Analysis and Improvement of Product Management Processes – A Case Study

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Abstract

This paper discusses the improvement of product management activities in a fast-growing marketing automation software company. Recently, the company experienced an expansion of its international activities, a fast-growing turnover, and a significant enlargement of the software team. The new needs coming from this situation led the company to move the product development team from a traditional functional organization to a holocratic organization, where self-organized teams are entirely responsible for their product development activities. To design effective management practices and tools for this new organizational model, the company decided to analyze its business processes in-depth. At the first stage, high-level process mapping techniques were employed to comprehensively view the product management activities, their embedding organizational structure, and context. Then, detailed process mapping techniques were employed to build up a detailed visualization of the process workflows. Then, it was possible to conduct a root-cause analysis aiming at identifying the opportunities for improvement. These opportunities were then assessed and prioritized based on their expected impact upon business performance, namely productivity and time-to-market. The actions selected for implementation addressed three main issues: standardization of the planning and monitoring procedures; teams misalignments. Through a systematic process analysis and redesign, it was possible to set up a new set of management tools that cope with these issues, reinforce the workforce commitment and involvement, and ultimately improve business performance.

Keywords
Product Management, Business process management, Analysis and improvement, Software development teams

1. Introduction
To stay competitive in fast-changing business environments, companies have to adapt their strategies and structures continuously. When companies expand their product portfolios and augment the workforce, coordination and communication problems are magnified as new functions emerge, and new levels are added to the management hierarchy. Also, job interrelation and dependencies increase, thus organizations become more complex and challenging to manage (Greiner, 1998). Better coordination and control become essential. Companies need to "scale up" their organization and their operations to meet these new demands, adding formal systems, structures, and processes. The software company addressed in this paper develops an omnichannel marketing automation platform. Recently it experienced significant growth in turnover due to a rapid expansion in international markets. To keep its competitive advantage, the company increased its development team significantly, resulting in more internal complexity and, consequently, more coordination needs.

1.1 Objectives
To cope with this new complexity and needs, the Product Development Department recently changed its internal organization from a functional to a holocratic model sustained by the instantiation of product teams. Each one is assigned full responsibility for a specific product or module of the marketing platform. This significant change was implemented in a short period and without a previous in-depth study of its implications and consequences. It led to many challenging problems, namely, heterogeneity in the internal procedures of the development teams, a decrease in productivity, and a significant increase in rework.

This situation led to an urgent need for an in-depth business reengineering grounded in analyzing and improving the product development business processes. More specifically, the following key questions were to be addressed:
• How are Product management processes structured, and what are the primary type of problems affecting them?

- What are the root causes of those problems?
- Which are the improvements that should be addressed first?
- How should improvements be implemented to keep workforce engagement and business success?

Following these critical issues, the project was designed in two distinguished phases. Firstly, the research explored a deductive approach supported by case study-based research. Furthermore, an inductive approach was adopted to frame a set of orientations, guidelines, and practices to be considered in the context of the business domain of this research. The paper is organized as follows. Section 2 presents a brief reference related to software development models and the fundamental aspects of business processes. Sections 3 to 6 present the case study results, and section 7 presents the conclusions.

2. Literature Review

In the following paragraphs, we briefly address three main topics addressed in this project: software development methodologies, the roles and functions of product managers, and business process management.

2.1 Software Development Methodologies

Software development methodologies are continuously being challenged by the emergence of new technologies combined with increasingly demanding user requests. This is particularly true in the software industry as applications become larger, more complex, and demand higher quality patterns (Almeida, 2017). In recent years, the term "agile" has emerged in the software development area in opposition to the most traditional methodologies. Modern software projects are very dynamic and with short deadlines. For that reason, conventional methodologies inspired by the "waterfall" model are being replaced by the new agile methods. One of the critical success factors for a project is the adopted software development method (Govardhan, 2010; Bhuvaneswari and Prabaharan, 2013; Almeida, 2017). Choosing the proper method assumes is one of the major decisions in software companies.

