

Universidade Estadual de Campinas Instituto de Computação



Caique Garutti Moreira

# Analyzing the BizDev Interface at an Enterprise Context: A Case of Developers Acting in Business

Analisando a Interface BizDev em um Contexto Empresarial: Um Caso de Desenvolvedores Atuando em Negócios

> CAMPINAS 2022

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# Resumo

**Contexto**: Atualmente, organizações buscam evoluir e adaptar metodologias de engenharia de software almejando obter uma colaboração mais ampla e saudável entre suas áreas funcionais. Neste contexto, a interface entre negócios e desenvolvimento (BizDev) inclui todas as interações entre o setor de TI e os setores de negócio de uma organização. Apesar de recentemente observarmos alguns poucos estudos sobre esta interface, ainda consideramos que a área merece uma caracterização mais profunda e análise sob uma maior variedade de contextos. **Motivação**: Motivados por esse cenário, almejamos obter entendimento sobre esta interface em diferentes contextos, levantando informações sobre papéis, responsabilidades e práticas inseridas na interface. Em pesquisa anterior, nós analisamos a literatura sobre metodologias ágeis tradicionais e o que elas haviam proposto sobre papéis e práticas conectadas à esta interface. Após realizarmos uma pesquisa qualitativa dentro do setor de TI de uma universidade pública, nosso objetivo se tornou obter informações de um contexto diferente, um ambiente corporativo. Métodos: Conduzimos um estudo de caso dentro de uma empresa brasileira, através da aplicação de entrevistas semi-estruturadas com quinze pessoas de áreas de negócio e tecnologia. As entrevistas foram gravadas, transcritas e analisadas usando procedimentos de Teoria Fundamentada em Dados (Grounded Theory), através das fases de open, axial e selective coding. Finalmente, a síntese foi validada com participantes do estudo. **Resultados**: Não só conseguimos obter informações relevantes sobre papéis, práticas e responsabilidades inseridas na interface BizDev, como também identificamos um fenômeno no qual pessoas de tecnologia atuavam em negócios. Nós observamos analistas e líderes de desenvolvimento trabalhando na definição e priorização de requerimentos, analisando indicadores de negócio e inclusive apresentando propostas de features para diretores da empresa. Observamos que a cultura organizacional teve forte influência neste comportamento. A empresa analisada estimulava o senso de dono e a meritocracia, o que, combinado com a falta de barreiras estruturais e hierárquicas, empoderava desenvolvedores e os encorajava a dar um passo a mais na direção de impactar o negócio. Essa performance era caracterizada pelo direcionamento à dados, com pessoas de TI constantemente extraindo métricas e as utilizando para validar e justificar sua atuação em negócio. Dentre resultados positivos, destacamos que nove features diferentes foram idealizadas e implementadas por pessoas de TI, assim como dois produtos isolados que levaram à criação de uma nova unidade de negócios. **Conclusão**: Nós concluímos que a cultura organizacional e a abertura na comunicação BizDev foram os principais fatores que motivaram e facilitaram este comportamento. Apesar dos resultados positivos, também ocorreram casos de pessoas de TI definindo e implementando features que prejudicaram alguns aspectos do negócio. Por este motivo, enquanto recomendamos que organizações revejam seus valores e cultura organizacionais de forma a motivar que o setor de TI atue em negócios, sugerimos que mentoria da área de negócios é necessária, e que empresas devem introduzir medidas para evitar decisões de negócio sendo tomadas isoladamente pelo setor de TI.

# Abstract

**Context**: Currently, organizations are seeking to evolve and adapt applied software engineering methodologies targeting a wider and healthier collaboration among its functional areas. In this context, the interface between business and development (BizDev) includes all the interactions between IT (Information Technology) and business sectors within an organization. Although in recent years we were able to observe a small number of studies over this interface, we still consider the area lacks deeper characterization and deserves analysis in more diverse contexts. **Motivation**: Motivated by this scenario, we aimed at understanding how the BizDev interface works under different contexts, raising information on roles, responsibilities, and practices in the interface. In previous research, we had already analyzed traditional agile methodologies in the literature and which of their proposed roles and practices were connected to the interface. After also conducting a qualitative study on the IT department of a public university, our current objective was to obtain evidence about the BizDev interface from a different context, an enterprise environment. Method: We conducted a case study in a Brazilian company, through the application of semi-structured interviews with fifteen people from both technology and business areas. The interviews were recorded, transcribed, and further analyzed using Grounded Theory procedures, namely the open, axial, and selective coding phases. Finally, the synthesis was validated with participants. **Results**: Not only we were able to obtain relevant information on roles, responsibilities, and practices in the BizDev interface, but we also identified one phenomenon in which IT people acted in business. We observed development analysts and leaders working on the definition and prioritization of requirements, analyzing business indicators, and even presenting feature propositions to company's directors. We observed that the organizational culture strongly influenced this behavior. Mainly, the analyzed company stimulated the sense of ownership and meritocracy, which, combined with a lack of structural and hierarchical barriers, empowered and encouraged developers to take an extra step to impact the business area. This performance was characterized by being very data-driven, with IT people constantly extracting metrics and using them to validate and justify their work in business. Among relevant results of IT sector acting in business, we highlight that **nine** different features were successfully idealized and implemented by IT people, as well as two successful isolated products that led to the creation of a new business unit. **Conclusion**: We concluded that the organizational culture and the open BizDev communication were main motivators and supports for IT sector to act in business. Despite the positive results, there were also cases of IT people defining and implementing features that harmed some aspects of the business. For this reason, while we do advocate that organizations should review their organizational values and culture to motivate this behavior, we suggest that guidance from the business area is necessary, and that companies should introduce measures to prevent cases when business decisions from being made solely by the IT sector.

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# Chapter 1 Introduction

Currently, organizations are looking for evolving and adapting software engineering methodologies targeting a wider and healthier collaboration among its functional areas [8] [15] [16]. In this context, the interface between business and development includes all the interactions between the IT (Information Technology) and the business sectors within an organization. While the well-disseminated term DevOps is used to describe the downstream collaboration between software development and its operational deployment and administration [13], the term BizDev can be used to name the upstream collaboration between business and development [10].

The business sector of an organization may be composed of teams focused on product, content, requirement, management and even by the final customer. The technology sector of an organization may be composed of teams with different types of developers (mobile, back-end, frontend, fullstack) and other technology roles (testes, DBA, DevOps). The business area in this interface behaves as customer for the technology area, establishing demands, specifications, deadlines, and expectations. This way, the technology area acts as the productive force, but is not limited to it, being possible for it to participate alongside with the business area in activities such as requirements prioritization and establishment of deadlines.

Impacts of the disconnection in BizDev interface were already evidenced in the literature [2], with issues such as requirements being written in a way developers could not understand and development projects lacking proper customers' feedback. Also, the lack of proper BizDev alignment can lead to situations in which developers face technical constraints preventing them from delivering all features on a planned deadline and are forced to make business decisions by themselves, without having the required business knowledge [2]. On the other hand, collaboration at the BizDev interface has benefits such as transfer of business knowledge to the development team, increased customer feedback and quality of delivered products [14].

Given this context, a problem that is still relevant is that both business and development areas demand improved and healthier collaboration. Even though many of the interactions present at the BizDev interface were already studied and discussed, the interface as a whole still lacks characterization, specially in terms of belonging roles, responsibilities and practices. Understanding how the BizDev interface works in different methodologies and contexts is relevant to have an in-depth characterization and, then, providing guidance towards improving the continuous flow and healthier collaboration between these areas.

First, we analyzed traditional agile methodologies to understand which proposed roles, responsibilities and practices could be categorized as belonging to the business development interface [1]. We did not find any definition specifically concerning the BizDev interface at this literature review, rather we analyzed studies over definition of roles, responsibilities and practices of traditional agile methodologies and extracted the ones that would fit on the definition of the BizDev interface defined on [10]. Next, we started to review the literature for empirical evidence concerning the impacts of the lack of business involvement on the development process, such as requirements being written only by business people and demanding sessions of clarification, business people failing to provide necessary feedback over the developed product, and also development teams being forced to make product decisions without business basis to meet deadlines [2]. Also, we identified positive impacts of business members being closer to developers, such as the customer-onsite practice. Perceived benefits of this practice include the transfer of business knowledge to the development team, faster feedback from the customer during the development process, and increased product quality [14]. We claim that a better categorization of roles, responsibilities and practices in the BizDev interface is necessary to properly analyze the impacts of a healthier interface, as well as to understand the main motivators that can help achieving it.

Recent studies about BizDev [4] [15] also emphasize the importance of understanding and characterizing the interface. However, even though these studies discuss collaboration between Business and Development areas, we could not observe relevant cases of IT people acting in business. Specially, we did not observe any existing cases of IT people defining requirements, even though we found evidence of the benefits from reaching developers to add technical expertise on this process [20]. Also, we were not able to find find studies relating how organizational culture could influence and shape IT people acting in business, although we found evidence on how organizational culture and values can have a high impact on agile transformations [16]. From our literature review we conclude that the BizDev interface area still lacks deeper studies to determine consequences and motivations of IT people acting in business, and therefore, we contribute to expanding the existing knowledge about the BizDev interface by presenting new evidence on this matter.

Motivated by the initial findings, we sought further evidence to understand the businessdevelopment interface better, focusing on identifying what responsibilities and practices organizations were being applied on the BizDev interface. After conducting a qualitative study on the IT department of a public university [1], we envisioned and conducted a second case study, now targeting an enterprise environment, to obtain evidence about the BizDev interface from a different organizational context. We performed a total of fifteen interviews with practitioners from both development and business areas, and we analyzed the data collected using Grounded Theory procedures [9] (open, axial, and selective coding phases). From this case study, we were able to reach our goals of obtaining evidence over roles, responsibilities, and practices in the BizDev interface, alongside with attributes of communication at the interface. We also identified a phenomenon in which members from the IT sector would actively perform in business, engaging in activities such as requirements definition, the proposition of product features, participation in prioritization sessions, and benchmarking of competitors. This phenomenon comprises our main finding of this research, and we were able to obtain detailed information over its motivators, attributes and consequences.

Furthermore, we observed strong influence from the organizational culture in this phenomenon, in a context where such the culture motivated IT people to act in business and also shaped this behavior (see section 4.4.1: Organizational Culture's Influence). The company's values, such as the sense of ownership, combined with meritocracy, and a lack of hierarchical barriers could empower IT people and encourage them to acquire business knowledge and impact the business through definition and prioritization of requirements. The observed idea of meritocracy was that the more employees were able to positively impact the Company's business, the more they would be compensated, and the faster they would climb the career ladder. Alongside with the organizational culture, we observed that some job responsibilities also motivated IT people to act in business, such as developers having direct responsibility over customer's retention and engagement, as well as the business area having the responsibility of validating ideas from other areas (see Section 4.4.1: Responsibilities motivating and supporting IT people to act on business).

In order to have a deeper understanding of this phenomenon, we obtained detailed information over the communication at the BizDev interface, observing cases of good (section 4.3.2) and also of bad communication (section 4.3.3), alongside with the main reasons for BizDev communication (section 4.3.1) and opportunities for improvement (section 4.3.4). Among the analyzed attributes, we highlight that the open communication at the BizDev interface was essential for supporting IT people to act in business, specially due to business people being open for receiving questioning. We also collected data about cases of business people having technology knowledge and the effect this knowledge had on the BizDev communication.

Among the main attributes observed on IT sector's performance in business, we highlight the data-driven behavior: developers were motivated to constantly extract and monitor key performance indicators and trust decisions made on data, using this data to come up with new requirements and also to justify prioritization (see section 4.4.5: Data-Driven performance). We also observed that the combination of organizational culture motivating meritocracy and empowering IT people led developers acting in business without proper aligning with the business area, leading to cases when the business was considered to be harmed (see section 4.4.5: Lack of alignment between technology and business). During the timespan of this research, a process re-engineering project took place, introducing many process changes that impacted the business-development interface and were insert security measures that helped preventing this misalignment to happen (see section 4.4.2: Process reengineering project).

The most relevant results of IT people acting in business were the proposition of features made by IT people. We were able to observe nine different successful features that fell on this scenario (section 4.4.4). Two of these features were so successful that became isolated products, leading to the creation of a new business unit on the analyzed company. We interviewed the technology person responsible for the idealization of these products under a separate interview script, and we compared this result case against our main findings (section 4.4.6).

The knowledge resulting from this study, i.e., the main contribution of our work, should benefit organizations and practitioners from business and development areas by characterizing how the organizational culture can influence IT people to act in business and shape this behavior. We expect readers to compare the motivators imposed by the analyzed organizational culture with their own context, allowing them to reflect on both the positive and negative outcomes of having IT people acting in business, as observed in the case organization. We also expect our results on how business members helped IT people act in business and negative impacts of lack of BizDev alignment, which may help raise awareness on the importance of good cooperation between technology and business areas.

Apart from the results of the qualitative synthesis, other contributions include the study case protocol. The interview scripts alongside with the subject selection criteria can be used by other researchers to repeat this study in different contexts, allowing their conclusions to be compared against our own. We also present benefits of conducting the study case in two interviewing phases, allowing the use of acquired information to review and improve the interview scripts and also to adjust the subject selection criteria. More on the strategy adopted for reviewing the interview scripts detailed at section: 3.6.4. Finally, we advocate that the reporting of section 4.4.6, which details a specific scenario from the point of view of the Head of Technology, can be used as an example of how to analyze an isolated scenario and compare it against the main findings of a research, without using it to justify or deny conclusions.

The remaining chapters are organized as follows: Chapter 2 presents a theoretical foundation about the BizDev concept, organizational culture's impact over communication and over the application of agile methodologies, also describing related work over the BizDev interface. Chapter 3 describes the adopted research method. Chapter 4 presents the results emerging from this research. Chapter 5 presents a discussion over related work, the answer to the proposed research questions alongside with the research limitations and threats to validity. Chapter 6 presents our conclusions for this study, alongside areas and issues that we understand still deserve more detailed investigation.

# Chapter 2

# Background

#### 2.1 The BizDev Interface

Fitzgerald and Stol [10] stated that the entire software life cycle would be composed of three main functional areas: Business, Development, and Operations. In this context, BizDev is a concept that represents the link between business strategy and software development, complementing how DevOps represents the link between development and operations. As reported in their study, the need for a closer and continuous linkage at the BizDev interface was already evident in agile development processes, which seek constant feedback from customers (business) and propose roles that represent proxy customers. The disconnection in the BizDev interface means a problem, with developers adopting simplistic technical approaches for presenting solutions while lacking knowledge over business processes. Besides, developers displayed a desire to get more involved in business decision-making instead of being consulted after someone had taken these decisions.

Development projects can be harmed if they lack good and constant BizDev communication and cooperation, as evidenced in [2]: In moments when requirements are defined solely by business people they tend to be written in ways developers cannot comprehend, creating necessity of further clarifications that could slow down development and also lead to situations when the development team is forced to make business decisions without proper business basis in order to meet deadlines. Also, in moments when the business area neglects participation in the development process the project may lack proper feedback and business knowledge needed to correctly prioritize requirements.

On the other hand, benefits of having a closer cooperation were evidenced in [14], in practices like the "on-site customer". Perceived benefits of having the customer allocated alongside the development team include the transfer of business knowledge to the development team, faster feedback from the customer during the development process and increased quality to the project. At the previous case study we conducted at the IT sector of a university [1] we were also able to obtain information over the "on-site-customer" practice. Subjects reported benefits from this practice, such as how the customer started providing additional details on requirements to help increase developers' understanding and also a increase in productivity due to fewer interruptions for clarifying requirements: the customer on site was able to act as a local source of business knowledge for the developers, eliminating need to wait for external communication.

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During our previous study [1] we reviewed the literature on traditional agile development methodologies [11] in order to identify what they described over roles, responsibilities and practices that were inside the BizDev interface. Not all methodologies analyzed defined roles involved at this interface, and we identified roles with similar responsibilities but different names. We observed roles that involved responsibility of defining business requirements on the following methodologies: eXtreme Programming (Customer, responsible for writing stories, functional tests, and definition of done), Scrum (Customer, Product Owner and the Team are responsible for creating and maintaining product Backlog). Crystal (Business Analyst-Designer should specify requirements and interfaces based on communication with users) and Dynamic System Development Method (Visionary should guarantee essential requirements are discovered early). We also observed methodologies that defined roles involving responsibility of possessing business knowledge: Crystal (Business Expert should possess this knowledge and use to create business plan) and Feature Driven Development (Domain Expert should possess this knowledge and pass to others). Finally, we observed agile methodologies that defined roles with responsibility with communicating with end users and customers: Crystal (Business Analyst-Designer should communicate and negotiate with users) and Dynamic System Development Method (Ambassador User should bring knowledge from the user community to the team and also obtain feedback from it).

Based on the aforementioned literature review, a case study was conducted at the IT sector of a university [1]. From that study, we were able to observe interesting practices at the BizDev interface, such as having business representatives (customer-on-site) and requirement analysts allocated inside the development team. Benefits from these practices included fewer time spent on clarification of requirements, not only because developers were now able to reach members of the team for clarification, but also because the customer-on-site and the requirement analysts started providing additional details to the requirements after identifying the main difficulties developers had understanding them. We were also able to observe that the technical background from all of requirements analysts helped them to communicate with developers and to write requirements that were rich in technical details. Finally, we were able to observe a context in which the entire development team was involved in the continuous re-prioritization of the product backlog, even having the autonomy of making business areas only in moments of critical changes.

