

Influencing factors in the implementation of an agile methodology in service providers

Fatores de influência na implementação de uma metodologia ágil em prestadores de serviço

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ABSTRACT

Agile methodologies emerge when the client's demand for the contracted products and services has substantially changed. This phenomenon is a consequence of increased business and competitiveness, which has led customers to value aspects such as agility in delivery and cost reduction in product development or service provision. This study explores the influencing factors in implementing an agile methodology, precisely the Kanban method, in service providers. This research is exploratory and quantitative, where data collection was carried out through an online questionnaire with a group of professionals who use agile methodologies. According to the results, the use of the Kanban method is highly relevant since, the method continues to be highly effective, and the top management of the company in which the respondents work supports the implementation of new methodologies that contribute to improving the company's performance. The adherence of leaders and managers can directly influence the implementation of the Kanban method.

Keywords: Kanban. Agile Methodologies. Services. Exploratory. Cost Reduction. Quantitative Research.

RESUMO

As metodologias ágeis surgem em um cenário no qual a demanda dos clientes por produtos e serviços contratados passou por mudanças substanciais. Esse fenômeno é consequência de uma maior dinâmica de negócios e competitividade, o que levou os clientes a valorizar aspectos como agilidade na entrega e redução de custos no desenvolvimento de produtos ou na prestação

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de serviços. Este estudo explora os fatores que influenciam a implementação de uma metodologia ágil, especificamente o método Kanban, em empresas prestadoras de serviços. Trata-se de uma pesquisa de natureza exploratória e quantitativa, na qual a coleta de dados foi realizada por meio de um questionário online aplicado a um grupo de profissionais que utilizam metodologias ágeis. Os resultados indicam que a adoção do método Kanban é altamente relevante, uma vez que ele se mostra bastante eficaz, e a alta gestão das empresas onde os respondentes atuam apoia a implementação de novas metodologias que contribuem para a melhoria do desempenho organizacional. O engajamento de líderes e gestores pode influenciar diretamente a implementação do método Kanban.

Palavras-chave: Kanban. Metodologias Ágeis. Serviços. Exploratória. Redução de Custos. Pesquisa Quantitativa.

1. INTRODUCTION

The primary motivation to sustain the present study lies in the importance and relevance of Agile Methodology for companies today due to the innovative theme depending on the area in which the methodology is applied (Al-Saqqa et al., 2020).

Agile methodologies were created as an alternative to mitigate the limitations of traditional software development methods, such as excessive documentation or ineffective time to market (Barros, 2016). Therefore, knowing that everything changes extremely fast, and the needs of social networks have changed, it is imperative to be flexible and adaptable to the changes in the market that is constantly transformation, focus on the value of the business and the desires and needs of the customer productively and economically, and in this context Agile Methods are highly relevant because they are recognized for providing customer satisfaction, quick response to changes and delivering products in a short time (Jeon et al., 2011).

Second, Schwaber and Sutherland (2020) aim the purpose of agile methodologies is to use small project teams, with employees interacting with customers to make the necessary modifications, and thus, deliver the product/service in stages for an evaluation by the consumer and deliver a quality final product/service in the shortest possible time, where cross-functional teams have all the skills they need to complete the job without relying on others who are not part of the team. Therefore, it is known that these methods emerged to focus on flexibility and adaptability in project management so that the least amount of documentation possible is used (Corchak et al., 2020).

Traditional and agile approaches are differentiated by a few points, more specifically by the predictability of the former and the adaptability of the latter. Agile approaches' main characteristic is greater flexibility to change, which facilitates the more present participation of the client (Spundak, 2014).

There are ten main reasons to adopt the agile methodology, among them the idea of failing fast, i.e., work packages can be tested quickly, and their problems can be fixed more quickly.

According to the same author, it is essential to point out that the agile methodology presumes to be constantly going back to the previous phase, or even more than one phase or more than once, in order to anticipate and presuppose changes in the final product and service, so that is in line with the customer's expectation. This characteristic of going back to previous steps to monitor the process as a whole ensures that the result will be equal to or even better than planned.