2.2 Product Manager Role and Functions

The role of a Product Manager (PM) is a very demanding one, as a PM needs to lead product teams to combine design and technology to solve customer problems while meeting the needs of the business (Cagan, 2017). As stated by Banfield et al. (2017), the product manager is the one who is in charge of identifying customers' needs and business objectives, defining a vision of success for the product, and gathering a team to turn that vision into reality. Being a successful product manager demands encompassing skills and strengths. As claimed in (Cagan 2017), a PM needs to be the strongest talent within a company to succeed. A PM must balance three main disciplines - user experience, technology, and business - and needs to perform hard decisions and trade-offs (Banfield et al., 2017). Cagan (2017) identifies the key responsibilities for a product manager: (i) deep knowledge of the customer; (ii) deep knowledge of the data; (iii) deep knowledge of the business; and (iv) deep knowledge of the market and industry. As described by Banfield et al. (2017), the day-to-day activities of a product manager are wide-ranging. These activities can be organized in the following activity streams: (i) understand and represent the customers and its needs; (ii) monitor the market to create a competitive advantage; (iii) define the product vision and strategy; (iv) ensure the alignment of the stakeholders around the product vision; (v) prioritize features and capabilities, and (vi) empower teams to achieve independent decision-making processes. The product manager is the strategist that defines the product lifecycle and roadmap. Achieving this goal requires a good understanding of the technology and the interrelated aspects like financial, marketing, sales, legal, partnerships, customer environment, and user experiences. Therefore, and as stated by Cagan (2017), being a product manager is different from being a product designer, a project manager, or a tech lead. The need to master a deep understanding of all the dimensions of the business turns its role close to that of a CEO.

2.3 Business Processes Fundamentals

A business process is defined as a set of activities logically connected and triggered by events that transform resources (information, materials, etc.) into outputs valuable for the stakeholders involved or the organization (Trends, 2013). Business processes can represent a source of competitive advantage since they can affect the customer's perception of the quality of the service provided and the efficiency with which it is delivered (Dumas et al., 2018). Business process visualizations are used to represent how processes work now (AS-IS model), as well as they should work in the improved version (TO-BE model) (Dumas et al., 2018). Process analysis is dedicated to detecting opportunities for process improvement (Dumas et al., 2018). Some examples of process analysis can be found in literature, such as value-added analysis, root cause analysis, fishbone diagrams, five whys analysis, Pareto analysis, and role activity

diagrams. When the processes are identified and analyzed, the aim is to develop possible solutions or improvements to overcome the identified problems and allow organizations to achieve their performance goals (Dumas et al., 2018). This stage, named process redesign, is also commonly defined as process improvement for these reasons.

3. Case Study

The company analyzed here is dedicated to the development of an Omnichannel Marketing Automation platform. This platform, with a SaaS delivery model, is exclusively available on the internet. It enables customers to create and manage integrated actions through sevemultiple ral channels such as Email, SMS, SmartSMS, Voice, Web push, Push notification, Ads, and Slingshot to communicate with their databases. The company is vertically integrated, having complete control of the whole value chain. This includes the development of the platform and the marketing and after-sales support activities, as well as R&D seeking new functionalities and solutions. The product development department represents the company's backbone, ensuring that the best product is developed to meet customer needs, overcoming the competitors' market offers. To cope with the increasing complexity and the rapid growth of the human team, the organizational model of the department changed from a functional structure to a holocratic structure. In this new organizational model, teams are self-organized and can decide and prioritize the software developments within the general product strategy framework (Kniberg, 2014).
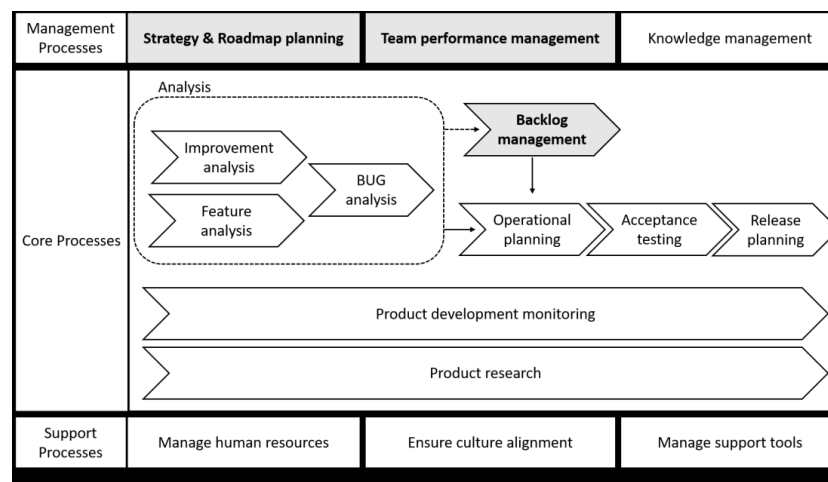

Figure 1. Product management process map architecture

Despite some previous attempts, there was not a documented processes architecture in the company. The first stage of the project stayed on building the process map for the product development teams. The first draft of the map resulted from interviews with several product managers combined with direct observation of product managers' daily routines. To validate the model presented in Figure 1, a workshop with the different stakeholders (CTO and Product managers) was organized. From this high-level model, the main processes were evaluated based on two criteria: the importance of the process upon business performance and the maturity of its current implementation. This evaluation led to the following three processes that should be addressed first: Strategy & Roadmap Planning; Backlog Management; Team Performance Management.