Gruhn and Schafer [4] proposed a BizDevOps approach for allowing business departments to express and review requirements in a hands-on manner (Biz), while leaving entire application development process in charge of IT department (Dev), and integrating automated tool chain for deployment (Ops). The proposed approach consisted of a framework, implemented through a platform, where business members would be able to create business logic through the use of domain specific languages, being able to define data models and user interfaces. The same platform would contain managed resources and plugins developed and maintained by the IT department, allowing integration with both the business logic and deployment pipelines. The platform was used successfully by a large company for several years, and a case study reported fully functional cooperation between business and development on the use of the platform.

Nyrud at [15] conducted a case study where business and development merged into a BizDev team, which was defined as a cross-functional team composed of people with the same purpose, whose combined efforts are necessary for achieving it. The study analyzed different coordination mechanisms in this BizDev team, such as project management tools, daily stand-up meetings, demos with stakeholders, and backlog grooming. One of the main challenges was having different needs in the working environment: business representatives preferred an open and social work environment, facilitating discussions, while developers preferred an environment leading to fewer interruptions. Also, members of this BizDev team were not all present at the same meetings, existing cases of regular meetings where not all developers would attend or business representatives would not attend. Finally, team members felt they did not benefit from sharing the same status in daily meetings, and did not apply the same methodologies and tools.

## 2.2 Scaled Agile

Traditional agile methodologies such as Scrum and XP majorly focused on defining roles and practices concerning the development team and development cycles [11]. In our prior study [1], we identified roles and responsibilities among agile methods that were involved with the business development interface. However, the observed responsibilities and practices were mostly related to creating and maintaining requirements, not focusing on improving or defining collaboration between business and development areas. As large scale enterprises started to apply agile methods, new frameworks such as SAFe  $^1$  (Scaled Agile Framework) appear, providing more guidance on how teams outside development could also become more agile. SAFe defined that a successful adoption of its methodology should affect not only development, but every part of the organization, and that all teams involved in the delivery of business solutions, such as operations, legal, marketing, and human resources, should apply lean and agile principles [3]. With the adoption of SAFe, traditional agile roles such as the Product Owner received changes regarding related activities and responsibilities. A mapping [7] of Product Owner activities to SAFe's role descriptions revealed that the activities were fragmented in multiple roles, concluding that for large enterprises, the scope of activities goes beyond the capacity of one single person acting as Product Owner. Reported benefits of adopting SAFe [8] were improvements upon collaboration and dependency management between agile teams, indicating that new frameworks targeting larger organizations were able to improve BizDev collaboration.

A recent survey [22] over the adoption of agile scaling frameworks by multiple organizations in 26 countries reported SAFe as being the most widely adopted scaled agile framework, followed by Large-Scale Scrum (LeSS). The most common reasons for the adoption of a scaled agile framework were to scale to more people and to remain competitive in the market. The most common expected adoption benefits was improve the collaboration and dependency management between teams, and other relevant expected benefits were dissolving silos, improve transparency, and enable faster feedback. All of

<sup>&</sup>lt;sup>1</sup>https://www.scaledagileframework.com/

these expected benefits can be related to a healthier BizDev interface, in which both areas collaborate constantly, with transparent communication, frequent feedback cycles, avoiding the creation of information silos isolated in each area. Therefore, organizations expecting to benefit from applying large scale agile could also benefit from improving their BizDev interface.

## 2.3 Sociotechnical Aspects

For this study, we refer to organizational culture as a shared belief system that permeates an organizational and ultimately influences the actions of people and work groups [17]. Through an empirical study reported at [17], Strode et al. provided evidence regarding the relationship between organizational culture and the use of agile method techniques, observing correlation between the adoption of agile methodologies and organizational culture factors such as: organization enables empowerment of people; organization is results oriented; social interaction in the organization is trustful, collaborative and competent. These relationships provide support for the argument that organizational culture is a factor in successful adoption of an agile method.

When analyzing the relationship among people on the BizDev interface, we considered communication, collaboration, coordination and cooperation as defined by Sharp & Robinson [6]: communication takes place when people exchange information through verbal or non-verbal means, collaboration takes place when people are working together on a task; coordination is the management of dependencies among activities; and cooperation happens when people are working independently on parallel but dependent tasks and come together for coordination. As observed in [6], considering it is usually infeasible for all team members to have the required expertise, agile teams need cooperation, and to identify practices fostering cooperation between business and development is one of the goals of our research.

The organizational culture is a shaping factor of communication and its processes, and the resulting forms of communication can ultimately impact the quality of information upon which organizations base their decisions [19]. These relationships indicates the importance of analyzing company's cultural values and beliefs and understanding their impact on the communication at the BizDev interface, as well as it highlights the importance of understanding the impacts the quality of communication at the BizDev interface may have on company's overall results. Examples of these relations were observed in [19]: a preference for *ad-hoc* communication had originated in cultural beliefs that leaned towards flexibility and interpersonal contact; rigid hierarchy culture created a division in which an information-rich management area only communicated downwards essential operational information, leading low-hierarchy employees to place little value and trust over information originated from the top.

# Chapter 3 Research Method

The main goal of this research is to obtain empirical evidence about the BizDev interface, to allow a better categorization of the interface and roles in it, alongside with their responsibilities and practices. This research consists of a case study conducted at a Brazilian tech company. The case study was planned following the guidelines in [21] and performed through two phases of semi-structured interviews, which were recorded, transcribed, and further analyzed using Grounded Theory (GT) procedures [9]. For the first phase of interviews, previous research and target goals guided both the subject selection criteria and the creation of the interview scripts. Before the second round of interviews, the first phase results were analyzed in full, guiding updates to the scripts as well as the next subject selection criteria.

## 3.1 Research Questions

Based on the results of the literature review and the qualitative research performed previously in [1], and on our research goals, we defined a set of research questions to guide the current case study. It is important to notice that the results presented here emerged after data collection and analysis procedures, and were not anticipated during the planning of the case study. In special, we did not envisioned to acquire information regarding the influence of organizational culture at the BizDev interface.

**RQ1:** Which roles have practices or responsibilities in the BizDev interface?

**RQ2:** What is the required effort and involvement from the development team regarding responsibilities and practices in the BizDev interface?

**RQ3:** What are the responsibilities in the BizDev interface? Who defined these responsibilities, development or business area?

**RQ4:** What are the adopted practices in the BizDev interface? What is the motivation behind those practices?

**RQ5:** What was the perceived change on the analyzed projects after applying the practices in the BizDev interface? What were the impacts on the project's overall quality, fulfillment of deadlines, stakeholder satisfaction and communication between business and development sectors?

#### 3.2 Case selection criteria

Given our objective of characterizing the BizDev interface, we wanted to analyze different contexts than what we had found in our previous research, and for this reason our first case selection criteria was an enterprise environment. We were interested in a case that could allow us to observe if developers possessed responsibilities or applied practices in the BizDev interface.

At the time of the first interviews, one of the researchers had been working for CompanyP<sup>1</sup> (alias chosen for confidentiality) for several years, allowing him to observe interesting behaviors on the BizDev interface that indicated a relevant case for study. He was able to observe cases of direct communication between development analysts (Mobile and Backend) and members of business teams (Product and Content). Also, he observed moments in which people from the IT sector had been involved in discussions for designing new features. Finally, there were aspects of CompanyP's culture and values that encourage employees to acquire business knowledge. These clues, alongside the opportunity to conduct interviews in the company, compose the main motivations for CompanyP to be chosen as a case. Three researchers performed and constantly reviewed the analysis to reduce possible bias related to the involvement of one of the researchers with CompanyP.

#### 3.3 The Case

CompanyP is a global leader in its market. Existing for over five years at the time of the first interviews, the company offers products for final customers through a mobile app (ProductP) and through two other main products. The company started as a separated sector from a larger tech company, growing to become an independent company after a couple years. At the time of this research, CompanyP had over 300 employees and over 1 million monthly active users on ProductP.

At that time, CompanyP was divided into three different business units, each one with its own sets of IT and business areas. The analyzed business unit was the one focused on ProductP, which had approximately fifty employees allocated exclusively to it, working alongside with around thirty employees from teams shared across different business units. The IT sector of this unit was divided into a mobile development sector (Android and iOS) and a back-end and full stack development sector. The Design team, composed of graphic and UI/UX designers, was also part of the technology area. At total, the technology area of the target business unit had around twenty five employees. The business area was composed of teams focused on Product (overall project management, roadmap elaboration, definition of new app features), Content (curatorship of multimedia content inside the apps), and Growth (monetization and offer strategies). Development teams followed an adaptation of agile methodologies, closer to Scrum. Teams engaged in rituals such as daily, planning, and retrospective meetings. A product backlog was continuously maintained, with prioritization of tasks and allocation of developers organized into time boxes (sprints). While mobile developers accumulated features to be delivered together

<sup>&</sup>lt;sup>1</sup>Throughout this paper we refer to the company as CompanyP, and ProductP for referring to its main product, the mobile app.

in a release at the end of the sprint, back-end and fullstack developers would continuously deploy their code to production during the sprint. Among the teams operating in multiple business units, there was the Data Team (Data analysts and Business Intelligence), the Human Resources team, the Marketing Team, and the Finance team. We interviewed people from the following teams: Mobile Development, Back-end Development, FullStack Development, Design, Product, Growth, and Content.

The interviews happened during the time span of September 2019 and October 2020. We claim that all of the data was collected for academic purposes, and that we realize the data reflects the company at that period of time, which may or may not reflect the company's current state.

#### 3.4 Subject selection criteria

Since our goal was to observe the BizDev interface, we decided to select participants from both business and development areas. Targeting only teams working with ProductP, we decided to select participants from all of the technology and business teams, both analysts and leaders, working closest to ProductP's operation, which led us to selecting people from the Mobile Development, Back-end and Full Stack Development, Product and Content teams. After conducting the first round of interviews, involving members of business and development areas, we obtained indication that led us to also interview people from the Growth and Design teams, as well as interviewing the Head of Technology. At total, we interviewed fifteen people, as detailed in Section 4.1. Even though we had indicators of relevant behavior at the BizDev interface happening at CompanyP, we did not know whether the selected participants acted in the interface or not before conducting the interviews, except for the Head of Technology, that was referenced by different participants during the first phase of interviews.

## 3.5 Data collection procedures

We conducted semi-structured interviews at CompanyP, in which scripts were used as guides. We performed the interviews in two iterations. We made the decision to split the interviews in different iterations to be able to analyze an initial set of collected data before finishing the data collection. We wanted to and use it to verify whether we were collecting enough data to answer the research questions, an to allow review and adjustment of our interview scripts if necessary. Also, we decided to stop in two iterations since we had already acquired a reasonable amount of data that allowed us to present relevant results and also because CompanyP was going through a set of structural changes that affected company's context, making it unfeasible to compare newer data with the data from the first iterations.

The first set of interviews happened during September and October of 2019 and involved people from the Mobile Development Team and from the Content Team. These interviews took place at CompanyP's office. The second round happened during the timespan between July and October of 2020 and involved people from the Back-end Development Team, Content Team, Product Team, and Growth Team. All the interviews from this second phase were conducted through video-call meetings, due to the pandemic scenario. All of the participants received a consent form that informed them about the confidentiality of their data, and the participants signed the form agreeing to collaborate on this research without receiving any benefit in exchange. The interviews were recorded and transcribed.

After defining the research questions, we worked on the development of interview scripts, based on guidelines from [5]. Using our experience from a previous research, we developed two different scripts: one for development and other for business profiles. The two scripts were used for guiding the first set of interviews, and were slightly adapted before the second set of interviews (more details on the analysis performed in Section 3.6.4). The interview scripts can be found in the Appendices A.1 and A.2. In summary, both interview scripts contained questions for warming up and subjects' characterization (time in the company, team composition, current job position), questions about current responsibilities, regular routine, communication on the BizDev interface, perception over IT people's performance in business, cases of knowledge sharing, and existing conflicts between business and development areas. For technology profiles, we defined questions regarding how they would get specifications and clarification of requirements for implementing new features and about their business knowledge. For business profiles, we defined questions on how they would specify requirements for the development team and how they evaluated their technical knowledge. For the Head of Technology interview, we did not use any of the already defined scripts, rather using a small set of questions focusing on getting information from two specific projects s/he worked in and also her/his perception over the performance IT people had while working on the definition of requirements and features. The interview topics can be found in the Appendix A.3.

# 3.6 Analysis procedures

We analyzed the transcriptions using Grounded Theory procedures as described in [9], performing the Open Coding, Axial Coding, and Selective coding phases, reviewing and discussing the current findings between the researchers. We used the Atlas.ti<sup>2</sup> tool for all phases, using it for creating codes and categories, assigning interview snippets with respective codes, and creating networks for establishing relationships between the categories.

## 3.6.1 Open Coding

At this phase, the transcriptions were analyzed and emerging concepts were classified as codes. For each interview segment where a concept would appear, the Atlas.ti tool was used for highlighting the segment and associating it with the related code. In this process, no codes had been previously defined, to avoid possible confirmation bias as defined in Grounded Theory procedures [9]. For mitigating threats to interpretive validity, the

<sup>&</sup>lt;sup>2</sup>https://software.com.br/p/atlas-ti



Figure 3.1: Snapshot of the Atlas.ti tool, displaying an interview segment and its associated codes.

codebook and the coded segments were reviewed by the author and a second researcher. Additionally, we constantly compared occurrences of possible new codes with the current state of the codebook.

Throughout the open coding phase, we labeled the emerging codes with colors and names that would support a better categorization of types of codes, such as "communication", "responsibilities", "requirement", "knowledge", "organizational culture" and "practices", i.e., these labels work as low-level categories. Figure 3.1 shows an example of an interview segment marked with codes.

#### 3.6.2 Axial Coding

At this phase, we first analyzed codes, comparing them and allowing common categories to emerge, such as "High Frequency of Communication", "Technology team working Data-Driven" and "Members of the IT sector with business Knowledge". The codes were then related to these categories using relationships to connected them, such as "is-a", "iscause-of", "is-consequence-of". There are types of relationships for which we were unable to determine a more accurate type of connection, as it was not clear in the raw data. For these cases, we used the a more general connector "is-associated-with". Next, we established relationships between the categories, using the same type of connectors. The relationships were analyzed by all of the three researchers.

We used the axial coding paradigm proposed in [9] to guide our process of identifying and relating the categories. This paradigm organizes the categories around phenomena, grouping the categories according to their relation with the phenomena (i.e., Causal Conditions, Context, Consequences). A illustration of this paradigm is present on figure 3.2. Even though this paradigm guided our Axial Coding process, we did not try to force all of categories in it. During this process, new categories emerged, grouping a subset of categories. Figure 3.3 displays a segment of the axial coding phase for one category. After this step, we ended up with a network that was fully connected, with a central category called "IT sector acting in business". Finally, the author performed an extensive work of iterating through all the created categories, analyzing each of the connected codes individually, tracing them back to interview segments and verifying the validity of the connections, writing detailed information on each relation based on the corresponding interview segments. This step of validation was reviewed by the second and third researchers.



Figure 3.2: Illustration of the axial coding paradigm as defined on [9], proposing the connection of categories around phenomena.



Figure 3.3: Network for one category and its related codes.

#### 3.6.3 Selective Coding

We started the selective coding phase as described in [9], but were not able to finish it. After performing the axial coding phase for the first phase of interviews, we ended up with three categories that became candidates for central category: "IT sector acting in business", "Attributes and causes of Good BizDev Communication" and "Attributes and causes of Bad BizDev Communication". We started the selective coding phase by identifying "IT sector acting in business" as the central category and main phenomenon of our research. However, using only the data acquired on the first phase of the interviews, were not able to refine our theory. After finishing the axial coding for the second phase of interviews we returned to the selective coding phase, first integrating our central category with the dimensions of "BizDev Communication" and later with other categories, integrating our theory by using the paradigm detailed in Figure 3.2. The author then proceeded to apply multiple steps of theory refinement, returning to codes and interview segments to validate groundedness as well as internal consistency and logic of our theory. Those steps were then validated by the second and third researchers. We did not reach theoretical saturation, therefore we do not claim to have finished the theory refinement step of the selective coding phase. As mentioned on section 3.4, we decided not to perform a third set of interviews because CompanyP had been under a recent set of structural changes that changed company's context in a way it would make comparison between newer data and results from the first iterations unfeasible. Moreover, some of the interviewees had already left the company.

#### 3.6.4 Review of Interview Scripts

After finishing the first round of open and axial coding, we reviewed the interview scripts and adapted them by applying the following procedure: 1) Identify relevant codes with low groundedness (low number of segments marked with the code); 2) Analyze all relations marked with "is-associated-with" (a mark that indicated a relation that was weakly grounded to our data); 3) Identify script questions that did not produced relevant information; 4) Identify questions that could be rewritten to become clearer or simpler; 5) Analyze how close we were from being able to answer the proposed research questions. We used this procedure to add, remove or rewrite script questions.

When analyzing the relevant codes with low groundedness, we aimed at identifying topics that needed further clarification, to adapt the interview script to include questions for this topic. Same consideration was taken for relationships of the type "is-associated-with", since they required more information from the second set of interviews to be considered.

During the interviews, we were able to observe that some questions resulted in answers that were not relevant for our goals at better understanding the BizDev interface. Therefore, these questions were removed. We also identified some questions that could be slightly rewritten to be better understood.

Finally, we went through all of the research questions and analyzed how close we were from being able to answer them. Based on this analysis, we introduced subtopics to some questions, allowing us to try to guarantee the participants would discuss the details we missed from the first set of interviews.

## 3.7 Reporting

From our results, we identified one main phenomenon, that is the CompanyP's IT sector acting in business. This paper presents and discuss all of the main findings over this phenomenon. Due to the amount of information gathered over this phenomenon, we decided to also publish segmented reports containing specific aspects of the results. The segments are the following: 1) How cultural organization motivated and shaped IT sector acting in business; 2) Good and Bad attributes of the BizDev communication, and how they impacted IT sector acting in business; 3) Main attributes and consequences of IT sector acting in business. A paper containing the report on the first aspect has already being written and submitted for review.

