Robotic process automation technologies evaluation for the procurement processes of an offshore industry

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Abstract. Robotic Process Automation (RPA) technology has been considered an essential digital transformation tool in operations and supply chains due to its lightweight approach to automating and optimizing repetitive tasks and controlling end-to-end business processes. However, there are still few works in the academic literature referring to the RPA theme with the approach focused on the supply chain. Moreover, few studies combine technology acceptance models criteria with multicriteria methods to propose a robust methodology for technology selection in the Industry 4.0 (I4.0) era, and there is no research relating RPA adoption through the lens of innovation diffusion theory (IDT). Thus, this paper aims to evaluate RPA platforms in the context of I4.0 and through the lenses of IDT. The research methodology involves an empirical assessment of RPA platforms to be selected for procurement processes of an offshore company, combining two multicriteria group approaches: Fuzzy Delphi and AHP-express. Results indicated that the Workfusion RPA platform was the best platform to be applied in the purchasing area of the company, which may be related to its good performance in structured data processing, assisted automation, and RPA applications developed for front-end users criteria. From a practical point of view, the work contributes to a new methodology for selecting RPA platforms for the procurement sector.

Keywords: Robotic Process Automation (RPA), Industry 4.0, Innovation diffusion theory.

1 Introduction

Industries are currently undergoing the fourth industrial revolution, also known as Industry 4.0, which has been characterized by the incorporation of emerging infor-mation technologies into the production environment, promoting substantial produc-tivity and flexibility gains, and transforming the nature of industrial work [1]. Busi-ness intelligence can be enabled by integrations of various new-age technologies, such as IoT (Internet of things), blockchain, chatbots, artificial intelligence (AI), and others [2]. According to [3], Robotic Process Automation (RPA) is an essential tech-nology in the digital transformation brought by Industry 4.0, as it performs the repet-itive, non-intellectual, high-volume tasks performed by humans.

RPA is changing the way work is performed, automating mundane and repetitive tasks, so much so that as of mid-2021, there were more than 60 vendors [4]. It seeks to automate business processes, using software robots that interact with systems through their user interface, improving efficiency and reducing costs [5] and is one of the fastest-growing segments in the enterprise software market. In this context, RPA is increasingly used in purchasing organizations, taking buyers away from low value-added and often time-consuming tasks, allowing them to be more focused and efficient in more complex operations, spending more time working with internal customers and suppliers [6].

For more significant optimization and synergy in the supply chain, the automa-tion of repetitive tasks is one of the means to add value to the processes because this area presents many repetitive tasks that can be automated using RPA technology. As an example of processes to be automated, the sourcing process can be cited, which consists of tasks to be automated such as: creating suppliers in ordering systems, updating purchasing catalogs, reading supplier emails, and sharing documents with suppliers and contract manufacturers [7]. The use of RPA technology to automate processes in the Purchasing area is justified because the implementation of this technology is associated with potential gains in productivity, cost reduction, reduc-tion of error rates, achievement of competitive advantage by assisting in the simpli-fication and agility of the end-to-end process [5, 6]

Driven by COVID-19, the market for RPA technologies continues to be one of the fastest-growing segments in the enterprise software market. However, in the aca-demic literature, few works refer to the RPA theme with the approach focused on the supply chain [6], even though it is increasingly used in the purchasing area with a focus on process automation. Moreover, despite the existence of technology ac-ceptance models (e.g., TAM and TAM2), which have relevant criteria to assess in-novation, few studies combine these criteria with multicriteria decision support methods to propose a more robust methodology for technology selection in the I4.0 era. Furthermore, there is still

no research relating to RPA technology adoption cri-teria and the group multicriteria approach through the lens of innovation diffusion theory (IDT) [8]. Thus, the central question of this research is: how do we select an RPA platform for application in the purchasing process aligned with the company's strategy?