4. Problem identification and characterization

This section analyses the improvement of the three processes identified in the previous section.

4.1 Process Strategy & Roadmap Planning

This process did not clearly define its flow of activities, resulting in misinterpretations in the different teams. The process has several inputs coming from different tools that were not integrated. Consequently, the information collected and the roadmap plan produced did not follow a standard framework. This brings an important improvement opportunity to solve the problem of dispersed and unorganized information and the lack of updated information for decision making. Another problem identified in this process was the fact that all the flows were unidirectional. As the decision-making flow was mainly top-down, the operational information was not considered in the negotiation between top management and team managers. Also, the company's long-term strategy is not shared and visible to the

middleman management (including product managers), which compromises the analysis and proposal of a plan representing the key information to drive critical decisions.

As mentioned before, the company develops and maintains a marketing automation solution made by several components. In such an environment, there are several dependencies between the different product teams. Thus, alignment is crucial to success. As the process did not follow a standard framework, several important dependencies (especially in backlog tasks) were not explicit for the teams. Additionally, as the process is not uniformized and performed by the different product managers, each team's strategy & roadmap plan is not visible and explicit for the other teams. This was a source of misalignments between the different teams' roadmaps. Table 1 summarizes the problems identified in the process Strategy & Roadmap Planning along with their causes.

Table 1. Problems and root causes identified in the process Strategy & roadmap planning

P1		Dispersed and unorganized information
	C1.1	Non-uniform process
	C1.2	Use of non-integrated multiple platforms to document information
	C1.3	Lack of a framework to summarize the information
P2		Lack of key information for decision-making
	C2.1	Unidirectional decision-making
	C2.2	Operational information not considered in decision-making
	C2.3	Company long-term strategy is unknown
P3		Misalignment between different product teams roadmap
	C3.1	Different teams' dependencies are not clear
	C3.2	Strategy & roadmap plan is not visible for other teams
	C3.3	Non-uniform process between different teams
	C3.4	Lack of a framework to summarize the information

4.2 Process Backlog Management

Managing the backlog is vital to the overall efficiency of the core product development processes, and an updated backlog enables all the touchpoint processes to be improved. There was an internal policy stating that all open issues in the backlog should be estimated and prioritized. Still, no rules were settled to reassess scores; neither a specific tool existed to support the backlog grooming. Moreover, as the process was not standardized, decisions depended on each product manager's self-judgment. These facts result in a lack of frequent reassessment that is harmful to the issues scoring low. Over time, these issues keep overcome by new issues and end up lost in backlog. For an effective strategy & roadmap planning, decisions should be taken considering the most updated information. For that reason, each quarter, the process "backlog management" should be triggered. Also, as stated before, the lack of a tool to support backlog grooming discourages reassessing and updating of scores and estimations. In the end, it was common to find misalignments between the priority score attributed to the different issues and the priorities settled in the roadmap plan. The problems and root causes identified in the Backlog Management process are summarized in table 2.

Table 2.- Problems and root causes identified in the process Backlog management

P4	Lack of frequent reassessment	
	C4.1	Non-uniform process
	C4.2	Backlog is organized top-down by a Moscow prioritization
	C4.3	Prioritization value remains without reassessment
	C4.4	Lack of a tool to support backlog grooming
P5	Misalignment between priority score and roadmap	
	C5.1	Non-uniform process
	C5.2	Strategy & roadmap plan is not a trigger for priority reassessment
	C5.3	Lack of a tool to support backlog grooming

4.3 Process Team Performance Management

As this process is executed continuously, it is mandatory to have easy access to updated information to support monitoring and feedback. This is compromised by the lack of a framework to summarize the information as information was dispersed through several platforms that are not integrated (e.g., Google sheets and Jira issues). Also, the process was not managed the same way by all the product managers, as often each followed his own approach. These facts highlight a problem of unorganized and dispersed information that was urged to be solved. As the process was not standardized and there was no systematic activity monitoring, it wasn't easy to update the KPI and OKR. For that reason, the data available for feedback is not sufficient or relevant to support proper feedback. The product managers identified the need for daily and monthly monitoring. However, the lack of a standard monitoring and reporting framework compromised that goal. The feedback was based on the PM perception and not on real data. This meant that the feedback provided was not representative to highlight improvement opportunities. The exposed facts underline a lack of continuous monitoring and feedback that ended in a misevaluation of the teams, as real performance only was assessed at the end of each quarter. Each product manager does his own feedback, not following a uniformized process and without relevant data. For this reason, the members of the team could not access information and lacked perception about their performance along the quarter. This causes a lack of key information for performance improvement that leads to dissatisfaction in the different team members. The problems and root causes identified in the Team Performance Management process are summarized in table 3.