# 3.8 Validating Results with Participants

After finishing the analysis of results, we selected a sample of the participants for being presented with a summary of the results. The objectives of this presentation was to get some validation over the achieved results and also to provide feedback to the participants with information that could help them on their work. Due to the timespan between the first stage of interviews and the presentation of results, many participants had left CompanyP or been relocated to a new company that was incubated inside CompanyP. Therefore, we selected a small sample of three participants that were still in the company and could promote discussions over the presented results back to their colleagues. All of the participants were also invited to read a paper with the details of the research.

# Chapter 4

# Results

On this chapter we report the main findings of the qualitative research conducted at Company P. First, we describe all of the involved participant's roles and main activities. On the next section, we detail all of the observed responsibilities in the BizDev Interface, connecting these responsibilities with the roles presented on the previous section. The next section presents an analysis on the BizDev communication observed at CompanvP, enumerating reasons for it to happen alongside with good attributes, bad attributes and opportunities of improvement. After providing context on roles, responsibilities and BizDev communication, we introduce the main phenomenon that emerged from our research: IT sector acting in Business. We first report this phenomenon by analyzing its causes and the factors that improved or supported this behavior. We then provide details on the two ways the IT sector acted in business: Through work on prioritization and through work on definition of requirements. We proceed to report the observed characteristics of this behavior, such as it being data-driven and characterized by cases when IT sector acted in business without aligning with the business area. Finally, we report one specific case analyzed in which a member of the IT sector idealized two products that were successful up to the point that a new business unit was created on CompanyP to focus on them. We finish this chapter by providing the obtained answer for the research questions presented on chapter 3.

#### 4.1 Involved Roles

In this section, we describe the participants, the functional area they were assigned to (business/development), and a summary of their main activities. Table 4.1 contains the summary of the roles.

The mobile development team, including developers P1, P4, P6, and P9, worked on the maintenance of the Android and iOS versions of ProductP. Their daily activities consisted of developing new features for the app, working on bug fixes, monitoring app failures, and also extracting and analyzing product metrics. Analyzed metrics include not only numbers regarding failures and health statistics, but also strategic business indicators, such as user retention, content viewership, and the performance of product's features. Mobile development analysts engaged in brainstorming sessions for defining

Participant	Role	Area	Phase
P1, P4, P6, P9	Mobile Development Analyst	Development	1
P5	Mobile Development Leader	Development	1
P3	Content Analyst	Business	1
P7	Content Leader	Business	1
P15	Back-end Development Analyst	Development	2
P11	Full Stack Development Analyst	Development	2
P2	UI/UX Designer Analyst	Development	2
P12	Content Analyst	Business	2
P14	Product Analyst	Business	2
P13	Growth Analyst	Business	2
P7	Product Manager	Business	2
P10	Head of Technology	Development	2

Table 4.1: Participants, their roles, and interview phase

new requirements and in prioritization discussions. The mobile development leader (P5) worked supporting the team while also engaging in different discussions with business teams.

The full stack developer (**P11**) worked on the creation of a Web version of ProductP. S/He was in charge of developing and maintaining both the front-end Web Application and the corresponding back-end server, alongside its infrastructure. The full stack developer also engaged in prioritization discussions.

The back-end developer (**P15**) worked maintaining back-end systems used for supporting the mobile apps. One of these systems include a platform used for collecting the app's analytics, providing authentication features, and also maintaining user's subscriptions. Other systems include integration with external partners, such as CRM (Customer Relationship Management) and marketing partners.

The UI/UX designer (**P2**) was in charge of defining and designing all user interactions, considering the user's experience in terms of usability and accessibility. During the first iteration of interviews, s/he was allocated on the same team as the mobile developers, engaging in the team's rituals and discussions. In the second iteration of interviews, s/he was allocated on a design team.

Another analyzed team was the digital content team. This team was in charge of choosing what type of multimedia content (videos, games, books) would be included in ProductP, curating content based on whether it suits the target age groups and strategic goals. Content analysts (**P3**, **P12**) and the content leader (**P7**) worked operating an internal CMS (Content Management System), using it to perform activities such as uploading new videos and organizing video playlists.

The growth analyst (**P13**) was allocated exclusively on ProductP's business unit, but belonged to a team of growth and CRM analysts that acted on other business units. The growth analyst was responsible for identifying and applying product growth opportunities, such as changing the product's price, proposing introductory offers, and segmenting user's offers based on their behavior profiles.

The product analyst (**P14**) was responsible for studying ProductP's users' behavior, market and competitors, and using this information to propose growth strategies. The information acquired should also be spread to other business teams, such as Marketing and Content. The product analyst was also responsible for keeping track of the progress of every development release.

Another analyzed role was the Product Manager (**P8**). Even though her/his role was that of a Product Manager, s/he did not considered herself/himself as part of the product team in which **P14** belonged, and **P8** did not act as the leader of any person or team. After joining the company, s/he started a process re-engineering project, aiming to identify practices for better organizing and integrating different teams from business and development areas around common goals.

We also interviewed one member of a different Business Unit, the Head of Technology (**P10**). This was an specific interview focused on the period s/he acted as Mobile Development Manager for ProductP. At that time, s/he proposed a new feature for ProductP, which became a success case for the company, inspiring people from the IT sector to impact the business through the proposition of new features and requirements. This success case comprehends a specific point in time for the company and will be analyzed separately.

## 4.2 Responsibilities in the BizDev interface

One of the goals of this research was to identify responsibilities in the BizDev interface. This information was acquired both through interviewees reporting their main responsibilities and through interviewees reporting responsibilities and actions from colleagues. The responsibilities on the BizDev interface were organized into three different categories: Centralization and Promotion of BizDev communication; Improving BizDev cooperation and co-ordination; Motivating or Supporting technology teams to act in Business.

#### 4.2.1 Centralization and Promotion of BizDev communication

We grouped all of the responsibilities related to the centralization and promotion of BizDev communication under the same category, as illustrated on figure 4.1. The product team had the responsibility of centering the communication between different teams, aiming to reduce communication noise, as well as to ensure that different teams were aligned and involved in discussions and decisions about the product. Four different interviewees, from development (P11), design (P2) and content teams (P7, P12), reported scenarios where the product team would center and channel the communication for these purposes. The designer stated that a member of the product team increased her/his alignment and involvement on different stages of the project: "Then those incidents (communication misalignments) started to subside, since s/he as a member of the Product team knew everything that was happening and knew when to involve me or not." (P2). The Content Leader believed that "the Product Team should be able to reduce (communication) noises



Figure 4.1: Axial Coding explaining codes related to responsibilities on the **Centraliza**tion and Promotion of BizDev communication category.

throughout the development project." (**P7**) and that "The Product Team should (...) not only act as a bridge between teams to support their mutual understanding, but also to unite them." (**P7**). The FullStack developer stated that "we (Development and Business Teams) understood each other. Because, as I mentioned, P14 (Product Analyst) kind of channeled the communication, lowering the probability of occurring information loss in the communication." (**P11**). The interviewed Product Analyst also reported it was one of her/his responsibilities to develop communication strategies: "And the fourth responsibility was to try to communicate, try to develop communication strategies with the other teams. There we have development (team), content (team)... for all these other teams, I believe it was Product's (Team) responsibility to develop (communication) strategies." (**P14**).

The Product Manager reported it was her/his responsibility to connect different teams and facilitate the communication between them by finding and applying the "more suitable day-to-day practices on Team organization, deciding whether or not they should have squads <sup>1</sup>, what process to apply for the releases, if it would be Scrum, Kanban, etc." (**P8**). S/he reported the responsibility of ensuring that different teams engage in constant communication through the entire development cycle, to avoid information loss and to guarantee the delivered product would suit the customer's needs: "So I have to make sure that exists, at some moment, be it through a meeting, be it through asynchronous communication, (...) I have to guarantee that these people are talking to each other, at the first moment, over time, and at the final delivery. (I have to guarantee) That these touch points exist, that this information does not get lost, and that we do not end up developing something that does not make sense to the user." (**P8**). In order to fulfill this responsibility, the Product Manager took the decision to concentrate all asynchronous communication regarding ProductP at "a common Slack<sup>2</sup> Channel. In order to not frag-

<sup>&</sup>lt;sup>1</sup>When interviewers at CompanyP reference Squads, they are referencing Spotify's model of organization, in which teams (squads) should be composed of people from different areas of knowledge: https://blog.crisp.se/wp-content/uploads/2012/11/SpotifyScaling.pdf

<sup>&</sup>lt;sup>2</sup>https://slack.com/



Figure 4.2: Axial Coding explaining codes related to responsibilities in the **Improving BizDev Cooperation** category.

ment the information exchange, that could eventually create information silos." (P8).

#### 4.2.2 Improving BizDev Cooperation/coordination

In this section, we grouped responsibilities on improving BizDev cooperation and/or coordination, as described in [6]. Figure 4.2 illustrates the responsibilities grouped on this category. Both the Product Analyst and the Product Manager reported the responsibility of guiding technology and other teams for reaching a common goal by constantly bringing important information about the market, customers, and the product. The Product Analyst stated that the "Business team is responsible for bringing inputs to help (technology teams) launch their products and understanding what is happening." (P14). The Product Manager also stated it was her/his responsibility to help removing any project barriers: "Facilitate the day-to-day communication, support on the removal of barriers, guide work and provide a common tool to enable areas to connect to each other (...)" (P8). These responsibilities represent a scenario in which the Business area will not only depend on the developer's work, but it will also make efforts to support it.

One of the interviewed developers also stated a similar responsibility towards supporting business teams on reducing technology complexity of business teams' tasks: "What I need to do is to translate, remove Computing complexity and say (to business people): Here is what you need to understand. Now use your business knowledge and do what you need to do." (P9).

## 4.2.3 Motivating or supporting technology teams to act in Business

In this section, we grouped responsibilities that motivated or supported technology teams to act in business, as illustrated on figure 4.3. Two different developers (**P5**, **P4**) and one product analyst (**P14**) reported that technology teams have direct responsibility over customer's retention and engagement. The mobile development leader stated her/his



Figure 4.3: Axial Coding explaining codes related to responsibilities in the **Motivating** or supporting technology teams to act in business category.

responsibility as being "working together with the Product team to be able to solve ProductP's main issues: be able to monetize better, be able to retain users." (P5), and P14 also reported her/his vision that "it is the technology team that, essentially, developing the product, understands how the users use it and who the user is." (P14). This responsibility motivates developers to acquire business knowledge such as information about customer's needs and behavior, and such as ProductP's usage metrics and market knowledge. We verified based on several interview passages that different developers possessed deep knowledge on customer's behavior and preferences, allowing us to conclude that efforts were taken to fulfill these responsibilities.

The Product Manager reported s/he had a responsibility to "ensure that the information is reaching who it needs to, (..) and that people closest to development are making the decisions." (**P8**), and this responsibility included guaranteeing that technology teams were aligned and involved during decision making processes. To fulfill this responsibility, the Product Manager worked to make decision-making more transparent, since "sometimes it is hard to remember who you should involve at the beginning or during the development." (**P8**) and because "if you do it (communication) in a more open and transparent way, it is easier for someone to see and say: 'Ops, that's concern me, I should be involved on it."' (**P8**). For that, one of the interventions was to introduce a common issue tracking platform for all teams and another was the establishment of roadmap meetings. The roadmap meeting was a weekly moment for different teams to share the status of their current and planned tasks. Since all members from all of the areas involved with ProductP (Development, Product, User Acquisition, Growth, Design, Content, Branding) were expected to engage, the roadmap acted as an influencing factor for the technology team to acquire business knowledge and participate in business decisions.

The Product Analyst reported a responsibility for validating the technology team's ideas for new features and requirements: "It is a responsibility of a Product (Team) person to help other people think (...). How can I help you to come up with an even better idea? (...) It is our (Product Team) responsibility to (...) bring critical arguments to make your ideas 'waterproof'." (P14). This responsibility involved gathering market information to evaluate the ideas and also to help convince other business areas of its importance. Even though the Product Analyst reported this to be one of her/his responsibilities, s/he



Figure 4.4: Axial Coding explaining codes related to Reasons for BizDev Communication

believed this responsibility was not fulfilled completely, and that the Product Team could have prevented one feature proposed by the development team to not have achieved the expected results.

## 4.3 BizDev Communication

#### 4.3.1 Reasons for BizDev Communication

From the interviews, we observe the communication between technology and business sectors was open and frequent. As a result, a high frequency of communication would occur between teams like Development, Product, Growth, Design and Content. The reasons for technology teams to communicate with members from the business area vary, ranging from routine discussions and periodic meetings on product development to specific discussions about new requirements and features proposed by developers. Figure 4.4 illustrates the main reasons for BizDev communication to happen.

#### Routine discussions

On their daily routines, business teams such as Product and Marketing would reach developers to make **new feature development requests**. In these situations, the requirements would be mostly explained in an informal manner, without any scheduled meetings and without introducing many details, as stated by a mobile developer: "Usually s/he (Product Manager) just goes there (to the Mobile development team). S/he reaches us and talks to..., usually with P5, or with everyone there. S/he says: 'I need this and that' and that's it."(P4). For further requirements clarification, the developers were encouraged to go directly to business teams' members, without needing to channel this communication through development leaders or to schedule meetings for this purpose. All of the six development analysts interviewed (P1, P4, P6, P9, P15, P11) reported that, when they needed clarification on requirements, they would directly reach whoever demanded the feature or possessed the information, and it was common features to be

requested without many details. On this matter, the Mobile Development Leader stated: "The mindset I tell (to the mobile development team) is the following: (...) You have to agree that it makes sense to develop it (the requested feature). After this step, you become the owner of the task. And an owner will solve everything that needs to be solved. (...) talk to people, go to the sources, and solve it (your doubts about requirements). (...) The person (responsible for the task) must have the autonomy to conduct the development in the best possible way possible and be the owner of that task; be the owner of that result." (P5). Much of the Mobile Development Leader's statement reflect on the value of sense of ownership that is stimulated by CompanyP's organizational culture, as detailed better in section 4.4.1.

Another frequent reason for BizDev communication was Business **teams reporting bugs** found inside ProductP's mobile app or on inside CompanyP's internal administrative platforms. During development, if members from the technology teams found issues that could prevent a release to be delivered at the planned deadline, they would report these issues to the Product team. In case of hard deadlines that could not be postponed, development and product teams would engage in discussions to determine whether some components of the release could be removed without causing high impact or decreasing too much release value: "If they can contribute somehow, for example telling what features can be removed, what (feature scope) can be reduced or not, then we certainly need to involve them (Product Team), we (Mobile Development Team) never make this decision alone." (**P5**).

#### **Knowledge Sharing**

Two distinct flows of knowledge sharing were observed. First, the CompanyP's leadership shares constantly business knowledge to the entire company. Second, there are isolated scenarios in which members from the IT and Business sector would share with each other technology and business knowledge respectively.

Different interviewees reported two major events where **CompanyP's higher lead**ership would share business results to the entire company. Those events were a biweekly report conducted by the CEO and a monthly alignment meeting conducted by the different leaders of each business unit to their subordinate areas. One developer reported these events as being one of her/his source of business knowledge: "So my business knowledge (...) would be acquired mostly through conversations with my manager or through external conversations. And from the monthly result meetings (...). The overall (business information) I get to know, get updated on, every two weeks, when we have the meeting with Company P's CEO. This meeting usually brings a higher level vision (about the company). And on those monthly meetings (...) I feel that we can get more details about what's happening with the business and with Product P." (P15). The Product Manager reported her/his view that through these meetings CompanyP was able to bring great transparency to business communication, allowing employees to understand CompanyP's business more easily: "The transparency we have on the Monthly Alignment Meetings, the chat we have with the CEO (...) I think that on this matter, compared to what I saw in other companies, the quality of communication is very high. Understanding Company P's

universe today, it is easy. Because the information is openly available." (**P8**). These events of knowledge sharing structured by CompanyP are aligned with the organizational culture that promotes IT people to gather business knowledge and use it to impact the business: "CompanyP encourages a lot that we develop our business skills, our strategic thinking... The company's CEO is always saying that the ones who build the company are ourselves, so we can't keep waiting for another person to bring the solution to our problems." (**P10**).

Two different developers (P15, P11) reported situations where they would share knowledge over tech concepts such as JSON and Javascript to business people, commenting that these were isolated and informal situations: "And then I started teaching her/him Javascript a little. But it was, you know, something isolated. It wasn't something expository like making a presentation about it." (P11). Similar behavior was observed in the opposite direction: The moments where business people would share business knowledge to members from technology teams were informal and isolated, focusing on giving business context on prioritization and importance of strategic decisions: "And the CEO, at times s/he participate on our meetings, (...) s/he is also helping us. Providing support for us to understand the importance of what we are developing and engaging people to keep working on that direction, or to make some direction adjustments." (P15).

#### **Recurring Meetings**

There were some recurrent meetings where members from both business and development teams would engage.

The **Monthly Alignment Meeting**, as mentioned in the previous section, was a moment where different leaders of each business unit would share the latest results of the Company to their subordinate areas.

The Roadmap meetings were weekly moments for "presenting the status of the main projects that are happening at ProductP to all and any stakeholder. Which means, any interested area could participate, any person from the company could participate, making it a moment of open presentations about the main topics over ProductP." (P8). Different people from the business area (P11, P12, P14) reported the Roadmap meetings increased BizDev alignment. The Growth analyst stated: "It (Roadmap meeting) was super important to provide visibility of what is happening, for teams to engage on the most relevant activities. Based on the principle that 'I know whether I should be involved or not at something better than other people know whether to involve me or not'." (P13). One Content Analyst reported that before the Roadmap meetings "We had no vision of what other teams were working on. Who were the people responsible, the areas responsible for each project." (P12).