When analyzed quantitatively, agile approaches use only the number of processes and controls necessary to carry out the project in question, emphasizing the project and delivering value to the customer, always aligned with the interest of those involved (Albino et al., 2014).

On the other hand, in organizations in the service sector, it is necessary to measure specifications, quality in delivery, standards, and measurement techniques to ensure the quality of the performance of services since customer orientation is an integral focus of the company on the needs and desires of its customers, constantly observing their behavior. The main focus is customer satisfaction (internal or external), so good strategic management, team involvement, and research action must exist.

In this context, the research proposes to explore the influencing factors in implementing the Kanban method in service providers, identifying barriers and enablers.

This study aims to contribute to a more excellent and better application of agile methodologies in service companies in order to ensure greater customer satisfaction, better project development and execution of activities, and ensure reductions in expenses and time with rework.

2 AGILE METHODOLOGIES

Agile methodologies were developed to make processes less bureaucratic and meet the customer's expectations. According to Ludvig and Reinert (2007), the agile methodology emerged as a reaction to past methodologies. Its primary foundation was to create alternatives to the Traditional Model of Waterfall project management. According to Fowler (2005), the most significant difference between traditional methodologies and agile methodologies is the assumption that agile methodologies are adaptive instead of predeterminant, and traditional methodologies try to predict and condition details of the development process at the beginning of the project, which leads to future problems when changes are necessary for the project, such as delays in delivery to the client. On the other hand, in the agile methodology, changes are already foreseen during the project.

The term "Agile Methodology" became known in 2001 when a group of software-process experts noticed that in their previous experiences, there was a set of common principles that, when used, project work. The Agile alliance emerged from this meeting and established the Agile manifesto.

According to Fadel and Silveira (2010), agile methodologies are iterative and incremental, resulting in a product developed based on sequential improvement. As there is customer interaction during its creation, satisfaction is usually inevitable. Therefore, it is understood that with the use of agile methodologies, it is possible to carry out more focused developments in collaboration and flexibility to adapt between developers to the changes and the speed of customer responses.

However, the authors point out that success in applying the agile methodology depends on the commitment of everyone involved in the project and, in the same way, who is willing to change. In addition, achieving agility comes from the assiduous commitment of the team, management, customers, and sponsors (Albino et al., 2014; Vacari & Prikladnicki, 2017).

The human aspect can represent a significant obstacle to adopting an agile method, as it requires a work environment where the team and other stakeholders have cultural principles and values compatible with agile methods' demands. Companies that are born with this agile thinking, such as FinTechs, have an easier time implementing the methodology in its various areas, as all employees already have this value within the institution. according to Wonglimpiyarat (2018), On the other hand, older companies that are accustomed to the processes already defined, in a waterfall model that proposes a systematic, linear, and sequential approach, or even with little planning in agility and difficulty in changing routes in cases of unexpected problems, cannot achieve this implementation so quickly.

Given this, it is noted that the agile methodology is more adaptive and flexible than traditional methods and indicated for scenarios where constant changes and results must be delivered in short periods.

Of the various existing definitions for agile methods, the assertion is that agile methods are a set of practices that follow the principles of the Agile Manifesto (Beck et al., 2001). The fundamental principles of agile methods involve honesty in the work code, effectiveness of the people involved, and focus on teamwork. Among the existing agile methodologies, in this work, we will present only the Kanban taken as a guide for research.

2.1 Kanban Method

Kanban is a word of Japanese origin that means “signpost” and is used as a scheduling system to get products/services delivered on time. It is a lean production methodology that originated from the Toyota Production System. Its principles are “start with what you have” and “make evolutionary improvements.” The Kanban board is not restricted to one team and one iteration. However, it visualizes the entire workflow and accepts the co-authorship of multiple teams and people from multiple domains to build a product and perform a service.

Taiichi Ohno, creator of the kanban board, took his idea from American supermarkets, where merchandise is removed only when the customer needs it. That same merchandise is replenished only when consumed. It is a system designed to ensure that only the needed items are produced through the pull feed process. The Kanban board is fundamentally characterized by being informal, simple, easy to understand, visual management, and carried out by the employees themselves.