Table 3. Problems and root causes identified in the process Team performance management

P6	Unorganized and dispersed information	
	C6.1	Non-uniform process
	C6.2	Use of non-integrated multiple platforms to document information
	C6.3	Lack of a framework to summarize the information
P7	Lack of continuous monitoring & feedback	
	C7.1	Non-uniform process
	C7.2	Lack of constant monitoring (Update OKR/KPI)
	C7.3	Lack of a tool to support daily and monthly performance assessment
	C7.4	Lack of data to support continuous feedback
P8	Lack of key information for performance improving	
	C8.1	Non-uniform process
	C8.2	Lack of informed feedback
	C8.3	Lack of perception of performance during the quarter

5. Improvement proposals and actions

To get an overall understanding of the relation between the intended improvements and the problems and causes they address, table 4 summarizes the result of the cause-effect analysis.

5.1 Process Strategy & Roadmap planning

A1 – Process redesign to include bidirectional flows of decision

Currently, the flows of the process are unidirectional, following a top-down approach. These improvement solutions aim to systematize the process to allow the correct definition of the different activities, the roles of the different actors, and the documents produced at the output.

A2 – Development of an integrated tool to centralize all the inputs to S&R plan

This solution proposes creating a centralized tool that integrates with the different sources of inputs and presents all the possible needs that can drive the roadmap for the next quarter in the same tool.

A3 – Development of a tool to share cross-team needs

The proposed solution aims to provide a tool that all product managers can use to document cross-team needs. This tool would document the different needs and dependencies between teams to align their product roadmaps.

A4 – Automatic generation of notifications when the quarter is ending

This solution aims to assist product managers in the opportune filling of the quarterly needs tool (A3) through the deployment of automatic messages, alerting them to it. It is suggested to take advantage of the potentialities of the company platform by setting an autoboot triggered in specific conditions.

Table 4. Match between proposed solutions and improvement opportunities

Process	Problem	Cause	Actions
Strategy & Roadmap Planning	P1	C1.1	A1, A10, A11
		C1.2	A2, A12
		C1.3	A2, A10, A12
	P2	C2.1	A1, A2
		C2.2	A2, A3, A4, A12
		C2.3	A1, A2, A12
	P3	C3.1	A1, A3, A4
		C3.2	A2, A12
		C3.3	A1, A10, A11
		C3.4	A3, A10, A14
Backlog Management	P4	C4.1	A5, A10, A11
		C4.2	A6
		C4.3	A5, A6, A12
		C4.4	A6, A12
	P5	C5.1	A5, A10, A11
		C5.2	A5
		C5.3	A6, A12
Team Performance Management	P6	C6.1	A7, A10, A11
		C6.2	A9, A12
		C6.3	A8, A9, A10, A12
	P7	C7.1	A7, A10, A11
		C7.2	A7, A8, A9, A12
		C7.3	A8, A9, A12
		C7.4	A8, A9, A12
	P8	C8.1	A7, A10, A11
		C8.2	A8, A9, A12
		C8.3	A8, A9, A12

5.2 Process Backlog management

A5 – Process redesign to include backlog reassessment
In this process, rules for backlog reassessment do not exist. In parallel, there is a lack of some process triggers. This improvement aims to create these rules and activities to prompt the backlog reassessment, and at the same time to introduce a new trigger for the process to be performed. Besides, with this process redesign, it will be possible to identify the actors' roles, the produced documents, and milestones.

A6 – Development of a Dashboard to manage and groom the backlog
As previously stated, most of the activities of a product manager depend on having a well-managed backlog. Having that in mind, it is crucial to develop solutions that can allow product managers to efficiently reassess their backlog to have it updated and with the desired behavior. To achieve this goal, a "backlog groomer" dashboard is proposed to be developed.