The **Daily meetings** were attended by people from Development (Mobile and Backend), Design and Product Teams. The objective of the Daily meetings was to "exchange (information) about what each person has done, the progress of each activity, (..), inform about any impediments, define actions to obtain progress on the job tasks." (**P8**).

#### Technology teams involved on ideation phase and requirements definition

We observed from the interviews that members from technology teams were constantly engaged in discussions for new ideas and requirements, working alongside with members from business teams.

**Brainstorm meetings** were moments in which these discussions would occur. At this sessions, the technology team was able to come up with ideas for new features and requirements. Those sessions were attended by people from Development, Product and Design team. More details on section 4.4.4.

Different interviewees (P2, P12, P13, P14) reported they would reach the development teams at early stages of ideation to acquire information over technical feasibility, effort estimation, and to obtain IT people's feedback over the proposed solution. One Content Analyst stated: "Every time we have an idea, a new feature proposal, we go and talk to the technology team. Usually with the Mobile Development Leader, to understand the feasibility, the effort estimation. And also to obtain her/his perceptions over the implementation." (P12). The Growth Analyst also reported: "And then, we involve the technical teams. The idea is that this discussion happens not necessarily when the solution is ready. We, still during analysis, will reach people that are involved and the specialists in order to get some opinion." (P13).

The majority of interviewees (P1, P3, P4, P5, P7, P8, P9, P11) reported different moments in which members from business and development teams worked together on the definition of requirements. One example of this collaborative work was a set of meetings attended by a Content Analyst and the Mobile Development Leader to discuss new strategies of combining different types of multimedia content at ProductP: "Our idea is to combine both things, so every week we have this meeting, me and the mobile development leader, P5, so we can understand how different types of content are working, and how we could develop a way for the Content Team to provide more content of an specific type." (P3). A mobile developer also reported working together with a member from business to develop one feature: "Yes, we called her/him (business person) to work with us, especially for pedagogical concerns over the feature. We kind of developed the idea together, basically." (P1).

#### Technology teams proposing new features

From different interviews, it was possible to observe the technology teams idealizing features. Therefore, BizDev discussions happened in a way that technology teams reached the business sector to validate ideas, as well as to prioritize and justify their work.

One Mobile developer (P6) reported it was common for her/his team to come up with ideas for new features and reach Product team members to **discuss and validate these features**, using knowledge from the market. One Back-end developer (P15) stated that business teams would be receptive, listening to the new ideas and helping on the conception of new features, but would later demand data and metrics to really be convinced of its importance and validity. More details on this behavior at section 4.4.5. Some mobile developers (P1, P9, P4) reported that for one feature proposed by their team, they prepared a presentation directly to some of CompanyP's directors, in order to prioritize the



Figure 4.5: Axial Coding explaining codes related to Good BizDev Communication

development of the idea: "And then, we combined everything we had structured and we made a presentation to the CPO, that leads the Product Team, and that's how it (the new feature) moved on." ( $\mathbf{P1}$ ).

#### 4.3.2 Attributes and causes of a good BizDev communication

From many different segments of the interviews, we identified that business and technology teams were able to experience good BizDev communication. There was frequent exchange of information between BizDev teams, enabling them to stay aligned during different stages of development. We could observe BizDev communication in which business and development teams were able to understand each other and reduce communication noise. A strong characteristic of the BizDev communication observed at CompanyP was the presence of open communication, allowing information to be exchanged freely and quickly with no hierarchy restrictions. Even though we were able to identify several examples of good BizDev communication, this behavior is not present at all times. In Section 4.3.3 we present opposite situations. In this section, the following attributes and reasons of a good BizDev communication are discussed: **High Frequency of BizDev Communication**; **Business People having technology knowledge**; **Efforts to continuously improve BizDev Communication**; **Open communication at the BizDev interface**. Figure 4.5 illustrates the causes of good BizDev communication.

#### High frequency of BizDev communication

As mentioned previously, a high frequency of communication was observed between some teams: Backend Development and Content, Mobile/Web Development and Product, Growth and all Development Teams, Design and Product.

One main reason for the high frequency of BizDev communication was the creation of "core teams", which were multidisciplinary squads composed of people from Product, Design(UX) and Development. As the product analyst stated: "Who is the core team? It is the team that is shipping (the product), who is delivering things day-to-day, things to the end user. Who is this team: There may be a day when this team is mobile (development),
and day when it is Web (development). There are days when this team is Platform (backend). Whoever is shipping." (P14), and "So who is shipping the product: It is the Product Team, UX and Development. It's those three main areas, ok? These are the 'core' areas." (P14). The "core team" members communicated constantly with each other, participating in the same daily meetings.

The Content Leader reported on different statements that a higher frequency of communication resulted in a higher level of alignment between different teams, preventing communication issues that happened in the past. When asked about what could have prevented some past conflicts between her/his team and the development team, s/he stated: "More alignments, that's for sure. More communication itself, teams talking more to each other." (**P7**). S/he concluded that a higher frequency of communication between Content, Product and Development team also helped reduce communication noises: "And then I saw a large communication noise. (...) But today it is a lot better (...) And I think it is not only that we included more people in the communication, but that we communicated more. The Product Team, for example, did not have a weekly meeting with the Content team before. The Mobile (Development) team did not have this weekly meeting with the Product Team (...). So, I think the alignments did help; closer meetings; more constant meetings. Even though I hate a lot of meetings, (...), some of them are necessary." (**P7**).

#### Business people having technology knowledge

Technology knowledge from business people contributes to a good BizDev Communication as it gives business people a better understanding of the technical jargon developers use. With this knowledge, business people become more capable of understanding the technical complexity of the requests made to the IT sector and technical limitations, allowing both parties to engage in better discussions over effort estimation and technical problems. One Mobile Developer  $(\mathbf{P6})$  reported s/he felt explaining technical problems to a former Product Manager was easier because of the manager's technical knowledge. The Content leader reported that due to her/his acquired technical knowledge, s/he was able to question estimation efforts provided by the development team: "And then s/he said that to develop that WebView it would take one and a half month. So I started looking at that estimation and asked why it would take so long. A WebView should not take one and a half months to be developed. (..) And then the developer said: 'Actually there is another thing I need to do before the WebView, there is this other thing..' So I got the issue was another thing." (P7). Because of her/his technical knowledge, the Content Leader was able to perceive that part of the effort estimation given by the developer included prioritization on other tasks, removing a communication noise that would affect the project's planning: "And then we can prioritize the project as well. Because if s/he tells me that it will take one and a half months and I don't understand it (the technical complexity), every time I need to update that (the WebView), I will insert one and a half months on my deadline." (P7). One of the Content Analysts also reported that technical knowledge allowed her/him to perceive technical restrictions before even reporting to the development team, reducing the need of unnecessary BizDev communication: "So, if we

already have it (technical knowledge), even before we bring it to the technology teams, we can realize that it may have implications. Because we will have this previous knowledge, right? And then we can decide sometimes not to raise a feature request because we know we would be wasting time if we did. Because it would not be a priority, or because it would not be that easy to implement." (**P12**).

We identified different reasons for business people to acquire tech knowledge. As mentioned on section 4.3.1, there were cases in which technology teams would transmit information on concepts such as JSON to business teams. There were also cases in which business people had a previous technical background, as noticed by people from Product and Growth teams: "So, yes, a good fraction of people from Growth and CRM teams have a technical background. (...) Generally speaking, in our team, we have statisticians, people who studied computer science and ended up changing to another area, people that graduated in Mechatronics Engineering. (...) This proximity with technology turns out to make things easier, and overall it is not an obstacle. But this is something more related specifically to our team's profile." (P13).

#### Efforts to continuously improve BizDev communication

We observed people from both sides of the BizDev interface taking efforts to improve and promote the BizDev communication. These efforts were taken not only to increase the frequency of communication but also to make it clearer and more fluid.

Different developers (**P1**, **P6**, **P9**, **P15**) reported they would take special efforts to speak in a simpler way, avoiding technical jargon when possible and providing technical context when needed. The back-end developer reported: "When I talk to people from other areas, I always keep in mind that those people are not used to many terms that I use, so I try to avoid technical jargon. However, in moments when I need to use them, I usually explain what the jargon means first, (...) And after that I start referring to the jargon assuming that the person knows it." (**P15**). Those efforts from technology teams were perceived by one Content Analyst: "But I see a predisposition of the (Development) team to present this information for us (Content team) in a much clearer way, trying to level the information. (...). And to try to translate it to a language people from other teams will understand." (**P12**). When asked about their motivations to improve BizDev communication, developers reported leader incentive (**P9**) and also bad communication experiences in cases when technical jargons were used without proper understanding for both parts (**P15**).

A Content Analyst reported a similar effort to improve BizDev communication: "A learning I had was to, when talking with technology team, always try to ask for things being as specific as I can, (...) because they should not need to take assumptions, should not need to discover any particularity because I used a generic term." (**P3**).

The hiring of the product manager (**P8**) was also perceived as an effort to improve BizDev Communication (reported by **P2**). Some of the tools s/he introduced with this purpose were the centralization of all communication related to ProductP at a single Slack channel and the use of a common issue tracking system (Monday <sup>3</sup>) to all teams work-

<sup>&</sup>lt;sup>3</sup>https://monday.com/

ing with ProductP, centralizing information about feature's requirements, progresses and deadlines: "We changed that to be one common (issue tracking tool) for everyone. Which means that I, even though I'm not from the Tech team, I have access to information about what the (tech) guys are working with. So this will ease this exchange (of information), using one common Tool. (...) So, that was one of the points (of changes introduced). There were others. Like the common channel at Slack." (**P8**). Different people from business teams (**P2**, **P8**, **P14**) reported benefits of the unification of issue tracking tools: "And everybody is using 'Monday' today, Development, Product, Content. So it is easier for us to visualize what everyone is doing, at what moment, what's the progress of each feature." (**P2**).

#### Open communication at the BizDev interface

We observed open communication between the IT and the business sector at Company, indicating transparent exchange of information without the existence of hierarchical or bureaucratic barriers. Developers were able to easily access people from business to get clarification over requirements, present progress of development and also to bring business questioning.

As mentioned before in section 4.3.1, all of the six developers analysts interviewed (**P1**, **P4**, **P6**, **P9**, **P11**, **P15**) reported that, in moments when they needed clarification on requirements, they would directly reach whoever demanded the feature or possessed the information. Three developers (**P9**, **P11**, **P15**) also reported that they usually did not have to wait much time to get requirements clarification answers from business people, and one developer (**P4**) stated that the process of reporting development progress to and getting feedback from the Product team ran naturally.

Both the Growth Analyst (P13) and the Content Leader (P3) reported they observed all teams were open to receive questioning and suggestions about their work, having at the same time the freedom to reach other teams for the same reason. Both of them credited CompanyP's culture for this scenario. More on this relation between organizational culture open communication is discussed in section 4.4.1. In particular, different interviewees (P4, P11, P14, P15) reported that the business area was, and that it should always continue being, open for receiving business questioning from the technology area. The developers reported that people from the Product team were receptive to their business suggestions and questioning, and helped them validate their ideas for new requirements. The Product analyst stated that the ideal process for all project implementations would include a moment for people from technology areas to present their opinions.

One behavior observed at CompanyP that also indicates open BizDev communication is that members from business teams did not feel they needed to channel communication through Technology leaders, being able to reach developers directly to ask for new features, discuss requirements, track project progress, etc. This behavior was observed by several people both from business (P3, P8, P12, P14) and development (P2, P11, P15) areas. When asked about differences in quality of BizDev communication between tech leaders and analysts, the product manager stated: "In my conversations, I did not perceive much of that (difference). (...) I did not have difficulties in communicating to analysts regarding,



Figure 4.6: Axial Coding explaining codes related to Bad BizDev Communication.

for example, understanding of product's requirements, discussing, being able to uplift the conversation in terms of not staying only at a technical level (...). So with all of them (IT people) I never had the issue of trying to connect the business requirement with the technological ones." (**P8**). Although different business people reported they could reach analysts directly, many interview segments indicated that technology leaders would engage in more BizDev discussions than analysts. This behavior will be further discussed in section 4.3.3.

#### 4.3.3 Attributes and causes of a bad BizDev communication

Even though many interview segments pointed to the existence of good and healthy BizDev Communication at CompanyP, we were also able to identify attributes of a bad BizDev Communication. The lack of technology knowledge from some business people made it harder for them to communicate with development analysts who did not have good communication skills and were unable to avoid the excessive usage of technical jargons. We were also able to identify some impediments that prevent BizDev communication from flowing naturally, such as the physical separation of different sectors combined with a preference for face-to-face communication. As a consequence of teams having a bad performance at BizDev communication, we identified cases of misalignments and communication noises leading to conflicts such as product features being announced to customers before being finished, confusion over delivery deadlines, and different teams working on the same feature without realizing it. During this study, we gathered not only the reasons causing the bad BizDev communication, but also the improvement opportunities the participants proposed.

In this section, the following reasons and attributes of bad BizDev Communication will be discussed: Business Members Lacking Technology Knowledge; Development Analysts with Poor Communication Skills; Communication noises and misalignment at BizDev communication. Figure 4.6 illustrates the analyzed causes of bad BizDev communication.

#### Business members lacking technology knowledge

Different business (P7, P12) and technology (P6, P9) people reported that lack of technology knowledge by business members could harm the BizDev communication, mainly in cases of excessive use of due to issues from use of technical jargon. The difficulty development analysts had to communicate without using technical jargon is better detailed on the next subsection.

The Content Leader stated that people from her/his team felt intimidated in situations where too many technology jargons were used, preventing them from engaging in discussions with the technology team: "Overall, that is not much of a problem for me, but for some people of my team specially it is. So they sometimes feel... It's not even that they don't understand, but since there are words (technical jargons) they don't use, they feel intimidated to give an answer (to people from tech teams). 'I think I'm right, I think I understood. But I'm afraid to continue this conversation because I feel like I don't know what I'm talking about' (...) And then, they sometimes feel intimidated to even propose ideas. Because they don't have that knowledge, they can't speak the same jargons." (P7). One of the Content analysts reported that communication noises would occur in her/his conversations with the technology team due to this lack of knowledge: "So there are a lot of things, a lot of jargon, a lot of dynamics, a lot of operations we do not know. And then it ends up in communication conflicts, right? In which one person is talking about something like the other person was there as an equivalent, but that's not the case. And this situation creates communication noise that needs to be aligned." (P12).

Two mobile developers (**P6**, **P9**) stated they would expend more time providing context and explaining technical details in cases when business people lacked technology knowledge, which led to a slower BizDev communication: "Sometimes I feel that some (business) people have certain difficulty to understand how technology things work, and then (the conversation) starts to get... and then I need to sit and explain. Like technology for dummies, you know." (**P9**). One of the mobile developers (**P6**) also reported difficulty in explaining the different responsibilities of mobile and back-end development teams to Product people, which makes her/him feel insecure when stating that s/he wouldn't be able to work on an issue, since it would be the back-end team's responsibility.

#### Development analysts with poor communication skills

In the previous section, we discussed our observations on how the lack of technology knowledge by business members could harm BizDev communication. This scenario is worsened in situations where development analysts have poor communication skills, not being able to communicate without the excessive use of technical jargon. Development analysts lacking communication skills also harms BizDev communication when these analysts feel frightened to reach business people or when business people start to avoid communicating to these analysts, prioritizing communication with development leaders.

One mobile developer (**P9**) stated that communication and social skills varied among the members of her/his team. One Content Analyst also observed this situation, understanding the difference in BizDev communication skills among IT people was a reflection of natural differences in their communication skills: "And I think this (ability to explain technical jargons) is something very specific to each person. And (..) I think that it varies according to the communication skills of each professional. We know that there are people with better didactics and that can perform clearer communication." (P12). The mobile developer stated her/his opinion that, as IT people gain more professional experience, they increase their communication skills and, for this reason, technology leaders were able to help analysts to improve their BizDev communication: "So that's how the Leadership can help (help analysts improve communication). Getting closer to other people, from other areas, also helps. Because then you will be putting yourself in situations in which you need to communicate with people from different areas. (..) Then you will have to expose yourself in some situations. You will get tangled up, you will harden your skills, you will be learning. And that's when the point of professional experience and seniority comes in." (P9).

Regarding differences in BizDev communication skills among technology leaders and analysts, the Content Leader reported that analysts would have more difficulties communicating without excessive use of technical jargon and would sometimes try to avoid live BizDev interactions. S/he stated: "On the Mobile (Development) team, with the team leader, it is a little easier, s/he is a person that is able to communicate without speaking too technically. However, communicating with the analysts of the mobile team is a little bit harder. They are too technical, and are not able to avoid using a set of technical jargon." (P7) and "Generally speaking, the lower in the hierarchy, the less the members of the technology teams talk to other teams. They are afraid to talk, they seem shy to talk. And sometimes they don't want to engage on a call that would resolve the issues in five minutes, preferring to exchange messages for three days." (P7). When asked if tech leaders were more capable of abstracting technical jargon on BizDev communications than tech analysts, one Content Analyst (P12) stated that s/he felt that was true, and that s/he perceived that the tech leadership had better developed communication skills.

As discussed before in section 4.3.2, about the open communication at the BizDev interface, business people felt they did not need to channel BizDev communication through technology leaders. However, different business people (**P7**, **P12**, **P13**, **P14**) and developers (**P1**, **P4**, **P15**) reported that technology leaders would engage in more BizDev discussions than tech analysts. Business people reported the majority of their communication with the development area was directed to the tech leaders, while the developers stated their leaders engaged in more BizDev discussions than they did. From this study, we were not able to establish a direct relationship between the lack of BizDev communication skills from tech analysts and the preference of business people for talking to technology leaders.