Therefore, this paper aims to evaluate RPA platforms in the context of I4.0 and through the lenses of IDT. This research proposes and applies a methodology for evaluating RPA platforms for application in the procurement process of an offshore oil, gas, and wind energy operating company. This proposed methodology involved data collection through structured questionnaires elaborated from the reports of the consulting companies Gartner [4] and Forrester [9] regarding the RPA platforms present in the market and data analysis through two groups of multicriteria decision-making approaches: Fuzzy Delphi and AHP-express. From a practical point of view, the work contributes to a new methodology for selecting the most appropriate RPA platforms for the offshore industry. In summary, an assessment tool for evaluating RPA technologies, in the context of I4.0 and through the lenses of the innovation diffusion theory, is proposed and tested to select the most appropriate RPA technol-ogy to be adopted by the purchasing area of an offshore company, considering its strategic interests.

This work was structured in five sections, section 1 introduces the theme. Section 2 is the theoretical foundation with the concepts of RPA, platforms, applications and benefits. Section 3 presents the research methodology relative to the Grey literature, the Fuzzy Delphi and AHP-express methods. Section 4 presents the results and dis-cussion. Finally, in section 5, the conclusions and suggestions for future work are described.

2 Background

RPA is defined as the use of automation software with trusted robots that autonomously reproduce the steps of a repetitive administrative process typically per-formed by a person, thus improving operational efficiency and reducing costs [10]. The operation of this type of software is based on the interaction with pre-programmed graphical interfaces that a person would use to execute a process [5] and has been an essential tool in digital transformation due to its lightweight ap-proach to automate repetitive tasks [11].

RPA automation requires no programming skills, as it builds on already available IT infrastructure by transferring data from one system to another through user inter-faces [12]. RPA presents technological solutions for enterprises, increasing business productivity and efficiency. Moreover, when combined with conventional business solutions, it can stimulate digital transformation by enabling companies to control end-to-end business processes, which form the basis for continuous process im-provement [7]. The primary motivation for the study of RPA is related to the need for companies to reduce costs and streamline their processes due to the current com-petitive scenario characterized by the use of new technologies [13]. RPA can be used in several areas and in any

organization; it is predicted that by 2021, more than four million robots will be implemented for everyday office tasks [11].

In the case study presented by [14], RPA was implemented in the Procurement area to perform the following routines: meeting spending limits, reviewing and re-sponding to supplier emails, creating and updating purchase orders, and automatical-ly entering data into spreadsheets. RPA is increasingly used in the purchasing sector to take purchasing staff away from low-value-added tasks to focus more on more complex operations and spend more time working with internal customers and sup-pliers. With the implementation of RPA, buyers will be able to delegate, for exam-ple, order receipts to a software robot and/or configure their software robot to make automatic orders based on inventory levels [6]. An RPA approach to streamlining internal processes, where people and technology work together in harmony, allows better insight into trends and opportunities for the business. [7] list cost reduction, better customer experience, lower operational risk, improved internal processes, and did not replace existing IT systems as the top 5 benefits.

3 Research methodology

The scope of this study is to identify and implement the best RPA tool, among those existing in the market, for the purchasing sector in an offshore oil, gas, and wind energy operating company. A new methodology was adopted to meet this objective and evaluate and select the best RPA platform for the purchasing area. To develop this methodology, existing studies on the technology acceptance model (TAM and TAM2), business reports from Gartner and Forrester consultancies, which make up the grey literature, and structured questionnaires for evaluation by the company's experts were used, followed by an analysis through the Fuzzy-Delphi and AHP-express multicriteria methods, to obtain the results of the object of study.

First, we conducted searches in grey literature, through websites and reports on RPA tools, concluding by using the reports of the companies Gartner [4] and Forrester [9], both renowned consultancies that develop reports based on research on technology and business. The grey literature was validated according to the AACODS (Authority, Accuracy, Coverage, Objectivity, Date, and Significance) checklist [15]. This checklist was designed to enable critical evaluation of grey literature, defined by The Fourth International Conference on Grey Literature. After verifying the companies' reports (Gartner and Forrester), the AACODS checklist was performed to verify if the reports would meet the criteria to compose the grey literature. Both companies met 30 of the 33 criteria proposed in the AACODS checklist. Thus the reports of Gartner and Forrester met more than 90% of the requirements of the critical evaluation for the use of grey literature in an academic research paper. The analysis of the reports, which contain information about the RPA platforms present in the market with the presentation of each platform's strong points and points of attention, provides an adequate selection for