5.3 Process Team performance management

A7 – Process redesign to enable continuous monitoring
The product managers identify the need for continuous monitoring. As the process is not uniform, it is unclear when and how to perform this monitoring despite that perception of need. Also, the milestones are not well defined. This improvement solution intends to systematize the process to allow the correct definition of all the inconsistencies.

A8 – Development of a Dashboard to monitor the work performed
As mentioned before, to rapidly gain access to information, it is critical to support monitoring and feedback. This improvement suggests developing a "Team performance" dashboard.

A9 – Development of a tool to monitor team members KPI and team KPI/OKR
The proposed solution intends to provide a tool that all product managers can use to monitor the evolution of team KPI/OKR and the team members' KPIs. This tool is proposed to be integrated with the different sources of inputs to calculate the different indicators.

5.4 Other improvements

A10 – Development of a Department Wiki manual

Nowadays, the processes are not uniformized nor documented. The development of this manual will enable the quick identification of the redesigned processes. Delacroix (2015) stated that the company processes are complex, and it is crucial to managing them with simple tools that are easy to work with, like wikis. The main aim of this improvement was to create a tool that would be available at any time, which can ease access to updated information.

A11 – Review of department onboarding training program

Due to the widely presented problems with information and processes, it is difficult for a new employee to know exactly which processes are used in the department and their triggers, objectives, activities, and milestones. This proposal intends to review the content of the department onboarding training program to include a workshop related to product managers' processes and the tools employed.

A12 – Development of an integrative platform for product managers

Currently, in the department, there are different tools used by product managers (such as Jira platform, Bitrix24, Google suite, Admin). The proposal is to internally develop an integrative platform that enables product managers to access all the needed information in a single place. It is proposed to be integrated with the used sources of information and comprehend all developed tools to groom the backlog, manage the team performance, elaborate the strategy & roadmap plan, team repository, department wiki manual, and provide the different dashboards needed for visual management.

5.5 Cost-benefit analysis

Knowing the set improvement solutions that address the problems identified, a cost-benefit analysis is performed to select the solutions that should be implemented. In the context of BPM initiatives, this sort of analysis is often required because of the scarcity of resources available that do not allow implementing all the identified solutions. Given these constraints, companies typically start by implementing the solutions expected to produce greater effects or are easily implemented. In the prioritization of the improvement solutions, several criteria can be applied (Andersen, 2007). In this project, the criteria taken into account were: expected impact on business key indicators and implementation difficulty, assessed in terms of the time required for its implementation, the cost, and level of collaborative effort needed. For the assessment of the implementation priority, the four-quadrant matrix in Figure 2 was considered.
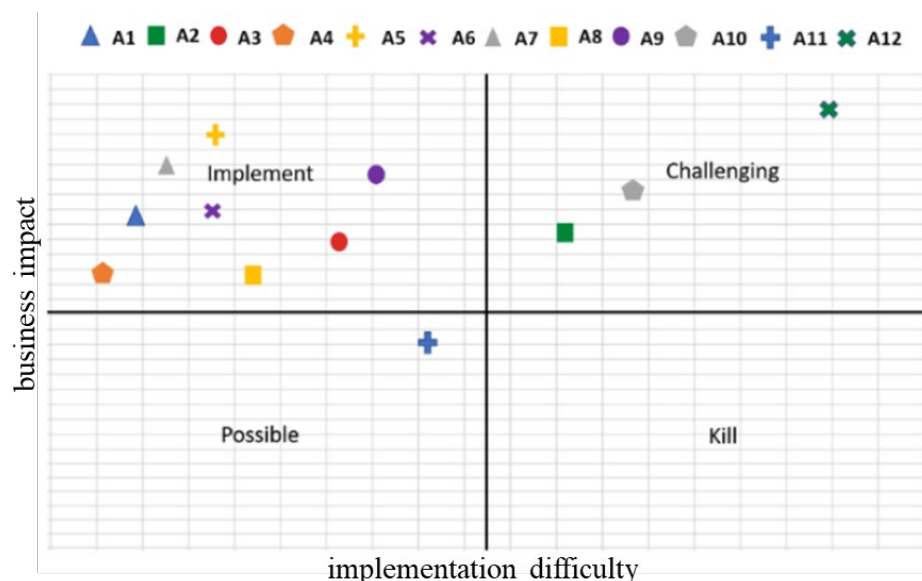