Therefore, for the system to be effective and work properly, there must be a participatory, cooperative, and committed environment between employees and the company. In addition, because it is a simple system, it is possible to notice the problems previously hidden from the team's view without significant difficulties, such as bottlenecks, poor quality, and equipment failure, among others (Duarte, 2009).

According to Castellano (2019), it is a method of operation that helps the operation of the Toyota Production System, controlling the intermediate stock and contributing to the leveling of production so that the process of transforming raw material into final product happens in a convergent way, and which is popular among companies that seek to increase the flexibility of their business, and thus, improve the management of the services they provide to their customers, without having to make relatively significant changes in the structure of the organization or job positions.

According to Milani (2008), an organization can be considered an artificial system composed of multiple parts that work together and harmoniously to achieve a specific objective and form social units with their own needs and interests. Therefore, it focuses on receiving inputs and converting them into products or services, which shows that the agile Kanban system can be applied in service provider organizations in any possible field. According to Matthias et al. (2016), The Kanban system can also be used as an order control system, i.e., to control individual orders' flow.

In turn, one can use the Kanban method to achieve better alignment across the company, meaning that overarching strategic objectives can be achieved. If market conditions change or problems arise, Kanban provides the ability to change course quickly. Anderson (2016) states this methodology is an alternative path to agility.

2.1.1 Origin of Kanban

The Kanban system was used to reduce inventory and ensure a return on investment in Just in Time (JIT), one of the first philosophies created by Toyota in 1952, aiming to eliminate waste and continuously improve quality.

The JIT methodology was carried out by unique cards (kanban) with essential information about the product and the remaining stock in the warehouse. This same card was used for future orders to the supplier when inventory was finalized. With this technique, the

inventory was limited only to the ongoing process, eliminating materials in the warehouse unnecessarily and generating considerable costs. (Babalâc & Dobrin, 2014).

Despite this, Kanban is a new tool that extends from small teams to the organization's value stream. The reality is that several companies have been seeking to align their efforts and gain competitive advantages in their markets. Kanban can undoubtedly be a tool to help search for control of production with high performance and obtain good results (Silva, 2019).

According to Moura (2007), the function of kanban can be summarized in six main points, namely: stimulating the participation of employees in the area; means of information control; inventory controller; definition of responsibility for employees; Simplification of the way of managing work and visual management.

Moreover, according to Rao et al. (2019), globalization comes with the need for efficient materials management in industries. This management refers to the group of manufacturers, suppliers, distributors, retailers, transportation, and other logistics management service providers involved in supplying finished goods to consumers, demonstrating that this system is also valid for service providers.

The Kanban method has a more technical and industrial character. With its origins in lean manufacturing, the primary visual element of the Kanban method is the Kanban board, where the entire life cycle of the development project is displayed (Stoica, 2016). Since it is a method that guarantees process improvement, companies have used it as a means of cost reduction and process improvement.

2.1.2 How Kanban works

The Kanban method has three essential principles (Fuior, 2019): the visualization of the workflow for the process, measurement of lead *time*, and work-in-progress limit (WIP – Work in Progress). According to Boonlertvanich (2005), when the WIP level is reached, new orders are not released before the current ones leave the system. In this context, it is necessary to understand lead time, one of the most prominent metrics in the Kanban method and regulates the average time to complete a work item. By improving lead time, the team involved in the project can better predict how many work items can be completed in a given timeframe, leading to an improvement of the process as a whole (Khan, 2014).

The first principle of Kanban method comprises the visualization of the process using the kanban board to draw or insert sticky notes/cards containing the workflow and its phases, offering a visual control mechanism. The visualization helps team members to know exactly how each task is progressing and to observe in an agile way if there are obstacles in the progress of the tasks in some phases.

The work-in-progress limit is based on the idea that it is best not to start work on a new item until the current item's work is complete, as the Kanban method brings a maximum limit on work-in-progress items for each phase of the workflow. The method is paramount to avoid overloading in the different phases of the workflow.