#### Communication noises and misalignment at BizDev communication

As mentioned in the previous sections, there were times when the use of technical jargon by developers led to communication noises. The opposite behavior was also observed, when the back-end developer communicated with the marketing team and business jargons were used: "Now, I think that with the remainder of the Marketing team, the difficulty (that I have) with jargons is big. Because there are... I feel there are many acronyms, at a lot of

moments, and each acronym has a meaning, a context. So I think that it's a lot to have in mind, and in their case (Marketing people), they already do. But sometimes when we need to communicate, we end up getting lost on our way to understand each other." (P15). Another reason for communication noises at the BizDev interface the back-end developer perceived was the lack of context, when business people reach tech people assuming they already have the necessary business context for engaging in conversation: "Because some people, when they come to talk to you, they have a context in mind, and sometimes they don't transmit this context to you beforehand. And then you start to understand some things, or make conclusions based on a knowledge that is not complete. And that can sometimes lead to features being implemented in a wrong way, obstacles being created, deliveries being delayed." (P15).

Another cause of communication noises was the physical structure of CompanyP, in which some business Teams were located in different cities than the development teams, combined with a bad performance at asynchronous writing communication. Several participants (P1, P2, P4, P5, P6, P9, P15) reported that, on CompanyP, the preference was to communicate in person or through audio calls, and some participants also stated one motivation for this preference was to avoid loss of information. One Mobile developer reported: "Normally, I prefer to go and talk with the person directly. I don't like talking on Slack very much, because on Slack we usually lose information. I prefer to sit with the person and say: 'OK, explain to me how it works'." (P9). On this matter, the Mobile Development Leader also stated a belief that communication noises occurred on written communication and that written communication was slower: "What I like to do in general is to go and talk to the person directly. If I am not able to do that I always try to talk through another channel, but through a channel that allows communication through audio, not by text. Because we have this severe problem here at CompanyP that is communication. One person says A, repeats A, says A again, and the other person understands B. (...) I can, in five minutes of conversation, communicate what would be worth thirty minutes in (written) chat. So I think it (talking through audio) gets a lot easier to understand what should be happening, why something has been done." (P5).

Given a set of analyzed attributes of the BizDev communication at CompanyP, we concluded the physical separation of some business and development teams represented a relevant source of communication noises. The physical distance between some teams prevents communication in person to happen. In parallel, we already observed development analysts tend to avoid audio conversations and the performance at written communication was poor, introducing communication noises and being slower than audio communication. This behavior would prevent some alignments to happen, as perceived by the Designer: "It happened a lot for them (people from other offices) to make decisions on corridor conversation, or on conversations happening on their work desks. And, since I wasn't on their daily routine, I wasn't involved." (P2). One Mobile developer credited the physical distance as a reason for bad communication with the content team: "Oh, the communication) usually written." (P1). A Content Analyst also stated the importance of face-to-face communication, when discussing the reasons for her/his difficulties when communicating with IT people: "But I have already pointed out to my leader that I felt some difficulties

talking to the technology team, and I think it may be due to some aspects. The first is the geographic distance, because the entire (development) team stays in another city. And of course, we know that when you have more daily contact the communication is facilitated. We begin to understand better how to communicate with each team you know." (P12).

From different transcriptions, we observe misalignment between BizDev teams: "We did not visualize what the other teams were working on, and who were the responsible ones, the responsible areas for every project." (P12). One mobile developer (P9) reported that, due to misalignment, her/his team was working on the idealization of a new feature for the project at the same time another team (Business Intelligence) was also working on it. S/he also reported a case when a misalignment between her/his team and the Marketing team resulted in a feature being announced to the customers before being finished by the developers. On this matter, s/he reported: "Many times, it happened that we were doing something and then we discovered the other (team) had already done it. That happens with a certain frequency here. So, I saw this happening many times, like I had the plan of doing something and realizing the Product team had plans to do the same thing. There was a case with the Marketing team, when they had not talked to the technology team to check if (the feature) was ready, and we said it wasn't ready. But then, they had already sent an email, you know..." (P9). The mobile developer believes this misalignment was partially caused by the lack of a direct communication between the Mobile Development and the Marketing teams, communication which was being channeled through the Product Team. The full stack developer (P11) also stated that channeling BizDev communication through the Product team led to situations where communication noises occurred. Finally, the Content Leader also reported cases of misalignment and communication noises between the Content, the Product, and the Mobile Development teams. The bad performance at the communication among those teams created confusion over definition of deadlines and also about whether one idea should be implemented or not: "But then I had decided one deadline, and another person decided on another deadline, and each one of us ended up with different deadlines. And the information reached a third person, when the Product team passed it (the information) as a third different deadline. (..) And then, when the information reached me, I said that was not the deadline and those were not the things (feature scope) we had chosen. So, I perceived a big communication noise." (P7).

In Section 4.4.5, we discuss how misalignment between Business and Development allowed developers to define requirements and make business decisions without knowledge of some business areas, harming those areas and the product.

#### 4.3.4 Improvement Opportunities for BizDev Communication

During the interviews, we asked participants about improvement opportunities for the BizDev communication. Their answers are summarized in Table 4.2, alongside with the participants that proposed the improvement.

#### Increase frequency of BizDev communication (P12, P13)

Even though we already observed a high frequency of communication between some BizDev teams, the Growth analyst and one Content analyst stated there's still opportunity for increasing the frequency of communication with technology teams. The Growth analyst stated: "Especially from the business side, but also from the other side (technology), we should err on the side of overcommunication." (P13). The content analyst (P12) stated that if s/he communicated more with the development team, s/he would build a closer relation with the team, which would facilitate future projects.

# Diversify communication methods, documenting conversation and business decisions (P13, P15)

The growth analyst and the back-end developer stated that diversifying communication methods, avoiding using only live audio conversation is an opportunity for improvement for BizDev Communication. The back-end developer proposed documenting business decisions as a communication improvement: "But I think that another aspect that could improve the (BizDev) alignment is more documentation. Because sometimes business decisions are made, but for other people to know what those decisions are about, they would need to talk to other people, constantly going after the whole context, and then making new alignments to get updated on this context." (P15). The Growth analyst also stated that diversifying communication methods, using written communication, could prevent communication noises: "It's about trying to explain the same thing in different ways. For example, let's take a meeting made through (audio) call. We could maybe try to document it through Slack or through email, to explain it properly and leave everyone on the same page. Because sometimes what is spoken (in audio) can be perceived differently by different people. And then what was aligned is not necessarily clear." (P13).

#### Involve more business analysts on BizDev discussions (P12)

One content analyst noticed that her/his leader participated in frequent meetings with tech leaders, and there is opportunity for more non-leaders to engage on BizDev discussions: "And that sometimes it (BizDev communication) gets restricted to leaders, alignment between leaders. And I think, for example, if we had some broader alignment, where everyone could participate, (...) I think these initiatives could improve a lot the alignment between different teams. And I think in the long term this would contribute a lot to

Improvement Opportunity	Participants
Increase frequency of BizDev communication	P12, P13
Diversify communication methods, documenting conversation and	P13, P15
business decisions	
Involve more business analysts on BizDev discussions	P12
IT people should abstract technical details	P8
Business area and tech leaders should provide more business context	P8
to tech analysts	
Translate strategic goals and KPIs into more applicable concepts	P8

Table 4.2: Improvement Opportunities for the BizDev Communication

improving the communication between the teams" (P12).

#### IT people should abstract technical details (P8)

The Product Manager reported an opportunity for communication improvement for technology members, through the abstraction of technical details on BizDev conversations: "And at the Tech side, I think on the continuous improvement of information synthesis. It's very common for us to get stuck on technical details because they (tech people) get excited discussing it. (..) And then, we start discussing minor details. On specific conversations, that's nice. But in a broader context, you lose the listener. You lose the Designer, you lose the Product Manager, the director, because that (tech details) are specific to your (tech people) daily routines." (**P8**).

# Business area and tech leaders should provide more business context to tech analysts (P8)

The Product Manager stated that if tech analysts had more business context, they would become more able to understand business goals, identifying that sharing this context on conversations is an opportunity for Bizdev communication improvement: "I think, from our side (business area), we need to bring more information about the 'Why' of things. So, one thing people usually complain (..) is that tech people get stuck in the technical world. So, if you don't take active efforts to transmit information that you have access to, about why that feature is being implemented, why was that requirement created for, what is the business goal... if we don't discuss this type of information, there's no way for us to expect that people around us (..) will share this concern, will share this context. So, if you don't transmit this (business) context, the (tech) person will only stick to the context s/he knows. So, people in leadership positions, especially those who are in Product areas (..) need to make efforts to transmit this (business) knowledge." (**P8**).

#### Translate Strategic Goals and KPIs into more applicable concepts (P8)

The Product Manager identified that strategic information was widely available for everyone at CompanyP, but that didn't mean all people could make good use of that information: "So it's not enough, for example when you talk about metrics, to just say: 'that's the D1 retention'. What does retention mean? Have you explained to the people how you look at retention (data)? How is it connected to the product's engagement? How do you look at this data to determine if the Product is moving to a good or to a bad path?" (**P8**). S/he identified that leadership could translate the strategic information into lower levels, into more applicable information: "So that's when we enter as leaders, as Product managers, to fill this (information) gap. (..) And you have to break this information into smaller levels, until you reach something that is applicable." (**P8**).



Figure 4.7: Axial Coding explaining categories related to the main phenomenon: 'IT sector acting in business'. This network illustrates the summary of the results regarding IT people's performance in business.

## 4.4 IT Sector acting in Business

The main phenomenon that emerged during this study was people from the IT sector acting in Business. From several different interviews, we observed development analysts and leaders working on the definition and prioritization of requirements, analyzing business indicators, engaging in brainstorming sessions for coming up with new ideas for ProductP, and even presenting their feature propositions to CompanyP directors. We could observe that the organizational culture presented great influence on this behavior, motivating IT people to take an extra step to impact the business. Also, some roles possessed responsibilities that motivated and support IT people to act in business. Cases of collaboration between development and business sectors and also cases of IT people working isolated from other areas characterize such performance. This performance was also characterized by being very data-driven, with IT people constantly extracting metrics and using it to validate and justify their work in business. Another attribute of this performance is that there were moments in which technology and business areas disagreed on business strategies, engaging in healthy discussion. Among positive results of IT sector acting in business, we analyzed one specific case in which this behavior led to the creation of a new business unit. Figure 4.7 illustrates the summary of these results regarding IT sector acting in business. In the next sections, the aforementioned topics will be discussed with more details.

#### 4.4.1 Motivations for IT Sector to act in business

#### Organizational Culture's Influence

There are different cultural aspects and values motivating technology members to get involved in business, as different interviewees (P5, P8, P10, P13, P14) reported these being strongly present in employees' routine and shaped their behavior: "The values, on CompanyP, are very intense, very strong. We believe that everyone one who works here should have the company values, should apply CompanyP's values on a daily basis." (**P5**). We observed tech leaders would take effort to share and enforce the company's values to their teams, as mentioned in the interviews (**P5**, **P9**, **P15**, **P11**): "So we work that (values) on the one-on-ones<sup>4</sup>, I work on it a lot on every one-on-one that I do, every other week, and I'm always enforcing the values, demonstrating with examples." (**P5**).

One of the company's values is about the sense of ownership towards the company and its products, encouraging employees to take an extra step to impact the business: "One of the values that I like the most, one I would say it is the first commandment, is the sense of ownership, because by the time you become the owner of something, and you care about that something, you will want to give your best for it to work (...) The company makes you feel like an owner, it empowers you, and shows that you, regardless of your position, can *impact the company strategy.*" (P10). Through this value, IT people are motivated to get business knowledge, to monitor product indicators and to try to apply this knowledge by getting involved on business decisions and decision-making processes: "We always have this aspect of being very involved on the business, and it is CompanyP that encourages that (behavior) a lot, and we always have this behavior of extracting some kind of data, or being involved on some type of decision, or be planning some new feature." (P9). More detail on this data-driven behavior is reported in section 4.4.5. We observed that tech leaders would specifically try to motivate their teams to acquire and apply business knowledge, constantly bringing information about the company's strategy: "So, at that time, my leader shared a lot with me about it (business knowledge). S/he tried to make me pursue this knowledge... understand this type of flow." (P11). As mentioned in section 4.3.1, the behavior of sharing business and strategy information was also performed by CompanyP's business leadership, through presentations such as the Monthly alignment meetings and the biweekly meetings where the CEO would share business results.

An important aspect of CompanyP's environment was that all teams were very open to receive suggestions and questioning, with technology teams able to bring business discussions to business teams and vice-versa. Different people credited this behavior to company's organizational culture (**P3**, **P5**, **P13**). The Growth analyst stated: "The receptivity (when bringing discussions to the technology team) is very good, and I credit that to CompanyP's culture, that overall, all people, specially the ones in leadership positions, are very open to receive suggestions, and they are also very comfortable to give opinions on what we are proposing." (**P13**). This cultural aspect enabled IT people to bring business discussions to business teams, since they were open to this type of conversation. When asked if IT people would bring content suggestions to her/his team, one Content analyst stated that "It happens all the time. It happens a lot, and I believe that it has to do with the culture of our company (..) And I think it is very nice, because I have the freedom to do the same questioning to other teams." (**P3**). The Mobile Development Leader shared that this incentive was present from the beginning of her/his career at CompanyP and

 $<sup>^4</sup>$  "A 1-1 is a dedicated space on the calendar and in your mental map for open-ended and anticipated conversation between a manager and an employee." (https://wavelength.asana.com/workstyle-what-is-a-1-1/ )

that, as a leader, s/he also motivates her/his team to exercise this behavior: "And that is kind of part of our culture, and even though it is not one of our declared values, this liberty and lack of barriers is something that always existed at CompanyP. Ever since I started at CompanyP this exists." (**P5**).

Another cultural aspect motivating IT people to work beyond development and take efforts to impact the business was the meritocracy, as reported by the Product Analyst: "There are people who think (..) that the company is giving you the opportunity to learn and to have a revolutionary idea. (..) On the company's routine, that stimulates the behavior of 'I'm going out and start doing things, because if I do something I will stand out, if I stand out I will get a good evaluation, if I get a good evaluation I will get a better job position, I will earn more influence, I will become a leader..'. Because that's what happens, people are being congratulated when they achieve great accomplishments. (..) The main issue is when this becomes a behavior to be pursued by others, by everyone. So, everyone is trying to get their own great accomplishment." (P14). S/he continued describing Company P was constantly stimulating employees to propose and develop ideas for the company, and that not only employees were fond of this stimulus, but that great products were built on that behavior, which : "That is stimulated. If we say it's not, we would be lying. It is stimulated. And a lot of cool stuff is built due to that stimulus. And there are people who are not bothered by that, that enjoy it, that say 'Man, that's awesome! Company P is giving me the opportunity to build a lot of cool things!'. So, Company P is the place for you, this is the culture of going and building things." (P14). The Product Analyst also reported that the meritocracy would encourage IT people to act in business in an isolated way (see section 4.4.5).

#### Responsibilities motivating and supporting IT people to act on business

In section 4.2.3, we reported that different responsibilities from technology and business people would motivate or support IT people to act on business. The responsibility over customer's retention and engagement reported by developers motivates them to acquire business knowledge. The Product Manager's responsibilities of spreading information and involving more teams on decision-making processes also acted as an influencing factor for IT people to acquire business knowledge and participate in business decisions. Finally, the responsibility of the Product Analyst of validating technology teams ideas for new features support their work on requirements' definition.

# 4.4.2 Factors that improve or make ease for IT sector to act in business

#### Process reengineering project

Between the first and the second phase of interviews, a project for restructuring company processes happened at CompanyP. The Product Manager (**P8**) organized and led this project, and different participants (**P2**, **P8**, **P12**, **P14**) reported its effects during the second iteration of interviews. Through the democratization of decision-making processes, this project facilitated and improved the performance of the IT sector on business by

naturally involving IT people in more business discussions and also by helping to prevent cases when IT people would act on business without properly aligning some business areas.

The reengineering project introduced a development cycle where different teams would participate in phases of goal definition, ideation, development, and reflection. On this new project cycle, the Product Manager summarized: "So basically that's it: first, we have a moment of definition of goals. Second, a moment of ideation, involving all of the main areas responsible for that delivery. And a third moment of implementation, bringing this job for the day-to-day and making its delivery. (..) And then, to do it we had this kick off (meeting), so everyone participated, defining the project's scope. There were weekly meetings of follow up. (..) After the feature was released, we had a moment of data collection, to check 'Had we achieved the result that we wanted? Had we not? What went wrong? What went right'." (P8). One main difference introduced by this cycle was that different teams from both business and development areas engaged on all the stages, giving IT people the opportunity to propose new ideas and give feedback on ideas proposed by business people: "So we declared, validated... the Product area validated these objectives with the board. Presented them to all the teams working on the app, collecting feedback to understand: 'This makes sense, this doesn't. Is there something wrong with this objective?'. If there was nothing wrong, and the objective was approved by the board and by everyone on the team, we went to a second phase of ideation. Then the teams of Design, Tech, Growth, and any area involved with Product development were invited to give suggestions for us to work on that issue. So, it was an opening moment, we collected the ideas brought by the areas. We prioritized them according to the information we had (..) so we could return to the teams and for each of those items (that composed the idea) we would involve the main responsible that would work for it to be delivered." ( $\mathbf{P8}$ ).