Figure 2. Cost-benefit Analysis

6. Implementation and Evaluation of Results

6.1 Process Strategy & Roadmap planning

As stated before, the most significant problems impacting this process relate the access to information and misalignment between teams. The improvements implemented addressed the redesign of the process and the development of a management tool and a notification system. The process was redesigned, as shown in Figure 3. The new design of the process aims to favor teams' alignments and ensure a bidirectional flow of information between top-level and team-level managers. The process already specified a quarter performance analysis, but the information itself was not considered in the elaboration of the plan. At the same time, the S&R plan proposal stage considered neither the operational information from the team nor the dependencies' needs from other teams, leading to inconsistent and incoherent teams' roadmaps. To overcome these problems, a collaborative tool was developed to access the needs of different teams (A3). The process was also redesigned to incorporate new activities (quarterly needs update, quarterly needs review). The "quarterly needs update" activity enables each team to communicate the work that is intended to be performed to other teams, as well as the expected dependencies. The "quarterly needs review" is settled after the reception of other teams' needs, allowing the development of the S&R plan, considering the other teams' touchpoints. This redesign, integrating different iterations before the construction of the S&R plan, incorporates in the process the bidirectional flows needed (A1). To successfully incorporate the improvements in the new process, the developed tool needs to be updated. An automatic notification system was also developed to avoid bottlenecks in the process and to guarantee that the different product managers timely update the "quarterly needs" tool (A4). This notification system was developed, taking advantage of the automation available on the company platform. An Autobot was developed to automatically deploy an email message reminding product managers that it is time to update the Reporting file. The rules applied in the construction of the automation guarantee that 15 days before the end of the quarter, the email message is automatically deployed. The Autobot is also prepared to address the possibility that some emails become lost in the inbox. If the email remains to be read, after 7 days, a SMS message is deployed. Finally, the automation deploys a "thank you" voice message to the product manager while notifying the CTO.
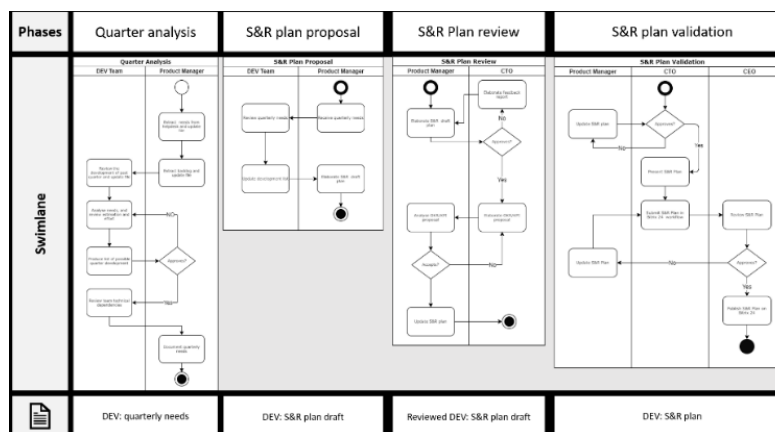

Figure 3.Strategy & Roadmap Plan redesigned

6.2 Process Backlog Management

This process has huge importance for a Product manager. As stated before, this is a backbone process, mainly due to the touching points with other processes. Improving the efficiency of this process will also improve many other processes. Currently, the process is triggered every time a new Jira issue is added to the backlog. This is mainly to ensure that the backlog is prioritized and estimated. The major problem in the backlog management process is related to the reassessment of the issues and ensure that the backlog keeps updated. The first improvement implemented was the redesign of the process (A5). The new design aims to guarantee the frequent reassessment of backlog and the alignment with the planned strategy & roadmap. This improvement starts with the review of the triggers, phases, and activities of the process. The improved process is triggered every week to review the work performed in the past week. Every month, it is also triggered to assess if the work performed is aligned with the strategy & roadmap plan. With this improvement, the trigger "every time a new Jira issue is added to backlog" is eliminated to improve efficiency, eliminate rework, and uniform the teams' process. Then, the stages and activities were reorganized to reflect the referred needs. The improved process now has two main stages (backlog grooming and selection for development).

The first stage intends to ensure the frequent reassessment and update of the backlog, and the second stage guarantees the update of the backlog with the work planned and not developed and the re-selection of new work to be developed.