the study in question. The criteria and sub-criteria for evaluating these RPA platforms were identified and defined in these reports. The criteria were substantiated by the technology acceptance models (TAM and TAM2), which are found in the context of innovation diffusion, initially proposed by [8], which consider relevant criteria to ascertain innovation for the evaluation of technologies in the context of I4.0.

Then, there was an empirical study to evaluate the criteria and sub-criteria and define the most appropriate platform from the perspective of the purchasing area. The sample of the empirical research was composed of a group of buyers, at the junior and senior levels, and supply specialists working in the purchasing area of the company; the object of study, through questionnaires, considered by [16], as one of the leading research methods. Two questionnaires were used to evaluate the respondents. Questionnaire 1: used to collect the demographic profile of the respondents and evaluation of the main subcriteria to evaluate RPA platforms through the Fuzzy Delphi method. Next, Questionnaire 2: is used to evaluate the criteria, subcriteria, and RPA platforms - after the analysis of the results of questionnaire 1 - to obtain the priority result of the criteria, subcriteria, and RPA platforms, with the application of the AHP-express method. Thus, data analysis was based on two group decision-making methods. First, the Fuzzy Delphi Method is applied to obtain the results of the subcriteria of the most relevant RPA tools for implementing the tool in the purchasing sector through the application of questionnaires to buyers and supply specialists in the company. Then, the AHP-express method is applied to define the degree of importance of the subcriteria resulting from the Fuzzy Delphi and the RPA platforms to define the best RPA platform for the purchasing sector of the company.

3.1 Fuzzy Delphi method

The Fuzzy Delphi method was applied to the analysis of data from the answers of questionnaire 1 to evaluate which of the sub-criteria evaluated in the questionnaire have greater relevance to the definition of the RPA platform for implementation in the purchasing sector company that was the object of the study. In this study, the FDM (Fuzzy Delphi Method) was applied to group decisions to solve the confusion of common understanding of expert opinions [17], as in [18], which applied the fuzzy theory to solve group decisions. The FDM process followed the seven steps adapted from the studies of [18] and [19], as follows: 1. Collecting opinions of the decision group, regarding the defined criteria and subcriteria, through linguistic variables, which the 7-point Likert scale was used, ranging from 1 (Strongly Disagree) to 7 (Strongly Agree); 2 Calculation of the evaluation value of the triangular fuzzy number of each alter-native factor given by the experts, concerning the criteria; 3. Use the vertex method to compute the distance between two fuzzy numbers; 4. Consensus analysis (greater than 75%); 5. Aggregation of fuzzy evaluations; 6. Defuzzification using the centre of gravity method; and 7. Screen evaluation indexes, in which the threshold was the average of the score A of the category of factors.

3.2 AHP-express method

The AHP-express method was applied to the data analysis of the answers of questionnaire 2 in order to obtain the hierarchy of criteria, subcriteria and RPA platforms analyzed for the present study. With this result the best RPA platform is defined for implementation in the purchasing area of the company that is the object of study.

The AHP-express method [20] is a simplification of Saaty's AHP method that considerably reduces the number of comparisons among alternatives. Instead of *n.(n-1)/2* comparisons for each matrix of size n, only *n-1* comparisons are made, taking as basis of comparisons an alternative of apa-rently greater importance and assuming full consistency of judgments. Thus being *b* the alternative taken as basis and *j* the other alternatives, the priority vector with n elements pr_j is calculated with the formula:

$$pr_j = \frac{1}{a_{bj}} * \frac{1}{\sum_{k=1}^{n} \frac{1}{a_{bk}}}, j = 1..n \quad (1)$$