In order to achieve a more transparent exchange of information and a better democratization of decision-making process, the Product Manager introduced a set of changes on ProductP's workflow. The Roadmap meetings and the multidisciplinary daily meetings (both presented in Section 4.3.1) were introduced on the reengineering project. The concept of 'core teams' (presented in Section 4.3.2) composed by people from Development, Design (UI/UX) and Product was also established after the reengineering project. The centralization of communication on a single Slack channel, alongside with the decision of using a single issue tracking system common to all teams working with ProductP was also a decision made on this project (both decisions detailed in section 4.3.2).

As a result of the process reengineering project, the UX designer reported more involvement from the technology sector on business discussions: "So, I take part in this moment of planning, on how we are gonna do things, how we are going to prioritize it, it's all done together with the product team. Generally, in the old days.. (..) before we had this.. I'm gonna call it 'revolution' on ProductP... Usually they (Product Team) would bring the priorities and I wouldn't participate much on this part of planning and strategy. My participation was more about how we would solve the priorities they were bringing. More in terms of the solution itself, not in terms of planning or strategy. But now (P2's participation) it's been since the beginning, for everything that we do." (P2). The Product analyst reported that developers also started participating more on business discussions after the first cycle of the reengineering project: "So, for all of our initiatives of the cycle like 'what do we want to solve? That's how we are going to solve it', doing the follow ups to design the feature and then following up how that feature performed, all of this is super important to democratize. So, in this process, I had a lot more participation from P7 (Content leader), more participation from P2 (UX Designer), more participation from the developers, that before used to stay too much behind P5 (Development Leader), and are now more participative on all of this." (P14).

When asked about whether there were moments when IT people would make business decisions without aligning with other areas, the Product Manager reported these moments had become rare, since after the reengineering project, development and design team become closer, and due to the creation of shared meetings and to the centralization of tools, there were now security measures preventing this moments from happening: "So yeah, afterall, we ended up not having this anymore. At least I didn't notice any other big update on the product that did not have everyone's understanding. Because that would hardly happen now, given that we have daily meetings presenting work. We have all the work communicated and shared through Slack channels. We have it documented on Monday (Issue tracking Tool). So you have a lot of security points in order to guarantee that doesn't happen. You have weekly meetings, in which we keep track of the delivery. So, tech and design teams align themselves. Or align themselves with other areas." (**P8**).

Regarding the results of the process Reengineering project, the Product Manager concluded: "The project allowed the areas to start to connect themselves around a single purpose without needing to make big changes on the day-to-day. So, without inventing a lot of processes or practices that would impose a lot of restrictions (...) By involving everyone to discuss 'So let's go in that direction. How are we going to reach it?', then you have Tech, Design, all areas involved, discussing and trying to come up with a solution. That was the most interesting part. At least I liked seeing everyone working this way a lot. They feel, indeed, more part of the process, a little more owners (of the product), because they effectively can have influence on that result." (**P8**). This feeling of becoming more influential on the company's results and this feeling of ownership towards the product strongly connect with CompanyP's values and organizational culture that would influence IT people to act in business (as detailed in section: 4.4.1).

#### Open communication at the BizDev interface supporting IT people to act in business

As discussed in section 4.3.2, we observed open communication between the IT and the business sector, allowing transparent exchange of information without the existence of hierarchical or bureaucratic barriers. This behavior facilitate IT people to act on business, since it enables them to ask business questions to other areas and to reach business people for validating their ideas for new features and requirements. It also allowed developers to present business proposals directly to directors, as reported by four members of the IT sector (**P1**, **P4**, **P9**, **P10**). This easability for proposing new business ideas is discussed in more details at section 4.4.4.

#### 4.4.3 IT people working on prioritization

Eight participants (P3, P4, P5, P6, P7, P9, P11, P15) reported that people from the IT sector worked constantly on the prioritization and re-prioritization of requirements and tasks, performing both autonomously and alongside with business people. We observed the entire development team was able to take part in prioritization sessions. One characteristic of this involvement was being strongly data-driven, with developers constantly when justifying prioritization for features and requirements proposed by the technology team itself. Details on this data-driven approach discussed in Section 4.4.5.

The Product Manager (**P8**) and the full stack developer (**P11**) reported moments when business people would include developers in conversations and meetings for discussing prioritization for ProductP. Through the new development cycle introduced during the process re-engineering project (see Section 4.4.2), developers were included in early ideation and prioritization discussions. The full stack developer (**P11**) reported the Product Analyst (**P14**) organized meetings for defining and prioritizing the next steps for ProductP, which involved people from Product, Growth and Content teams, alongside with **P11** representing the development team: "And then we discussed, check if there was anything to include in the Backlog, and then s/he (P14) wrote the requirements with us. So, in those meetings, I was there more for this reason, to bring what had really been implemented in the (web) page. (..) Try to bring priority, try to bring this type of thing. What was being developed, what could be developed next, you know, try to define priority as well." (**P11**).

Different participants (P3, P4, P7) reported moments when business people would reach the development team to negotiate prioritization for some features. Those moments of negotiation were reported by a content analyst as being healthy and transparent: "I believe we have a very close relationship with the platform (back-end) team, and a very transparent one. Usually, if I ask something that is a priority for me, they (platform team) will just need to say: 'Look, we will have some difficulty prioritizing this, because we have this, and this, and that as a priority, and we are going to take this amount of time'. And I found it nice that the time quantification is good, I find it slightly better than other areas, because I will get information on how many weeks it will take. And I think this is a very good thing, it gives me confidence, since there are things I can afford waiting weeks to be done, and there are things I cannot. And, transparency on the workflow of every team is the most important thing. If there is something locking my work, I just need to present this information (to the platforms team)." (P3). The Content leader also stated this behavior: "Overall, the technology team presents me a prioritization that makes sense. Like, 99% percent of the time. (..) From the moment it (Content Management System) crashes, then the priority is changed for good. And, usually, we won't even come to discussion. It crashed. And then, the Technology team itself will change the priority and everything works fine." (P7).

On their daily routine, developers reported the development team itself would prioritize their tasks: "We have a Trello<sup>5</sup> board with a backlog of all the tasks, which we will

 $<sup>^{5}</sup>$ https://trello.com/en-US

take in order. They are sorted by a priority that we define kind of informally." (P1). The Mobile developer  $(\mathbf{P1})$  also stated that after finishing a task developers would autonomously assign themselves to the next task on the priority queue. Another developer (P4) reported that the priority of each task would be defined by the developers who registered the task at the Trello board, after the developer had discussed with the Product team about their expectations for this task. In a scenario where it seemed like a delivery would not meet the planned deadline, developers (P1, P4, P5, P9) reported autonomy from the technology team to prioritize which parts of the feature would be deprioritized and removed from the delivery. When developers decided to prioritize work on technical debt, some kind of justification to the business could be necessary: "I think the business team tends to be more demanding on data over the reasons why that (work) needs to be done. That includes, for example, one point you mentioned, like a technical debt. It's something the technology teams need to do, and that will result in something from Product (Team) not being delivered, not being developed. So we need, in these situations, to always present the 'whys' of how those problems are affecting us, or how solving those problems will increase our productivity or enable us to develop that functionality that Product (team) wants us to develop." (P15).

Although priority discussions between development and business areas were seen as healthy and transparent, there were moments when business people did not take in consideration priority propositions made by the development team. The Full Stack developer (P11) reported a case in which s/he suggested prioritizing the extension of a web page to enable an international monetization flow, extension which would not demand a large amount of work time from any team. S/he spent a lot of effort trying to convince business people, but in the end was not able to get prioritization from them, even though the business people had verbally agreed to prioritize that implementation: "There were sometimes when I wasn't able to achieve it (convince about prioritization proposal). Even though I considered it very important (...). I think some things I suggested were a bit aggressive. let's put it that way. But no big deal, you know, it's just that there were those things that until today have not been done. (..) And I don't know exactly why. If it is kind of some fear, if they are not giving so much priority to this project (...). But like, I talked to the technology manager (P11's boss) and s/he said it made a lot of sense, so s/he also shared my opinion. Now, if those things were not made due to a Product (team) decision, or if they weren't made due to the Growth team's decision... Or simply because they thought my idea was bad, I don't know. (..) The only part missing was the translation of the checkout page. And I was like 'Why don't we do it? The payment integration is already finished!'. And then, the last thing they said was: 'Oh, ok, fine, we will do it'." (P11). The Product Analyst  $(\mathbf{P14})$  reported a case in which the development team had extracted relevant metrics for some prioritization and brought that information to high business leadership, but that was not enough to get the desired prioritization: "So, with that being said, I do believe the Mobile Development Leader (P5), (...), tried to reach the Product Manager, the product Director, but that is not enough. And I don't know how to explain the reason, but it's just not enough. I've seen many times P5 trying to run after some things that I thought were very nice, with data, all tied up, and then the idea changed. Because, again, the decision-making process is not clear. So, when the information reached the board, they

would process it and return it to us, it's not very clear to me how that information was handled." (P14).

#### 4.4.4 IT people working on definition of requirements

One interesting behavior observed in this research was that people from the IT sector were constantly engaged on tasks for defining requirements for new features, both by participating in discussions with business people and by incubating ideas for new features within the technology team.

Different people (P2, P8, P12, P13, P14) from Design, Product, Growth and Content teams reported they would reach developers at early stages of requirements definition, not only for the developers to bring technical feasibility information but also to obtain their opinion over the strategies being discussed. A Growth analyst reported s/he would involve IT people when her/his team started working on a proposition of new features for the product: "... And then, we would involve the technical teams. And the idea is that this discussion happens not necessarily when the solution is relatively finished. We will, still during the analysis phase, reach the people involved and the specialists on that matter so they can give their opinion over the solution we are developing." (P13). According to the Product Analyst, the ideal process for new features to be implemented would include getting opinion from the Development team: "(...) following what I believed to be the ideal process, that is: Build (solution) with the designer, bring to development leader (P5), P5 gives her/his opinion, P5 develops, I will raise results data, and then present the feature's results to them. (..) That was the process." (P14).

The new development cycle introduced by the Product Manager (**P8**) after the Process Reengineering project (see section 4.4.2) also included different moments for discussing definition and validation of requirements, in which development people would be involved. On the majority of these moments, as well as on the Roadmap and Follow Up meetings, the entire mobile development team would participate. However, the Growth analyst reported that development leaders and specialists would be able to bring better business insights: "Overall, (...) the people in more senior positions, they are more capable of bringing insights to the feature, looking to the business, not necessarily thinking only about the technical solution. (...) There are specific people on the analyst (non-leader) level that can also participate on that level of discussion easily, and propose, bring insights and changes on this matter." (**P13**).

One content analyst (**P3**) mentioned that it was very common for her/his team to receive Content suggestions from IT people, and that s/he was very receptive of this behavior. When asked about the impact of these suggestions, s/he reported: "I don't know if there were big changes, but there were small changes for the better, that's for sure. (...) So, I think it happens. It's positive." (**P3**). S/he proceeds detailing a case when someone from the IT sector was able to observe a possible problem in a video content, suggesting changes that were well received by the Content Team.

We observed IT people constantly idealizing, defining, and implementing new features for ProductP. From several segments of interviews, we observed that **nine** features proposed by developers ended up being implemented and released as part of ProductP. Besides proposing new features that would be directly integrated to ProductP's mobile app, there were also mentions of IT people idealizing business flows focused on optimizing and automating recurring demands of business teams. The back-end developer detailed one of these cases: "So this integration and the idea of this platform, it came from the (development) team itself, it wasn't something that was idealized by Product (team). The Product team had a problem at hand, but also did not know very well how to solve that. So with that idea, which we initially had planned on using only from one specific partner, a new business model had arisen. (...) So, it was a solution that was born kind of attached to a specific partner, but ended up becoming a business model that today is supporting a lot of partners." (P15). The Head of Technology pointed out that IT people were able to impact the business by coming up with solutions to optimize and reduce operation costs: "We observe the technology area impacting the business through cost reduction projects, and I saw that happen many times through the years, by effectively increasing product's margin and making it more viable. Be it through video compressing, through a new form of file distribution, Cloud provider configuration, cleanup, etc." (P10).

IT people also made two business propositions that ended up originating two different products inside CompanyP, leading to the creation of a different business unit focused on these new Products. When asked about new features being proposed by the technology area, the back-end developer replied by mentioning one of these products: "There is the case of this Product, that was proposed by the technology team. And in that case. it was a very big case indeed. It is always mentioned, so it is the first one that came to my mind. In this case, they were trying to improve some product engagement indicators, and by trying to improve these numbers they came up with the idea of introducing a new feature based on a prototype that P10 had already implemented in the past. So, there was this feature that originated from the technology area, that was discussed with a lot of IT people as well, specially from the mobile development team. Then, they validated the idea, implemented it, and the results were very good. Today, it even became a success case that was presented in many places." (P15). Even though we gathered a lot of information over different cases of features and requirements proposed by the technology team, different participants (P1, P11) shared that the majority of requirements would still be proposed by the business area, and that most of the proposals made by the technology team would be for relatively smaller features. Two exceptions for this scenario were these two products idealized by the Head of Technology (P10), which were considered to be very successful and also led to the creation of a new business unit inside CompanyP. This exceptions will be further discussed in section 4.4.6.

The Mobile Development Leader stated that thinking on new features for ProductP was part of her/his routine: "Currently, I'm very tuned to how ProductP is doing as a Product. So I am very tuned on marketing actions for us to revert issues that we are facing. Currently, it is the churn. So, I'm working very closely on how we should target our marketing, which people we should be targeting. (..) I also work very close on.. creating features that will be released, so I am very close of Product (team), thinking on how ProductP should proceed, what news should we bring to provide more values to the user, or different ways for us to monetize, to think outside of the box, things like that." (**P5**). One mobile developer also reported this vision that working on definition

of requirements and business directions was part of the development team's routine: "So then we get everyone together and we discuss what will be the next steps(..). We will sit together, everyone will talk about how it's going to be. So there is a lot of this dynamic of programming but also of talking about what's going on at the business side as well." (**P9**). Due to this kind of routine, the same mobile developer reported her/his vision that the development team behaved like a projects' team: "I would say that it (the team) is not just technology anymore. Because if you have projects being generated, it's not only technology, I would say it's almost a project's team. (..) I mean, because if we were only technology, theoretically it (the routine) would be 'send it (issues) to the (development) team and they will solve it', but we have been generating a lot of projects from inside the development team as well." (**P9**).

Different mobile developers (P1, P4, P5) reported they would constantly engage in Brainstorming sessions to discuss solutions for the most relevant business issues affecting ProductP, and those sessions were moments in which ideas for new features and requirements would be proposed by IT people. The Product Analyst reported that these brainstorming sessions would be attended by people from the Core Team: Product, Development and Design. The Product team defined the topics discussed on these sessions, but all attendants were able to propose ideas: "The people from Product (Team) raised (the issue) that we needed to test new monetization methods on the Android App, so the idea was born on a Brainstorming session that everyone attended. It was an idea from the IT people, but on a Brainstorming (session) with everyone. And then it was developed and it's currently live. So I don't see it that way... there is no written rule that it (idea to solve the business issue) has to come from Product (Team)." (P5).

After coming up with ideas for new features for ProductP, developers would be able to reach business people to get initial validations, as stated by P6 and P15. In those situations the Product team would use their business and market knowledge to help validate if the proposed idea would be viable at the moment and if it had already been done before. As mentioned in the section 4.4.3, business people would help with initial validation of requirements and prioritization proposals made by IT people, giving tips and guidance for them to proceed. But, at a later stage, they would demand more detailed metrics and motivation to fully commit to supporting and prioritizing technology team's ideas. When preparing the idea to be sold for business areas, IT people would work on the definition of an MVP (Minimum Viable Product), prioritizing a subset of attributes that would compose the first deliver of the proposed feature: "We imagine that there won't be enough time to deliver all of this. We think we will be able to deliver this, minus these other features. If we have time,  $(\ldots)$ , then we can expand and go deliver some more. But we will try to aim for this minimum, MVP really. This we can afford to *deliver.*" (**P9**). The Mobile developer reported that the composition of this MVP would be constrained by some deadline imposed by the Product Team: "Because we had an idea of what we wanted, but who would indeed define the deadline, was the Product Team. (..) So in a certain way, the constraints of when it should be delivered came from the Product (Team), so it guided our requirements somewhat." (**P9**). The Mobile developer continued detailing that even though the Product team imposed a deadline for the first delivery, the decision of which requirements would be removed and which would remain on the

MVP was made by the development team. For some proposals, developers (P1, P4, P9) shared that the final stage would include structuring a presentation with all the acquired metrics and planning and present it to the high leadership of CompanyP: "Then we build a presentation. We presented it to the Director of Product, to the Product Manager, to the Head of Technology. The Head of Technology even helped us to make some changes, polish the presentation a little. And then the Director of Product said 'It makes sense, let's do it'. Then s/he helped, talked with the Mobile Development Leader and then we started the idea's prioritization in order to be able to develop it." (P9).

#### 4.4.5 Characteristics of IT people acting in Business

#### **Data-Driven** Approach

We observed overall IT people working in a data-driven manner, constantly extracting metrics and indicators, and using them to guide business decisions, especially guiding prioritization and definition of requirements. One mobile developer (**P9**) reported that it was part of Company P's organizational culture to demand that developers be constantly extracting and monitoring data. Besides CompanyP's culture influence, s/he also hold the personal opinion that extracting and monitoring data was important for making business decisions: "I think we would be blinded if we didn't extract data, we wouldn't know where to go. It would be important for us to know if what we've done was important, if it impacted (the business) somehow. Because, otherwise, we wouldn't be able to make the next decision, of whether we would keep investing on the feature or if we would invest on other things. That could be more useful and have more impact. So I think having a minimum amount of data is always important." (P9). The back-end developer (P15) and the Content Leader (P7) also reported that IT people would tend to trust more business decisions if they were based on data: "But overall, I trust the decisions made by the business team. Because they make a lot of sense and, I usually understand, even because they usually bring data. And I feel that they are increasingly bringing more data to support their ideas and their propositions. So, especially when they bring those data, the level of trust on those propositions increase." (P15).