Finally, in the process activities, a new step was introduced: analyze the S&R plan and ensure that the backlog reassessment considered this plan. To assist project managers in this activity, a dashboard was developed and implemented (A6). This dashboard takes advantage of the platform's potentialities to manage software development (Jira) through JQL filters, where the information is selected to be presented in visual dashboards. This new set of filters and the dashboard (Figure 4) allows the visualization of the backlog organized with the prioritization applied. It also provides the list of issues needing to be reassessed by presenting a dropdown listing the issues not updated in the past month.
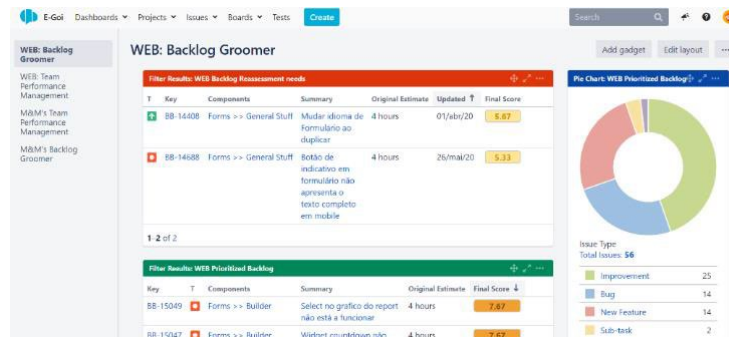

Figure 4. Backlog groomer dashboard

In addition to the developed dashboard and taking benefit from the developed filters, a management KANBAN board was also developed and implemented (Figure 5). Instead of presenting a list of unorganized issues for each status, this new board presents the issues using the prioritization model applied. This model is based on the MoScoW framework and maps the scoring attributed to the issues with the different status of the framework (must, should, would), enabling a faster selection of the issues to be set for development.
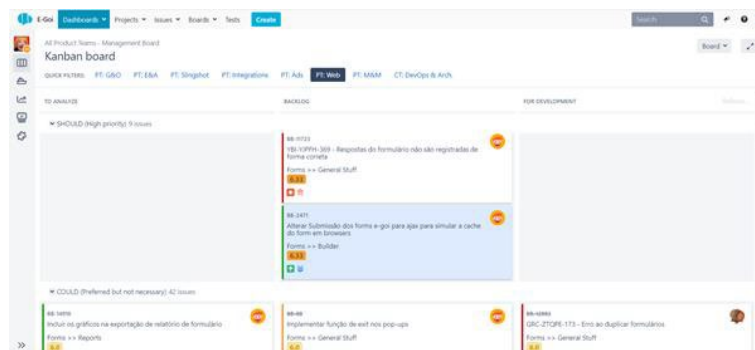

Figure 5. KANBAN board for backlog management

6.3 Process Team Performance Management

The process was not uniformized, and for that reason, the different product managers had different approaches to the process implemented where the feedback in some teams was not considered. When the project started to be implemented, the overall perception was that some process phases were identified, but what should actually be done in each one was not clear. For instance, feedback was made based on perception and not with the support of real data. To overcome these constraints, the process was redesigned and implemented afterward (A7). To ensure the usability of the redesigned process, it was critical to provide access to updated information rapidly. A new dashboard was implemented (A8) and a new tool (A9) to cope with that need. The objective of these activity improvements is to

increase velocity while reorganizing and presenting the relevant information in the same place. The developed dashboard (Figure 6) was settled using JQL filters and presents relevant information related to the team and team members' execution performance: mainly the work performed vs. the work planned. Furthermore, a specific monitoring tool was developed to systematize and present all relevant information in the same tool to support mainly the monthly feedback and quarter evaluation. It is integrated with the Jira platform and with the Google Sheets used by the department and presents the team KPI and OKR evolution and the individual KPI evolution.
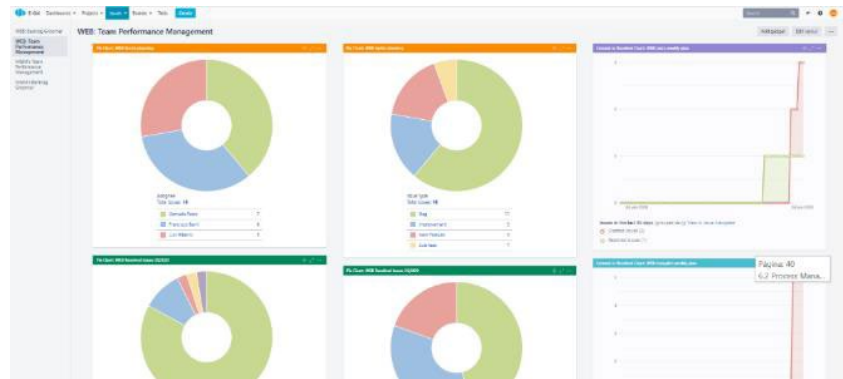

Figuture 6. Team performance management dashboard

6.4 Measuring implementation results

Two teams needing to improve their management practices and tools were identified as a pilot to validate the new procedures and tools: the **Web Team:** Formed in October 2019, this team is responsible for managing and developing Landing pages, pop-ups, embed forms, and Webpush. At the beginning of the project, there was no dedicated product manager. The team owned a product backlog with 256 issues, and the **Mobile & Messaging Team:** Created in February 2020, it was the most recent team in the department. The team is responsible for managing and developing SMS, SmartSMS, Voice, Push notifications, and Apps. At the beginning of the project, the product backlog included 134 issues.