Aggregation of judgments. When the judgment is made by several experts without consensus in the judgment Saaty suggests aggregating the judgments using the geometric mean of the dominance values defined by the users. Being a_{ij}^e the expert's judgment ***e*** when comparing ***i*** with ***j***, the aggregated value would be calculated with the formula:

$$ag_{ij} = \sqrt[n]{\prod_{e=1}^{n} a_{ij}^e} \quad (2)$$

Where ag_{ij} is the aggregate value of the trial for n experts

The calculation of the priorities with the aggregated values uses the same formula (6) as in AHP-express and already produces the normalized values that add up to 1. And for the evaluation of questionnaire 2 the adapted Saaty scale based on [20] was used, from 1 to 9, respectively from 1 (equal importance) to 9 (extreme importance).

Summary of judgments. The application of AHP-Express to the criteria will produce the priorities of the criteria pr^c against the general objective. When applied to each subcriterion of criterion c we obtain the priorities of the sub-criteria against their criteria pr_{sc}^c. The criteria priorities are used as weights to obtain the priority, or weight, of each sub-criterion against the overall goal.

$$weight_{sc} = pr^c * pr_{sc}^c, \ \text{c=1..4}, \ \text{sc=1..12} \quad (3)$$

The platforms' ratings produce the priorities of each platform against each sub-criterion: pr_p^{sc}

The final platform priority prf_p is obtained by the weighted sum of the platforms' priorities in each subcriterion with the subcriteria weights:

4 Results and discussion

4.1 Company characterization

This study will consider a hypothetical company named XYZ, headquartered in Norway and operating in more than 30 countries, including Brazil, for 20 years, with a focus on the exploration and production of oil and gas, and renewable energy, wind energy. For this study, the purchasing area was chosen due to the existing processes that could be automated to gain agility, lower rates of errors in the execution of repetitive tasks and better use of the time of the employees in the purchasing area, in order to have more dedication to complex tasks and of higher added value for the operations in the purchasing and supply area.

For the study and substantiation of the RPA platforms to be analyzed in this work, the Gartner [4] and Forrester [9] business reports were used with information about the main RPA platforms present in the market. Next, the expert evaluation was done by applying questionnaires 1 and 2, according to the criteria and subcriteria obtained from the TAM and TAM2 methodology and used to evaluate the platforms from the mentioned report. The Fuzzy Delphi and AHP-Express methods were applied to the results of the questionnaires. The criteria obtained from the analysis of the TAM and TAM2 methodologies and the reports described above are as follows: Technological, User Experience; Platform Attributes and Market Share. The subcriteria were obtained from the reports mentioned above and correspond to 33, which are listed in the Table 1 below.