These principles/fundamentals ensure that the method is effective and fulfills its final purpose, which is the delivery of quality products/services that are carried out in sequential stages without one phase interrupting the development process of the others, in order to ensure that the client can place orders during the development of the project and that there is no problem in the implementation (Carmo & Cunha, 2024).

According to Shamshurin et al. (2019), the Kanban method does not establish any function; on the contrary, it asks the team to decide if there should be defined functions and suggests minimizing the cycle time, so if adding a specific function will help minimize the cycle time, the function can be added to the process, and if not, or even slow down the process, then the function should not be executed.

According to Oliveira et al. (2020), the performance of the Kanban method starts from the total work capacity. Each card is assigned a job; thus, it is circulated in the system, going through all the essential steps for completion. Each position of the card demonstrates and points out the current status of the work linked to it, and one card cannot be released without the other having been completed. According to Anderson (2011), there is a queue for new jobs until a card is released. This action of limiting the work in execution to focus more on that step is the WIP - Work in Progress, mentioned earlier.

WIP works with a kanban board (a board or wall with cards). To do this, it is necessary to map out the steps through which a new project/work needs to proceed until it is completed. On the board, each step will correspond to a column. The required steps should be placed from left to right, following the flow of getting the job done to make the visualization more accurate. According to Lei et al. (2017), it is also possible that, in specific cases, a column referring to a stage is subdivided into two to differentiate work still in progress from those already completed.

Arango et al. (2015) corroborate by adding that there is an addition to these others, such as perfect quality the first time because everything you do must be done right and not fast, as it takes longer to do something fast and has to fix it later than getting it right from the beginning. Another principle is waste minimization: doing what is proper and necessary without lingering on other secondary or unnecessary tasks. Continuous improvement is also a principle to improve developments per the objectives to be achieved continuously. The fourth principle is flexibility because the tasks to be carried out are decided depending on the missing or pending tasks. Input tasks can be prioritized according to specific needs. Finally, there is the principle of building and maintaining long-term supplier relationships.

On the other hand, Gaete et al. (2021) cite that the Kanban method is an approach that, in addition to establishing a series of properties, provides a tool to improve project workflow visualization significantly. This makes the Kanban system quite simple to implement and, in addition, easy to integrate with other approaches, as it provides a set of rules to improve task visualization and workflow through the use of the Kanban board. This board must be kept up to date and have specific rules, always providing up-to-date information on the current project's status, which allows each team member to know at all times who is working on what, which favors the organization and distribution of tasks to be performed.

Notably, the Kanban method is well represented in many industries, not just software and internet services. According to Kanban University's 2021 annual report, the industries' representation also included healthcare and pharmaceuticals, industrial or manufacturing, insurance, government, education, and more. In addition, the method is being used by leaders, middle managers, consultants, and executives, which confirms that top management has a direct relationship with implementing the method in companies.

However, it is essential that after implementing the Kanban system, the actions during the projects are monitored since a difficulty encountered in the implementation is the return to the habits and operations of the old method. In addition, leaders' lack of clarity and knowledge is also an obstacle to using the Kanban method (Silva et al., 2020).

2.2 Service Providers

Some particularities between goods and services make the administration itself dissimilar. On the other hand, services are intangible and can be defined as effort or performance, while goods can be defined as objects. Therefore, from this definition, it is concluded that services cannot be stored, although the inputs used in a service's production can be saved for the moment of its production (Ribeiro et al., 2019).

This property of services is called perishability, which significantly generates obstacles in managing service providers when the demand for the company's services fluctuates over time.

Knowing this, one of service providers' main challenges is figuring out ways to synchronize and balance supply and demand. As far as they are concerned, service companies are qualified as knowledge-intensive companies. Therefore, employees' knowledge and skills stand out even more than any other organizational asset (McAdam et al., 2012).

Not all the knowledge needed to provide a service can be developed in a single company (Edvardsson & Oskarsson, 2011). Therefore, if a service provider company applies the agile methodology, it is more likely that the knowledge and mindset of the agile skills each employee has acquired throughout their career are disseminated more efficiently and quickly throughout the organization.

