the customer. This can be achieved by transforming the thinking model of a company's employees towards agile thinking with agile methodologies.

Starting by transforming the behavior and way of thinking of senior and mid-level leaders, having adequate technological tools, and empowering and involving all people in the organization in the process of implementation and transformation of agile and digital culture, are the 3 lessons learned proposed, to implement digital transformation projects through agile. These will help organizations in the Honduran financial sector to overcome the difficulties mentioned above and thus achieve a successful implementation of agile projects with a highly digital approach.

REFERENCES