Several members of the IT sector (P1, P4, P5, P6, P9, P10) reported extracting and monitoring data as being a frequent activity, part of their routine: "So we try to keep track, we have access to Firebase<sup>6</sup>, to internal tools (..), so we are always tuned to what's happening, so we can react quickly to some change, to some sudden fall (on business indicators). So I think it's kind of part of our routine, to monitor the business health." (P1). Developers would monitor the indicators of the features they were working on, in order to evaluate if the performance obtained is meeting the expectations and to guide the next steps for the feature, as detailed by one Mobile developer: "So, for example, for the feature we are working on now, (...), we are looking at retention data for it, we are also looking at usage data as well. So, we are keeping track, for example, if it is performing the way we were expecting, if users are returning to it the way we were expecting. And, with that, we will fetch information like... One data we recently fetched was that people

<sup>&</sup>lt;sup>6</sup>https://firebase.google.com/

were interacting a lot on one specific aspect of the feature. So we think 'Oh, we need more interactions that are similar to this one, because users loved it. And that can make them return more to our feature, and if they do it, they will use the app more, and consequently they will make more payments, etc.' So, we are using this data to guide what we will do in the future." (P9). Different developers (P1, P4, P6) reported they would perform A/B tests on the features they implemented, extracting data between the variants to compare their results and determine if the feature was successful: "every time we insert a new feature of usability or something related to that, we will perform A/B tests. And then, we from the technology team will extract the data ourselves, since it involves simpler analytics." (P1).

Besides extracting and monitoring data of CompanyP's products, developers would also constantly benchmark data from competitors, using the AppAnnie<sup>7</sup> tool and using information available in the market. One Mobile developer reported this behavior while trying to convince directors of CompanyP to approve one idea of a new feature for ProductP: "We brought [to CompanyP directors] all the data the Business Intelligence Leader had on churn and retention. And then, we benchmarked with data from other similar apps (similar to the feature being proposed). We looked at the competitors, looked at their [data available on] App Annie. (...) We said 'If we manage to do something like this, bring it to ProductP, it may be possible for us to improve our (user) base'." (P4). The Head of Technology (P10) described that during her/his process to propose new products for CompanyP s/he had to conduct extensive study of the market and of competitors, to acquire enough data over different business strategies and on the existing opportunities. More on this process will be discussed in section 4.4.6.

Even though developers reported possessing abilities to write queries and extract data, it was common for them to reach the Data/Business Intelligence (BI) team to get help for extracting and analyzing data, as reported by one Mobile developer: "Usually, it is a need of our (mobile development) team, or Product (team), to understand something, and then we reach the Business Intelligence team, usually for something we are having difficulties with (...) For analysis, like 'Help me perform a more complex analysis', or 'How do I model my data to be able to do this more complex analysis'. And 'How do I analyze this question and insert the data on ProductP to help you do this analysis that you need?'. Usually, that's the interface (with the Business Intelligence Team)." (**P9**). The Head of Technology also stated that even though s/he was able to write SQL queries s/he would still reach the Data team if s/he needed help: "For almost all the queries, I was able to write them myself. For one query or another, I needed help from my superior and for one or other data I needed help from the Data team. But I would say that around 95% of the data was acquired by queries made by myself." (P10). Although developers constantly engaged in activities of data extraction and analysis, it was reported by the back-end developer that most of the data over business results was extracted either by the Data Team or by the business area itself: "But about the business results, they are usually extracted through the Data team, that extract these data, or sometimes even by teams like Growth, and other (teams) that are more connected, are closer to the business. At some moments, we (technology team) extract data to send to those business people. But

<sup>&</sup>lt;sup>7</sup>https://www.appannie.com/

in general, they will extract this data themselves or the Data team will. What we do is mostly giving support for demonstrating how these data can be extracted, and what would make sense or not for each case." (P15). Due to the observation made by the back-end developer we concluded that the data-driven work performed by IT people was intended to help with their daily activities, and was not intended to replace the responsibilities of the Data team.

In order to justify prioritizing work on features and requirements defined by the IT sector, IT people would need to extract product metrics and/or use business and market knowledge and use this information to convince business people of this priority: "So, one of the things we had to do was to prove, using numbers, that it (feature proposed by development team) was more viable in fact than all of the things we had been working on. If they (BI team) were not on board, we would have had to convince them, and later have had to convince Product (team), it would have been harder. (..) So we presented all the numbers, we collected data of our competitors using AppAnnie." (P9). The back-end developer also reported similar process for another feature proposed by the technology team: "I don't have the entire context, but from what I remember of the presentations, a lot of data was extracted, because that project was quite big, in terms that it would need approval from the business area for it to be developed. So, indeed a lot of metrics were extracted, related to the product we already had, and regarding what could be done for the business area to validate it. So, yes, those metrics were very important for the development of this feature." (P15). The back-end developer reported that for prioritizing ideas that could have high impact on the business, the technology team was able to reach business people to get help with initial validations, but at the end would still need to gather data to justify the prioritization: "So when it's a bigger idea, for some implementation, one idea that will really affect the business, than I think that by talking with business people we are able to give some briefing and receive some hints, so later we can fetch the data and prove that it (the idea) will really work. So, first we get this help, but later, in order to really convince, earn trust on that idea, we will need to fetch more data and justify why that idea is really relevant or not." (P15).

We observed the conclusion of whether features delivered for ProductP were successful or not was data-driven, based on metrics and KPIs, as reported by different participants (**P10, P13, P14, P15**). This behavior also applied for the features defined by the technology team. When explaining why one feature idealized by the Head of technology was considered a success case by CompanyP, the Back-end developer stated that it was based on the data over the product's results: *"It (the company) considered it a success because all the data extracted from this experiment, from this feature, were very good data. So, when this feature was introduced, it had a session time that was a lot higher than the session time of other features of the same content type inside the app. If I am not mistaken, it was even higher than the sum of all of the other similar features. (..) So, the engagement had improved a lot, and I think we also managed to improve some financial aspects, because there were people interested in that feature, and that became a trigger for monetization. So, based on that, the product really acquired more value. (..) So, it was a success because we had results quantified on data that really corroborated the hypothesis that we would increase our engagement indicators." (P15).*  Another result from the data-driven approach exercised by the technology team is that IT people acquired high knowledge over CompanyP's key performance indicators and metrics, as well as the ability to critically analyze this data. We were able to observe this through reports from different participants (P4, P5, P10, P15), in which they explained in details analysis they had performed, being able to correlate data over subscription cancel rates with engagement indicators, or being able to correlate data over session time with monetization triggers for the product.

#### Lack of alignment between technology and business

We observed several reports in which IT people act on business without proper alignment with the business area. One consequence of this behavior was the development team defining and delivering features that would harm some aspects of the business. We also observed the perception that some features proposed by the technology team were not successful due to this lack of alignment with business teams. The main motivations observed for this behavior relate to CompanyP's organizational culture and structure, especially to the encouragement of the sense of ownership towards ProductP, to the idea of meritocracy, and to a decision-making process that lacked mechanisms to prevent areas from taking business decisions isolatedly. Several participants (**P2**, **P7**, **P8**, **P9**, **P14**) reported moments that developers were not in sync to other teams about business decisions they made, allowing us to observe lack of alignment between the development team and the following teams: Product, Marketing, Content, Design, and Business Intelligence.

The Product Analyst saw the culture of meritocracy at CompanyP as an stimulator for individualized work by IT people (work without properly alignment with the business area): "And that was it, it (project idealized by IT people) was a quick project, supposed to bring quick results, to achieve rewards, and that didn't happened. It's like a game. It's a reward mechanism (...). It's the experience of a gamified company. (..). And then you earn 'coins', and the more 'coins' you earn, the more you ascend. And so on. And that stimulates the individualized work, stimulates the hero feeling: 'I am the hero, I can save it, I can do it alone'. I don't believe in any of this, I believe in teamwork." (**P14**).

The Product Manager (**P8**) also observed a relationship between the behavior of working isolatedly and cultural stimulus for proposing and developing new ideas for ProductP. S/he observed the developers were eager to impact the business by proposing new ideas and, as the final product was a mobile app, the mobile developers had the power to ship new features without proper alignment with other areas: "So I think that between these two areas, development and design, there was some conflict in the sense that sometimes there were changes (on the product) that did not involve the Designer. So, there was a flow definition, or some logic, some information architecture for a pop-up that wasn't validated by the Designer. I think this behavior has decreased a lot (after a Process Reengineering Project took place), and it's not something intentional, of wanting to deceive the other person. The thing is that here (CompanyP) we have the urge to create things, it's the company's entrepreneurship aspect, part of the culture, that sometimes we want to do something, we have the urge to create, but end up forgetting there are other people with other expertise. People who have mastery over that subject and that should be involved. At the end of the day, is it possible to ship without the Designer? Of course it is. Because after all, the technology team is the last one to touch the code, and it's possible to implement things without having the assets for example, without information. But it's better when we bring this together (align the areas with expertise). So, I saw that happening." (**P8**).

Besides cultural influence, we observed CompanyP's structure would also motivate IT people to act on business without proper alignment with business teams. The Product Manager reported that due to CompanyP's structure, involving all business areas would slow down the process of adding new featured to the product, and this context combined with the sense of ownership stimulated by the company would motivate people to act in a more isolated manner: "In my opinion, the sense of ownership is what drives this behavior the most. And also the company's structure, that's my vision, of the mapping I've done when I joined the company. We didn't have the concept of (multidisciplinary) squads here. So we had a fragmented product management, we had the concept of functional areas. So we had the Technology area, the Design area, the Branding area, etc. But at the end of the day, to implement anything that would make sense for ProductP, it's not done by one area, it's done by a group. And the creation process of this group takes time, and it will go through a lot of changes regarding the everyday practices. So it's not something you can change overnight. So I think that this context, alongside the sense of ownership, would motivate people to act in more restricted forums." (P8). S/he concluded that working in niches allowed people to deliver faster, but less assertively: "So in this sense, I think that if I put areas working in niches and delivering things, they will be faster, that's a fact. I won't even try to argue about teamwork. Teamwork is nice, but it slows the delivery. So if you want to be fast, don't introduce Agile Frameworks. Don't discuss in groups. Take a decision, execute, and do it. It will always be faster, because there is less work involved in taking the decision. If you want to increase the assertiveness of things, then the output will suffer, because again, there are trade-offs." (**P8**).

Both the Product Manager and the Product Analyst reported that before the Process Reengineering Project, the decision-making process was not clear and wasn't well structured, allowing parallel decision-making paths to exist between business and development areas. The Product Manager reported that the product management for Product P was spread in different silos: "There wasn't a clear product management figure, it was spread in silos. So there was a lot of activity going on inside the tech world, inside the design world, the different worlds of each area." (P8). S/he reported that each of these silos would have their own issue tracking tools, behavior that was changed after the Reengineering Project. The Product Analyst reported the existence of two parallel decision-making paths, one mainly composed by the development area, and the other mainly composed by the product area: "What I felt when I started working with ProductP: The product team was very isolated, very close to the Product Director, close to the board maybe, while the tech team was closer to the Head of Technology and her/his influence, taking decisions without consulting the Product team. So they were walking in two parallel paths. The UX person at that time was closer to the technology team. And the Content team was closer to the Product Team. So you have two parallel paths." (P14). The Product Manager reported that in the scenario prior to the reengineering project the requirements would

come from different sources, being presented in a non-organized way and ending up being executed on an isolated niche: "We had demands that appeared suddenly, that could come from anywhere. It could be a demand made by the Content Team because they had an issue with their tools, it could be something the board asked because it would be good for a partnership, it could be something that came from the Product Manager. So this was how the demands arrived, there was no general presentation, there was no invite for a group discussion, and then the demand ended up on the hands of those closer to it's execution. So there were projects that demanded Design, but happened to be executed only by the developers, with little involvement of Design (team). Precisely because there was no such exchange (of information), no clear and well established contact points for that to happen. So it ended up in the hands of someone who would execute it, and it stayed stored on that niche, and it was developed that way." (**P8**).

The Content leader reported developers would implement features on ProductP without considering the current business direction taken by the company: "Sometimes I feel that if I knew how to code I would be able to just code and ship things to the app. Literally like that. Because that's something I see happening sometimes, the team who knows how to do it implements a new feature and ships it. Regardless of the business rules we are following. Independently of the general direction we are following. (...) To me, it's like if I went to our Content Management System and said 'I need this flow implemented for a release'. And then, I would be organizing things and then 'Oops, I broke things. I don't care. My part is working, so it's fine'. And it's crazy, if we don't have a general direction of the company, each one will go in a different direction." (P7). The Content Leader felt that the developers had limited business vision, choosing a simplistic approach when trying to solve an issue of ProductP, focusing only on the specific issue being solved and ignoring other business aspects of the Product. Both the Content Leader (P7) and the Product Analyst (P14) reported they did not agree with some of the ideas implemented by the development team, considering their business point of view.

Different participants (P2, P8, P14) reported that some features proposed and implemented by the development team could have achieved better results if there had been a better alignment with Product and Design areas. The UI/UX Designer reported that for a certain feature, her/his team was not involved, which prevented her/him to support and enrich the feature: "Well, there is this project that technology (team) started without talking to us, from Design (...). We only joined to adapt the assets. Not about the functionality itself. At the end, it was kind of nice, but I think that if we (Design team) had been involved since the beginning, we would have been able to foresee some things, in terms of sustainability of the feature, I believe that if we had been able to bring a little of this perception we would have enriched the project. Which is a very nice project, it's not a bad project. But it could have become more well-polished." (P2). For the same feature, the Product Analyst also reported little involvement from her/his team: "I don't think the feature was a failure. I think the main issue is that it could have received a higher priority, it could have received a better perception if it had started alongside Product (team). Why? One of the things the Product Team does is dealing with the board (members). And this feature lacked political power, for it to be continued. (...) Thinking about the delivery, the feature is good, but it hasn't convinced the people it should have convinced. That is the

people from the top (High leadership)." (P14). Regarding a different feature idealized and developed by the technology team, the Product Manager also concluded the lack of alignment with specific business areas prevented the feature from being successful: "It was a project that was more incubated in the technology area.(...) So there were a lot of decisions made there that did not involve the teams which had better expertise, that could contribute saying 'This path may make sense, this one maybe doesn't'. And decisions had to be made quickly to ship the project. So, the main idea of the project is not problematic, but the fact that its execution did not involve these stakeholders harmed the result generated by the project. Which means it prevented the project from achieving a better result." (P8).

As discussed in section 4.4.2, the process reengineering project introduced a set of changes that helped prevent situations in which the technology team would act on business without properly aligning business areas.

#### Disagreements on business strategies

We observed different situations in which technology and business people had disagreements on business decisions. Besides moments in which these areas disagreed about prioritization (see Section 4.4.3), they also disagreed on business decisions regarding user flows and behavior. The Back-end analyst reported a case in which s/he believed the Product team took a decision that prioritized financial gains over user's experience, also making data analysis more difficult: "Usually, when these decisions are taken, I don't feel confident about what the Product team wishes. Usually, it is the Product (Team) that is making the final call, so I feel that even though we are able to advance, reduce user friction as they wished, at the end this decision will come back to them, because it will make it harder for them to analyze data, they will have difficulties on defining use profiles, user profiles. They won't be able to understand these users' behavior so well. With that being said, I think some of these decisions do not earn my trust." (P15). The Content Leader reported a case when IT people questioned the decision of having content organized by different age categories, demanding metrics that supported this decision. This questioning was not well received by the Content Leader, who claimed the decision was made about business (Content) knowledge: "It happened that they (IT people) tried to change decisions made by the Content Team. (...) They questioned why we had the age category division on the app. (...) Questioned why we hadn't placed a certain content under a specific age category. And then I kept staring like: 'Do I really need to prove that this content is not good for this age category?'. And they wanted data, numbers: 'Prove to me, numerically, that the content is not suitable for users of this age category'. And I was like: 'Look, it's not necessarily numerically proven, most of the people watching this show are below this age category. Because the video does not have much complexity..." (P7). Even though we observed cases of conflicts caused by business disagreements, some participants  $(\mathbf{P3},$ **P11**, **P15**) reported that in general the BizDev disagreements led to healthy discussions.

## 4.4.6 Point in time: IT people acting in business led to the creation of a new business Unit

The most successful case of IT people acting in business observed during this research was the one performed by the Head of Technology (P10), during a time s/he was a mobile development manager. S/he first proposed a new feature inside ProductP that was later released as an isolated product, also a mobile app. The Head of Technology used the results of this new product alongside with market studies to justify work on a second new product. This second product was inserted in a slightly different market than ProductP, and its outstanding results led to the creation of a new business unit on CompanyP, one focused solely on the development of mobile apps focused on this different market. This success case was an important inspiration for other people from the IT sector to act in business. Many of the motivations and characteristics discussed previously about IT people acting in business were also present on the Head of Technology's performance. However, we will not use this case to claim or justify any broader conclusions for CompanyP's BizDev interface.

#### Motivation and Context

The Head of technology reported s/he was strongly motivated by CompanyP's organizational culture to act in business. When asked whether s/he could directly relate the encouragement from the company to existing culture values, the Head of Technology (**P10**) agreed, highlighting values connected to a sense of ownership towards the company and its products, such as we detailed at section 4.4.1. The Head of Technology also reported strong personal motivation for creating a feature that was closer to a new market, a market in which s/he had previous work experience. S/he was able to convince CompanyP's high leadership to give a vote of confidence for prioritizing her/his proposal due to little risk involved and due to the fact that s/he had already built a working prototype of the app prior to joining CompanyP. Another reported motivation for the implementation and maintenance of the first proposed product to be approved by the business area was that it had good monetization potential.