Table 1. Criteria group and description of the 33 sub-criteria

Criteria		Subcriteria	Description
Technology	Sc1	Available in the Cloud	Works as software as a service, where maintenance and administration become the responsibility of the provider, while the user is concerned only with automation
	Sc2	Available in Saas	A form of software distribution and marketing, in which the software vendor takes responsibility for all the necessary structure to make the system available.
	Sc3	Process and Data Mining	Its purpose is to discover, monitor, and improve real processes by extracting knowledge from event logs available in various information systems.
	Sc4	Process Recorder	Records the execution of manual tasks for later automation.
	Sc5	RPA integrated with Low code Platform	They have a pre-defined modular system, which allows the reduction of time and effort in programming and coding
	Sc6	RPA interfaced with AI	Composed of Machine learning modules
	Sc7	Integrated Dashboards	It is a visual panel that contains information, metrics, and indicators for the company that represent the relevant numbers for the business strategy and for the achievement of objectives.
	Sc8	Intelligent Document Processing (IDP)	Converting unstructured and semi-structured data into structured and usable information
	Sc9	Structured data processing	They have a simple organization to be retrieved. They can be organized by rows and columns. They are usually stored in relational databases.
	Sc10	Unstructured data processing	They cannot be organized in tables. For example: comments on social networks, emails, videos, images, various texts, among others.
	Sc11	Optical Character Recognition (OCR)	It is a technology for recognizing characters from a scanned, handwritten, typed, or edited image file or bitmap, in short, from an editable text file.
User Experience	Sc12	User-friendly UX for novice developers	User experience is the set of elements and factors related to the user's interaction with a product, system or service, the result of which generates a positive or negative perception
	Sc13	UX for automation design	User experience design is the process of supporting user behavior through the usability, usefulness, and convenience provided when interacting with a product.
	Sc14	RPA applications designed for front-end users	The front-end is the part that the user inte-rages directly with, the visual part.
	Sc15	Free version	Free version of the tool for 30 days
	Sc16	RPA platform developer community	Community of volunteer developers of the RPA platform who create and implement no-vos bots for the use of all users.
	Sc17	API integration	API Integration is used so that applications linked by the Internet can interact with each other without the need for human intervention.
	Sc18	Customer support	Customer support by: email/helpdesk, phone-ne, chatbot, FAQs/Forum
Platform attributes	Sc19	Intelligent Business Process	Intelligent Business Process Management, such as capabilities for validation, verification, media integration, streaming analysis, and real-time
	Sc20	Assisted Automation	It is intended for tasks that can be performed more efficiently using RPA bots, but require human intervention.
	Sc21	Standalone Automation	It is intended for tasks that can be performed more efficiently through the use of RPA bots, without requiring human intervention.
	Sc22	Bot Implementation	Implementation of bots (digital robots)
	Sc23	Bot management	Management of digital robots
	Sc24	Screen scraping	Extract data from the web in your presentation layer
	Sc25	Web based development	Designed to be used through a browser, via the internet or applications
	Sc26	Secure managed automation	Strong security features present in the platform
	Sc27	ROI Analysis/Calculation	Analysis and calculation of the Rate of Return with the implementation of the tool
Market share	Sc28	Small business customers	Operates in small business (> BRL 360K <= BRL 4.8M)
	Sc29	Medium-Sized Customers	Operates in medium Business (> BRL 4.8M <= BRL 300M)
	Sc30	Large Business customers	Operates in Large business (> BRL 300M)
	Sc31	EMEA Operations	Operates in countries in Europe, Middle East and Africa
	Sc32	LANIC Operations	Operates in countries in North, Central, South and Ca-ribe America
	Sc33	APAC Operations	Operates in Asia Pacific countries

The main RPA platforms were also obtained from the aforementioned reports, which are known in the market, and in this case there are 14, as follow: Appian, Automation Anywhere, Blue Prism, Microsoft, PegaSystem, Servicetrace, Uipath, NICE, Kryon, WorkFusion, EdgeVerve, SAP, Cyclone Robotics and Datamatics

In company XYZ there are 15 experts, 9 volunteered to participate in the survey for questionnaire 1. For the second round of the survey, questionnaire 2, only 6 experts were selected due to their more than 5 years of experience in the purchasing area. According to the results of the Fuzzy Delphi, applied to questionnaire 1, the answers of 8 respondents were used due to the consistency of their results.

4.2 Results of Fuzzy Delphi

To evaluate the consensus of the group, the distance between the fuzzy numbers was estimated based on the frequency, and the calculation was performed measuring between the average fuzzy evaluation data and the evaluation data of the surveyed population. From the evaluation of the consensus of the respondents it was verified that of the 33 subcriteria, 25 subcriteria were accepted within the evaluation of the consensus of >75% of the experts. The threshold value "d" should be less than or equal to 0.2 and the percentage of consensus of the ratings are the conditions used in FDM to define the consensus among the experts on the items that are acceptable in the study (Hsu et al., 2010). The inability to obtain the required value and percentage, indicates that the items need to be removed or a second round of FDM needs to be performed. In the present case, the second round was necessary to evaluate the consensus of the surveyed population (experts) and the agreement was taken from the most relevant subcriteria, as presented in Table 2. The defuzification process was built to identify the ranking of the elements (importance) of the respondents' selection on the decision and the improvement of their knowledge.