Second, according to Valio (2016), when the service provider company does not structure itself internally to rescue this knowledge diluted among several operation places, the chance of losing knowledge and competitive advantage is great. This is a good opportunity for implementing agile methodologies since more technology-oriented companies already use these models.

2.2.1 Service providers and agile methodology

Customers have been staying closer to organizations, which was not noticed in the past. Thus, companies must be concerned with transparency with their consumers, building a complete view of all customers better to understand their needs and the profile of each one, and from there, prepare employees to think in an integrative way in order to impact the customer through the delivery of services positively.

The use of agile methodologies in service delivery helps to build a good customer experience so that they feel satisfied with the service provided by the organization. According to Matos (2011), an individual is satisfied when their consumption experience exceeds expectations. So, if the service is offered with greater agility and better quality than their expectations, they will undoubtedly become a regular customer.

To achieve such results, implementing agile methodologies such as the Kanban can be of great value, as it helps divide tasks and generate value for the customer (Yevtushenko & Makarov, 2024). Through the Kanban board, teams can broadly visualize which activities are in the backlog, which ones should be done, which are already being done, and which ones have been completed.

In addition, agile methodologies are more adaptive and flexible than the predictive approach. It is indicated for scenarios in which there is constant change, and the results must be delivered in short periods, which is the actual scenario found in service companies. Variability is an accentuated characteristic in the provision of services since their quality depends entirely on who provides them and when, where, and how they will be delivered.

3 RESEARCH METHODOLOGY

The present research presents an exploratory quantitative approach, which, according to Gil (2012), has as its primary objective to create a more significant collection of data through the most varied ways, such as bibliographic research, questionnaires with people who have already had some connection with the subject, application of forms, analysis of examples to stimulate understanding, among others, through a qualitative approach based on a case study.

Data was collected by applying an online questionnaire containing closed questions using the 5-point Likert (1- strongly disagree, 2 disagree, 3 neither disagree nor agree, 4 agree, and 5 strongly agree). Initially, a pre-test was carried out to validate the questionnaire with 5 people working in the service area and using the Kanban method. The selection criterion for the participating group members was based on the following factors: (a) managers working in service providers and located in any region of Brazil.

In the second moment, Twitter shared the questionnaire with some managers. There were approximately 500 people, many of whom used some agile methodology.

According to Gil (2009), a questionnaire is a technique of investigation and verification with questions that aim to obtain information on a specific topic. Although there is no standard and unique preparation methodology, the questionnaire must be formulated to meet the study's objective.

Therefore, reflecting on all aspects of the research before using a questionnaire to collect data is essential. An experienced person must conduct an assessment during the questionnaire's preparation and generate approval (Hoss & Caten, 2010).

The statistical analysis of the results was performed using the SPSS version 20 software. Descriptive analysis is the initial stage of the data collection research process, where descriptive statistical methods are used to organize, summarize, and describe aspects of a set of observed traits or to compare those traits in two or more groups.

The data description also aims to identify anomalies, even those that do not follow the general trend of the rest of the set, due to value registration errors and scattered data. It is increasingly common to use these descriptive sources to complement the presentation of facts and justify and sustain arguments, not only in technical articles aimed at researchers but also in newspaper and magazine articles written for the general public (Reis & Reis, 2002).

Two measurement characteristics should be considered when developing a questionnaire: validity and reliability. According to Hayes (1995), validity refers to how well the scale used in a questionnaire (and the questionnaire itself) actually measures the subject, while reliability refers to the degree to which it is measured. There's no random error. Second According to Trochim (2003), internal consistency refers to the degree to which the items in a questionnaire relate to each other and to the overall findings of a study and represents a measure of their reliability.

For this knowledge, based on the analysis of the Alpha coefficient of According to Cronbach, there are estimates of the reliability of the internal consistency of the questionnaire, as well as estimates of the reliability between examiners. Proposed by Lee J. Cronbach in 1951, Cronbach's alpha coefficient is one of the reliability estimates for questionnaires. Since all items in the questionnaire use the same measurement scale, the coefficient α , $\alpha \in [0,1]$, is calculated from the variance of a single item and the covariance between the items by the following equation, where: k is the number of items in the questionnaire, σ_i^2 is the variance of item i , and σ^2 is the total variance of the questionnaire.