The two teams evaluated the time spent performing the first update of the product backlog regarding backlog management. Web Team was assessed without the support of the developed tools, and the Mobile & Messaging Team was assessed when using the new tools. The update took 22 days for the Web Team with an average analysis time of 2,06 hours, while for the Mobile & Messaging Team, it took six days with an average analysis time of 1,07 hours. Another indicator was the update coverage between the two teams. At the end of this analysis, the developed filter was applied to select the issues that need to be reassessed. The results showed that there were nine issues in the Web Team that were not updated, with coverage of 96,5%, while in the Mobile & Messaging Team, there was 100% coverage with 0 issues without an update. To highlight the benefits of the implemented improvements in Team performance management, the different product managers were asked to present the team KPI/OKR and the team members KPIs while the response time was monitored. The average response time was 7,22 minutes with a maximum of 11,39 minutes and a minimum of 1,25 minutes (Web Team). If the two teams were removed from the pool, the average response time would increase to 9,59 minutes as the average response time of the two teams was 1,30 minutes. In the Strategy & Roadmap Planning process, it was decided to roll out and implement the developed tool and improved process in all the seven product teams already in the 2020 third quarter preparation. To guide the establishment of performance metrics, the Balanced Scorecard was used as the performance measurement tool. Kaplan and Norton (1996) stated that these indicators must be interconnected to communicate a few broad strategic themes, such as the company's growth, the reduction of risks, or the increase in productivity. Its completeness enables top management to have a complete visualization of the business based on the four main perspectives: financial, customer, innovation and learning, and internal (Van Looy and Shafagatova, 2016). Table 5 presents the performance metrics defined for each perspective.

Table 5. Performance metrics

Perspective	Performance Metrics
Financial	- Total service costs; - Number of active paying customers; - Channel sales;
Customer	- Customer satisfaction; - Support tickets; - Number of monthly active customers; - Number of contracted new businesses;
Internal	- Quality of the service provided; - Reliability of business processes; - Process lead time; - Product managers' productivity;
Innovation and Learning	- Number of new products/services; - Number of product/service improvements; - Level of internal satisfaction with the developed system.

7. Conclusions

One of the major challenges for companies with a fast-growing and operating in a highly competitive environment is to define an organizational system configuration that promotes sustainable business growth, with efficiency and effectiveness and is easy to operate and manage. The case study considered in our research comprises a company that had achieved significant business growth allied to a radical change in the organizational structure of the product development department. By following a qualitative research approach, conducting workshops, informal interviews, direct observation, document analysis, and automated discovery, it was possible to design the product management process map. The next step comprised identifying improvement opportunities, namely the root causes of the problems, thus answering the first two research questions previously defined. The major problems identified relate to three main dimensions: processes non-uniformization, unorganized and dispersed information, team work plans' misalignments. Often the same process was followed somewhat differently by each team. The company employed several tools that were not integrated to manage daily work, thus restricting fast access to key information and resulting in misalignments between processes and teams. After identifying and characterizing the root causes of the problems opportunities, the project focused on formulating and prioritizing possible solutions to correct or mitigate them.

It was possible to implement all critical solutions corresponding to 66% of the identified solutions. These implemented solutions enable a more efficient achievement of the processes' goals while eliminating the misalignment between processes and different teams. The developed tools and automation enable easy and quick access to key information that can support informed decisions. Although the work is still in progress, the results achieved clearly show the effectiveness of the redesigned processes. Due to the nature and expected impact of the solution, performance criteria were formulated to assess the final success of these implementation proposals. It was also acknowledged by all stakeholders involved that the process analysis methodology provides a sound basis for internal improvement projects. In this sense, future research directions can focus on understanding the results achieved so far and, if necessary, serve as foundations for improving other business processes. Furthermore, the project provided significant knowledge and documentation to the company and the product development department. This knowledge should be preserved to support future initiatives. Likewise, establishing an internal BPM group to promote, manage, and prioritize business process improvement projects can help the company and the department maintain the process-oriented culture that started with this project.

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