Table 2. FDM evaluation

ID	Consensus	> 75%	FDM	d < 0.20	Fuzzy Score (A)	Ranking in each criterion	Selection
Sc1	1	accept	0.174	accept	0.09861	2	yes
Sc2	0.625	rejected	0.365	rejected	0.07269	9	
Sc3	0.75	accept	0.231	rejected	0.08194	6	
Sc4	0.875	accept	0.214	rejected	0.09722	3	
Sc5	0.75	accept	0.201	rejected	0.08056	8	
Sc6	0.75	accept	0.219	rejected	0.08194	7	
Sc7	1	accept	0.074	accept	0.10324	1	yes

Sc8	0.875	accept	0.158	accept	0.08241	5	yes
Sc9	1	accept	0.163	accept	0.08519	4	yes
Sc10	0.5	rejected	0.359	rejected	0.07083	10	
Sc11	0.5	rejected	0.345	rejected	0.06481	11	
Sc12	0.5	rejected	0.3	rejected	0.07222	5	
Sc13	0.75	accept	0.153	accept	0.07685	4	
Sc14	0.875	accept	0.2	accept	0.08704	2	yes
Sc15	0.375	rejected	0.323	rejected	0.06157	6	
Sc16	0.25	rejected	0.155	accept	0.05556	7	
Sc17	0.875	accept	0.276	rejected	0.08704	3	
Sc18	1	accept	0.174	accept	0.09861	1	yes
Sc19	0.75	accept	0.243	rejected	0.07685	8	
Sc20	1	accept	0.179	accept	0.0912	4	yes
Sc21	0.875	accept	0.191	accept	0.09444	2	yes
Sc22	0.875	accept	0.184	accept	0.08565	6	
Sc23	0.875	accept	0.199	accept	0.08704	5	
Sc24	0.375	rejected	0.251	rejected	0.0713	9	
Sc25	1	accept	0.185	accept	0.09352	3	yes
Sc26	1	accept	0.116	accept	0.1037	1	yes
Sc27	0.625	rejected	0.423	rejected	0.08241	7	
Sc28	0.625	rejected	0.39	rejected	0.06852	6	
Sc29	1	accept	0.168	accept	0.09352	2	yes
Sc30	1	accept	0.109	accept	0.10093	1	yes
Sc21	0.75	accept	0.256	rejected	0.08565	3	
Sc32	0.75	accept	0.256	rejected	0.08565	4	
Sc33	0.75	accept	0.219	rejected	0.08194	5	

As a result of the application of the FDM, the 4 criteria and 12 subcriteria were selected to be evaluated by the specialists, through the questionnaire 2.

4.3 Results of AHP-Express

After the analysis of the sub-criteria defuzification, the 4 criteria were listed: technological, platform attributes, user experience and market. And the 12 most relevant subcriteria for the application of questionnaire 2, using the AHP-Express method for the definition of the weights of the sub-criteria and criteria, making it possible to find out the best RPA platform. Table 3 presents an example of the results of evaluating the four criteria by the AHP-express method.

Table 3. Example of results of criteria evaluation using the AHP-Express method (Basis of comparison: Technological)

Experts	Baseline for comparison	Techno-logical	Attribute of the platforms	User Expe-rience	Market-place
E1	Technological	1	5	5	1
E2	Technological	1	5	5	1
E3	Technological	1	7	3	1
E4	Technological	1	3	1	1
E5	Technological	1	7	9	7
E6	Technological	1	5	7	7
Geometric mean		1	5.1369	4.0963	1.9129
1/aij		1	0.1946	0.2441	0.5227
prl		0.5098024	0.0992	0.1244	0.2665

For the subcriteria, the analyses were performed within each group of criteria they belong to in order to verify their weights. The platforms' priorities were calculated for each criterion, indicated in the "sub-criteria" column, the criteria weights in the “Final weights” column, and the platforms' final priorities in the “Final Priority” row, obtained by adding the priorities weighted by the criteria weights, according to equation (3) described in section 3. From the weights attributed to the criteria and subcriteria present in the RPA platforms, it can be concluded that the technological criterion has the most significant weight among the other criteria for selecting the RPA platform.