It is noteworthy that, although the scientific literature on the application of the α coefficient in several areas of knowledge is extensive and comprehensive, it is generally considered satisfactory that a research instrument obtains a $\alpha \geq 0.60$ from this coefficient. However, higher alpha values may indicate better reliability, and the determination of the minimum reliability value of the questionnaire is at the discretion of the researcher.

During this evaluation, the value found was 0.58, which can be justified by the low number of questions and due to the homogeneity of the respondents in the sample, due to the fact that most of the respondents already used some type of agile methodology. The total number of responses was 74 (100% validated). The questions were grouped into the categories of knowledge, maturity, culture, collaboration, and support.

According to the existing scientific literature, several factors can influence the reliability of the questionnaires, such as the number of items, i.e., the reliability of the questionnaire can be increased when more items are included, which would be equivalent to the concept of reducing the sampling error by increasing the sample size. In addition, the number of questions (even multiple choice) should not be excessive, as this fact can lead to incorrect answers, due to the respondent's fatigue or even lack of interest. In addition, the time of application of the questionnaire can also influence reliability, since the application of the questionnaire according

to a predetermined period can also contribute to the occurrence and appearance of impulsive responses. In addition, the sample of participants is also an influencing factor because a sample of similar people can proceed to a questionnaire of low reliability, because if in the evaluation of an item all the respondents and participants of the sample indicate a true value, there is no variance in this item and, therefore, the calculated reliability will have a value of zero.

4 ANALYSIS AND DISCUSSION OF RESULTS

In the analysis of the results, it was found that 32.4% of the respondents hold the position of junior, senior or full analyst and 29.7% hold positions of manager or coordinator, a factor that may be directly linked to the age group of the respondents, who are mostly between 31 and 40 years old, representing 52.7% of the participants. In addition, 18.9% of the respondents earn from 9 to 11 minimum wages and 17.6% of the participants from 5 to 7 minimum wages, also due to the positions mentioned above.

The respondent audience is 68.9% male and 31.1% female. Of these, 50% of the participants have been working in their current company for less than 1 year and 25.7% have been working for between 1 and 3 years, which means that most of the respondents are new to the companies they work for.

Through the results, it was possible to observe that 33.8% of the respondents have graduated and 29.7% have an MBA, which can be justified by the position of analysts, management and coordination previously identified. In addition, 97.3% of the respondents have already taken a course/workshop on agile methodologies, which can possibly be justified by the fact that the respondents may be part of a network of contacts from an Agile Methodologies Coach.

Regarding the concordance scale questions, 66.2% of the respondents totally agree that the company in which they work has a team of professionals Agilists. In addition, 64.9% strongly agree to have knowledge of the Kanban method, which may be directly linked to the high percentage of respondents who stated that they have already taken courses and/or workshops on agile methodologies.

With regard to the statement "Implement the Kanban is easy", it was possible to identify that 41.9% of the participants agree and 36.5% neither agree nor disagree. It was also noted that 36.5% of people disagree that they think it is important to implement the Kanban method because competitors have already implemented it, and 17.6% do not agree or disagree, in addition to 17.6% of respondents agreeing with the statement. In addition, these results can be justified by the number of respondents who stated that they are aware of the Kanban method and/or confirmed that they have a team of agilists in the company where they work, because as they already have knowledge of the method, they know that the implementation of the method should not occur because the competitor adopted it, but because it brings improvement and cadence to the service delivery process;

Respondents who agree that a collaborative/participative team that follows their manager's guidelines contributes to the implementation of the method Kanban makes up 44.6% of the answers. On the other hand, 51.4% disagree that new employees would find it difficult to implement the Kanban method once it is operated digitally. Therefore, it is possible to identify that new employees and Kanban Online are not barriers in the implementation of the Kanban method.