The sub-criteria with the most significant weight for the choice of the RPA platform contained in each criterion are: Available in the Cloud within technological; Customer Support within user experience; Assisted Automation within platform attribute and Large Customers within the market. The results of these evaluations determined the ranking of the RPA platforms to be evaluated for implementation in the purchasing area of the company under study. According to the ranking of the RPA platforms, see Figure 1 below, we have the result of the 14 RPA platforms present in the market, according to the priority assigned through the weighting of the specialists' evaluations.

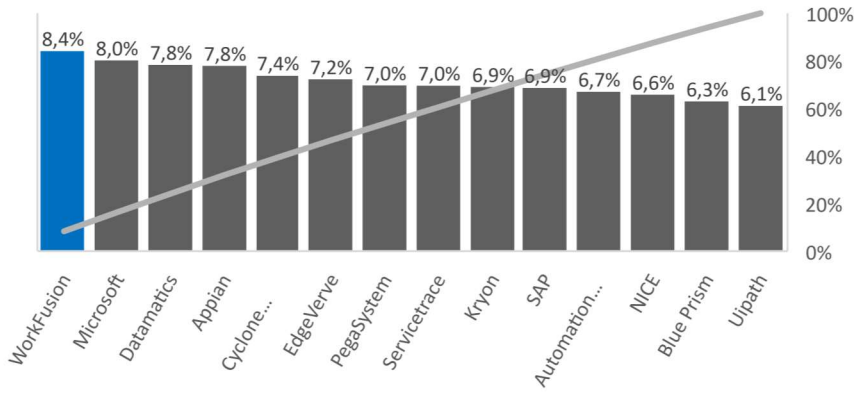

Fig. 1. Ranking of RPA platforms.

According to the ranking presented above, the Workfusion RPA platform is the best RPA platform to implement in the procurement sector of the company. The Workfusion Platform's strengths, according to Gartner [4] and Forrester [9] reports, are as follows: Operations in North America, Asia Pacific, and EMEA; Large customers; Focus on AI and ML; Over 1000 bots available for reuse and ML models; Spotlight on governance through auditing and bot performance. The choice of this platform is aligned with the guidelines of company XYZ, such as: isonomy in the process, the size of the company (large size), and the focus on process automation, which fits the purchasing area.

5 Conclusions

To compose the proposed methodology, aiming at the selection of RPA platforms, applicable to the offshore oil, gas, and wind energy company XYZ, the technology acceptance model (TAM and TAM 2), and the business reports from the consultancies Gartner [4] and Forrester [9] were used, which compose the grey literature. Based on these reports, the criteria and sub-criteria were evaluated in two questionnaires by specialists from the company's purchasing area.

As a result of the specialists' evaluation in questionnaire 1, through the Fuzzy Delphi method, from the four criteria and 33 subcriteria evaluated, four criteria and 12 subcriteria were selected for further evaluation through questionnaire 2 AHP-express method was applied to evaluate the criteria, and subcriteria. The results of questionnaire 2 allowed the specialists to identify that among the four criteria, the technological criteria are more important than the other three criteria (platform attributes, user experience, and market) for selecting the RPA platform.

Based on the experts' assessment, the most critical subcriteria were: available in the cloud, assisted automation, customer support, and medium-sized customers. Furthermore, after the analysis, which used the AHP-express method, the ranking of the RPA platforms, evaluated according to the experts, was defined. In this ranking, the first four positions eligible for implementation in the purchasing area in the company under study were: first - Workfusion; second - Datamatics; third - Appian and fourth - Microsoft. The proposed methodology using the fuzzy Delphi and AHP-Express methods in the analysis of the experts' evaluations proved to be adequate for evaluating the RPA platform to be implemented in the purchasing area of the offshore company. As a result, the possibility of productivity gains in implementing the RPA tool was glimpsed, through the proposed methodology, besides providing suggestions for new work plans. As proposals for future research, the number of off-shore energy companies should be increased, as well as the number of specialists for the evaluation of criteria and subcriteria and the application to other sectors of companies.

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