In addition, 54.1% of respondents agree that team members would use the method Kanban if only they knew that it assists in a better customer experience. In addition, 48.6% agree that a non-collaborative team with divergent opinions can make it difficult to implement the Kanban method. In this way, we can say that so that there are no barriers to the implementation of the Kanban method, it is necessary to align with the entire team,

demonstrating the benefits that the method will bring to the entire team and especially to the customer experience.

Regarding the statement “Older employees have more difficulty in understanding the method Kanban” was observed a very heterogeneous behavior, where 35.1% of the respondents disagree and 28.4% agree.

It was noted that 43.2% agree and totally agree that the company's culture had/has a great influence on the adoption/implementation of the method Kanban. On the other hand, 47.3% disagree that the demand for services fluctuates over time, making it difficult to implement the Kanban method. This demonstrates that the implementation of the agile method for service providers is also very useful and does not become difficult or complicated due to fluctuating demand.

Through the results, it was also observed that 37.8% of the participants agree that the top management of the company in which they work supports the implementation of new methodologies that contribute to improving the company's performance. In addition, 55.4% strongly disagree that the company does not have the resources to implement the method Kanban, which can be justified by the high percentage of respondents who totally agreed that in the company they work for there is a team of agile professionals.

Finally, 55.4% strongly agree that the Kanban improves the performance indicators in the quality-of-service provision, in this way it is possible to observe that the respondents understand that the method does not have so many barriers to be implemented and that it brings improvements in the results of the indicators of the service providers that use it.

5 CONCLUSION

The results obtained at present indicate that the use of the Kanban is extremely relevant for service companies, since even with the fluctuation in demand, the method continues to be highly effective. This was justified in the observed sample, in which it was identified that 55.4% totally agree that the Kanban method improves the performance indicators in the quality of service provision and do not agree that the oscillating demand was an impediment to the implementation of the method.

However, through the sampling, it was possible to identify that the top management of the company in which they work supports the implementation of new methodologies that contribute to improve the company's performance, in order to confirm that the adherence of leaders and managers can directly influence the implementation of the method Kanban, which confirms what Silva *et al.*, 2020 stated that the lack of clarity and little knowledge of leaders is also an obstacle to the use of Kanban, becoming a barrier to its adoption.

According to Albino *et al.* (2014) and Vacari & Prikladnicki (2017) corroborate by stating that the achievement of agility comes, first of all, from the assiduous commitment of the team, the management, the client and the sponsors, confirming the results found. In addition, the company's culture has a great influence (facilitator) on the adoption/implementation of the Kanban method, as it states that the seriousness of the organizational culture represents the perception of managers and workers and reflects the prevailing mindset in the organization.

The use of a larger sample could contribute to a greater potential for generalizability of the results. As a contribution, there are relevant aspects to be studied by the academy, and the opportunities for improvement themselves are possible targets of more specific tests, as in the case of the assertion that a non-collaborative team with divergent opinions can hinder the implementation of the method Kanban.

Furthermore, as a contribution to academia, it would be interesting to have a deeper analysis and investigation of the Kanban Online, since we live in a scenario in which most companies work in a hybrid model or 100% home office, and according to the data collected, respondents disagree that new employees would have difficulty implementing the Kanban

method if it is operated digitally. Therefore, it is possible to identify that there are no barriers in the implementation of the method, even if the uptake of the online method is still very low.

As a contribution to companies, it is interesting to investigate the reason for the method Kanban, which contributes to the improvement of the company's performance is not yet implemented, since according to the respondents, most companies have the necessary resources for it. In addition, it is relevant to reinforce the improvement of the customer experience for the company's employees, since most respondents agree that the team's employees would use the Kanban method if they knew that it helps in a better customer experience.

Therefore, it is possible to conclude that an engaged top management and a collaborative team are facilitators for the implementation of the method Kanban, in addition, agile methodologies are more adaptive and flexible compared to the predictive approach. In addition, the lack of knowledge of the improvements in the customer experience after using the method or a team with divergent and non-collaborative opinions can be a barrier in the implementation of Kanban.

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