After the first new product idealized by the Head of Technology was launched as an internal feature of ProductP, s/he started working on the idea of a second new product, one that would involve higher risks. The ideation process of this new Product involved deep analysis of a different market and the identification of an emerging opportunity, alongside with an extensive work of convincing the business area of the opportunity. In order to build the pitch presentations for convincing the business area, s/he had to obtain a large amount of business knowledge on this different market, studying a set of competitors and their metrics. At the beginning of the pitch process, s/he had to conciliate the work on regular tasks with the market studies and the work on the pitch presentation, and it was required to use extra-work hours to acquire the necessary data and prepare the presentation. Only after the opportunity was presented to an initial set of people the Head of Technology was able to allocate her/himself fully to the project: "Indeed, I had a whole set of demands that prevented me from focusing fully, at least at the beginning, on the creation of this pitch. So I used some of the idle periods I sometimes had between

tasks, but a lot was done at home, structuring the presentation, gathering more data. (...) Until I was able to show the pitch's structure to the first people, the feedback was very positive, and those people brought very valuable questions. From this moment forward, I started to have more time to develop the idea, the presentation, this pitch." (P10). The pitch process itself was very extensive, with the Head of Technology first presenting it to peers, then to direct leadership, afterward to CompanyP's higher leadership until presenting the pitch to board members, including the CEO. After each presentation, rich feedback was obtained, and the presentation was enhanced before the next pitch: "So when the presentation reached the Company's CEO, it had already gone through a lot of questioning and had been enriched a lot, I changed the way things were presented, the order of information. Not only was I able to learn, acquire more confidence to do presentations, but the presentation itself enriched over time. And I think the leadership brought wonderful questions." (P10).

#### **BizDev** communication

During all of her/his performance defining requirements and getting prioritization for both of the new products, the Head of Technology was in constant communication with people from the business area. As mentioned previously, the business area first gave a vote of confidence, allowing the MVP of the first product to be built and delivered. During the next iterations, the results were constantly shared with the business area: "So, when we released this first produc, they (business people) gave a vote of confidence (...), for us to perform this test. We saw they were very anxious in the first week, second week, and third week... For every iteration that we did, I started building presentations showing the KPIs (Key Performance Indicators) that we were impacting, the opportunities that we had on the table, and which would be the next iterations for us to monitor even more these results. So I did a very close follow up with them, not necessarily because they demanded me to do it, but because I wanted to push the project forward to build more interesting things in the *future.*" (P10). In order to get approval for working on the second proposes products, the Head of Technology performed a set of pitch presentations to the business area, which was very receptive and gave rich feedback over the presentations. Compared with other analyzed cases of IT people acting in Business, we could conclude the Head of Technology invested much more time on communicating with the business area, both to get approval for the project's allocation, and also to validate the ideas and receive feedback.

#### Business knowledge and data-driven behavior

We observed the Head of Technology possessed large business knowledge over ProductP, which allowed her/him to identify the opportunity of creating the first new product. S/he was constantly monitoring product's metrics and comparing them to competitors, in a display of data-driven behavior. At some point of time, there was a strategic goal of increasing ProductP's overall engagement, and the proposal of this product by the head of technology had the objective of helping with this goal. Due to her/his knowledge of ProductP's and competitors' metrics, s/he was able to identify the opportunity of adding a very specific type of multimedia content as an internal feature to ProductP, and that

feature was became the new product: "So, basically, we had a mission of increasing engagement at ProductP, it was the strategic goal of the year. This engagement was composed of session time and number of sessions. (...) And when we looked at our benchmarks they were not revealing anything that we weren't already doing or doing better than them. So, instead of looking at the outside, I decided to look inside. Where was our engagement coming from? What was its secret?" (P10). The Head of Technology reported with a large amount of details how s/he observed that one large source of engagement of ProductP was coming from a single content inside the app. Using her/his knowledge of a different market and knowledge acquired by analyzing different players on this market, the Head of Technology identified a content genre that could be explored inside ProductP.

The Head of Technology was constantly watching the biggest players of this different market, due to her/his previous work experience on this market and also due to her/his personal interest. And, this business knowledge was what allowed her/him to see the opportunity for creating the second new product, and also what allowed her/him to build a convincing pitch for CompanyP's stakeholders: "The entire idea for this opportunity emerged analyzing one (competitor's) product. Seeing how that product existed for more than 10 years and suddenly became a huge success. (...) Then I started performing a deep dive on the people behind the product (...). The demand existed, the opportunity existed, and it was being badly explored (...) Even though they understood the product they liked, they did not have the professional knowledge of a company. And, when you see that you have an opportunity in which you can differentiate yourself from others simply due to your technical knowledge, then you know you have an urgent deadline to do it. Because if someone else does it, observe it, and s/he has the same resources as you, s/he will start ahead of you, and the opportunity will be lost. So there was a time to market there, which was causing a certain agony. And that was the way the pitch was presented." (P10).

Compared with other analyzed cases of IT people acting in business, we conclude that the Head of Technology worked in a data-driven approach that was also displayed by other IT people, engaging in deep and constant analysis over ProductP's key performance indicators. However, we observed that the Head of Technology performed a more detailed and structured research over competitor's and over the market, which allowed her/him to identify strategic opportunities that could have higher impact than the ones identified on the other cases. Also, the Head of Technology was able to use this acquired business knowledge on the process of prioritizing allocation and convincing the business area in a more structured and successful manner than what happened in the other analyzed cases.

# Chapter 5

# Discussion

#### 5.1 Related Work

Karvonen et al [16] observed that focusing on the organizational culture could enhance the likelihood of a successful agile transformation. The authors discuss the Sustainable Agility Approach for achieving enterprise agility, which focuses on cultural orientation towards agility. At this, people's behaviours and values are seen as major aspects for transformation, considering that enterprise agility is achieved as a result of culturally aligned, highly motivated, and empowered people working together towards a common cause. Karvonen et al [16] performed a case study in an organization that was experiencing agile transformation, focusing on organizational adaptability and customer orientation. In this study, they observed that a complex organizational structure and multiple management layers imposed barriers between different teams, leading to the creation of functional silos, damaging relationships and presenting challenges to the agile transformation. Together, a hierarchical culture was present and there were frequent cases of employees bypassing formal procedures, using personal networks and influence to perform their tasks, what represents a new challenge of collaboration between less hierarchical teams and the former ones.

On this research we could also observe relevant impacts of the organizational culture. We observed that company's values were major influencing factor to drive employees into impacting the business, specially developers, in a similar way as Karvonen et al observed organizational values being motivating factors for successful agile adoption. While Karvonen et al observed that a hierarchical culture led to the creation of functional silos, in our research we could observe that even in a culture that removed such barriers, it was still possible for such silos to exist. We observed a case in which the organizational culture, combined with unclear decision-making processes, influenced developers to define, implement and release features without proper alignment with the business areas, working in niches in an attempt to achieve results faster and get the validation needed to keep working on their ideas.

Diel et al [18] conducted an exploratory observational study inside a large multinational company, focusing on identifying how did the two-way communication happened between a development team located in Australia and an operations teams located in Brazil. The authors identified seven main challenges to the distributed DevOps communication, such as teams not being available at the same time, teams not knowing the routine of the other team and lack formal communication channel for feedbacks. One facet of communication used to evaluate the results was Direction, which refers to how the communication flowed in the hierarchy of the company. An Upward communication meant a flow from a weaker member to a more powerful member. At the company observed, the authors reported communication was not affected by which directions the information comes from, even though it had different objectives (communication started by development teams tended to be more informative, while communication started by operations team tended to be aimed at obtaining information).

At CompanyP we analysed several reports on the communication between people from development and business areas. Just like Diel et al, we observed that in CompanyP's context the direction of the information did not affect the communication: not only communication flowed easily from business to development (presentation of requirements, prioritization sessions, business knowledge sharing) but also development analysts were able to reach communicate directly with members of the business area (requirements clarification, validation of ideas), without needing to channel communication through development leaders. Even though we found that hierarchy did not interfere in the BizDev communication, we observed recurrent cases of development analysts with poor communication skills, leading to scenarios in which excessive technical jargon was used.

Palomares et al [20] investigated the current state-of-practice regarding requirements elicitation by conducting interview-based surveys in 12 different Swedish IT companies. Among the findings of their research, we highlight the relevance of the technology area on the requirements elicitation process. Internal meetings were held between requirement engineers and developers with the purpose of getting technical perspective and more technical elaboration over the requirements. Software architects and system engineers were also engaged on the elicitation process to ensure the chosen technology fitted the purpose of the system and to evaluate the cost of achieving the desired goals.

While Palomares et al were able to raise evidence on how technology people could impact the requirements elicitation process by adding technical expertise, we were able to raise evidence that developers could also impact this process through their business knowledge, participating on business discussions and even proposing new features for the product. We observed that, at CompanyP, developers engaged constantly in brainstorming sessions and were reached at early stages of ideation to contribute with their business point of views. Also, developers considered that thinking on new features for the product was part of their routine, taking efforts to extract and analyse metrics to help them come up with ideas for requirements and features to help solving product's issues and impact the business.

#### 5.2 Answer to research questions

In this section, we provide answers to the established research questions based on the findings presented before.

# 5.2.1 RQ1: Which roles have practices or responsibilities in the BizDev interface?

The roles we were able to observe to have responsibilities on the BizDev interface were Developers (all types), Designer, Product Analyst, Product Manager, Head of Technology and overall CompanyP's high leadership (CEO and Business Units' leaders). The responsibilities and practices observed were summarized on research questions 3 and 4. There were two practices in the BizDev interface, namely the Roadmap Meeting and the Centralization of communication and issue tracking tools, which included all roles working with ProductP, but they will not be considered for this research question due to this allocation being too generic. It is possible that exist other roles present at CompanyP which we did not analyzed but also possessed responsibilities or applied practices in the BizDev interface.

# 5.2.2 RQ2: What is the required effort and involvement from the development team regarding responsibilities and practices in the BizDev interface?

Unfortunately, we were not able to acquire enough information to answer this research question. We were able to observe BizDev practices that were constantly performed and were part of employees' routines, such as developers extracting and monitoring business results, benchmarking competitors and participating in prioritization discussions. However, we did not obtain information to evaluate the amount of effort required to perform them. We concluded the main reasons we were not successful on answering this question were our focus in extracting information over frequency of the practices over focus in extracing information over the effort applied on them, and also the quantitative nature of this research question, contrasting with the qualitative nature of our research and of our interview scripts.

## 5.2.3 RQ3: What are the responsibilities in the BizDev interface? Who defined these responsibilities, the development or the business area?

The observed responsibilities in the BizDev interface could either involve interactions between people from business and development areas, or involve these people interacting with their opposite domains (e.g., developers interacting with business). Even though we identified the roles that performed these responsibilities, we were not able to identify the area or the person responsible for defining/assigning these responsibilities. Overall, the observed responsibilities were not officially defined in a job description document or similar, but rather reported as perceptions from the ones who possessed the responsibility, or reported by people who perceived other roles having the responsibility. For this reason, and to provide richer information about these responsibilities, we will also include information about the role who reported the responsibility. Table 5.1 contains all the observed responsibilities. All the responsibilities summarized here are discussed in more detail in Section 4.2.

## 5.2.4 RQ4: What are the adopted practices in the BizDev interface? What is the motivation behind those practices?

Practices in the BizDev interface involved IT people engaging in business activities and interacting with members from business areas. There were also practices related to promoting or improving BizDev communication, and practices in which business people would propagate business knowledge.

Table 5.2 contains all the observed practices and the related roles. For each practice, tables 5.3 and 5.4 contains summary of the analyzed motivations alongside with the paper's section(s) providing more details to the practice.

## 5.2.5 RQ5: What was the perceived change on the analyzed projects after applying the practices in the BizDev interface? What were the impacts on the project's overall quality, fulfillment of deadlines, stakeholder satisfaction and communication between business and development sectors?

For the majority of analyzed practices, we did not obtain comparative information between moments before and after the practices started being applied, therefore we were unable to obtain the information necessary to evaluate the related impacts.

However, for a subset of practices introduced by the Product Manager (**P8**) during the process reengineering project we were able to acquire comparative information. The analyzed practices were: the introduction of multidisciplinary squads (composed by Development, Design and Product), the creation of roadmap meetings, and the centralization of communication and issue tracking tools between different teams. The information of the state of CompanyP before the introduction of those practices was obtained by reports on both the first and second interview phases. For the state of CompanyP after the application of those practices we gathered information from reports by the Product Manager (**P8**), the Designer (**P2**), the Product Analyst (**P14**), one Content Analyst (**P12**) and the Growth Analyst (**P13**).

Before those practices were introduced, the product management for ProductP was spread across different silos, each one with different tools for communication and issue tracking. Product requirements would come from different sources, being presented in a non-organized way, and ending up being executed on an isolated niche. Also, people from the technology team would constantly question decisions made by other teams (Design and Content) without proper business or technical knowledge, which led to conflicts. Without proper alignment between BizDev teams, it happened that developers came up with new requirements and/or features ideas, implemented them and ended up negatively impacting the product, according to some business people (from Product and Content teams). Finally, due to this lack of alignment, people from the technology team had

Responsibility	Roles that pos-	Roles that reported
1: Validate ideas from technology teams for new features and require- ments	Product Analyst	Product Analyst
2: Concentrate/channel commu- nication between different teams (business and development teams as well), aiming to reduce communica- tion noise and ensure different teams are aligned and involved in discus- sions and decisions about the prod- ucts	Product Analyst, Product Manager (Product Team)	ProductAnalyst,ContentLeader,ContentAnalyst,Designer,FullStackDeveloper
<b>3:</b> Provide relevant information about the market, the customers, and the product, in order to guide technology and other teams to work for reaching a common goal	Product Analyst, Product Manager	Product Analyst, Product Manager
4: Facilitate communication be- tween different areas, ensuring they communicate during the entire de- velopment cycle	Product Manager	Product Manager
5: Find and apply more suitable day-to-day practices on team organization	Product Manager	Product Manager
6: Ensure the necessary teams are involved during decision-making process (ensure information is reach- ing who it needs to reach and that people closest to the development are making the decisions)	Product Manager	Product Manager
7: Support business teams by reduc- ing technology complexity needed for them to perform their tasks	Developers	Mobile Development Analyst
8: Direct Responsibility over cus- tomer's retention and engagement	Developers, De- signers	Designer Analyst, Mobile Development Leader, Mobile De- velopment Analyst, Product Analyst

Table 5.1: Responsibilities in the BizDev interface

Table 5.2: Practices in the BizDev interface alongside with roles that apply and with roles that reported those practices

Practice	Roles that apply	Roles that reported
1: Constantly extract and	Mobile Development An-	Mobile Development An-
monitor business results	alyst, Mobile Develop-	alyst, Mobile Develop-
and key performance indi-	ment Leader, Head of	ment Leader, Head of
cators	Technology	Technology
2: Implement and Monitor	Mobile Development An-	Mobile Development An-
A/B tests	alysts	alysts
<b>3:</b> Question business de-	Technology Roles	Content Analyst, Con-
cisions taken by business		tent Leader
teams		
4: Benchmark competitors	Mobile Development An-	Mobile Development An-
(features and data)	alyst, Head of Technol-	alyst, Head of Technol-
	ogy	ogy
5: Get requirements clari-	Development Analysts	Development Analysts
fication directly with busi-	(All)	(All), Mobile Develop-
ness people		ment Leader
<b>6:</b> Participate on prioritiza-	Technology Roles	Content Analyst, Con-
tion discussions with busi-		tent Leader, Develop-
ness area		ment Analysts (All)
7: Proposition of new fea-	Technology Roles	Development Analysts
tures and requirements		(All), Mobile Develop-
1		ment Leader, Content
		Leader, Designer, Head
		of Technology, Product
		Analyst
8: Leadership constantly	Company's CEO, Lead-	Development Analysts
sharing business results to	ers of different Business	(All), Product Manager
the entire company	Units	
9: Centralization of Com-	All roles working with	Product Manager, De-
munication Tools for differ-	ProductP	signer, Product Analyst
ent teams (from business		
and development areas)		
<b>10:</b> Centralization of Issue	All roles working with	Product Manager, De-
Tracking Tools for different	ProductP	signer, Product Analyst
teams (from business and		
development areas)		
<b>11:</b> Multidisciplinary	Product, Design, Devel-	Designer, Back-end
Squads composed of people	opment	Development Analyst,
from Product, Design and		Product Manager
Development teams		
12: Roadmap Meetings	All areas involved with	Product Manager,
	ProductP: Development,	Growth Analyst, Con-
	Product, User Acquisi-	tent Analyst, Full Stack
	tion, Growth, Design,	Development Analyst,
	Content, Branding;	Product Analyst
	Product Manager	v
Table 5.3: Practices in the BizDev interface, alongside with motivations and related sections (part 1)

Practice	Motivation	Sections
1: Constantly extract	Organizational culture's values	4.4.5: Data-Driven per-
and monitor business	(sense of ownership towards	formance
results and key perfor-	the product); Allow quick re-	
mance indicators	action to changes; Monitoring	
	results is part of the 'defini-	
	tion of done' of development	
	tasks; Get information for pri-	
	oritizing requirements and fea-	
	tures proposed by developers;	
	Acquire information to under-	
	stand what could be the next	
	steps for the requirements and	
	features proposed by develop-	
	ers.	
<b>2:</b> Implement and	Compare results of imple-	4.4.5: Data-Driven per-
Monitor A/B tests	mented feature alternatives to	formance
	determine if they were success-	
	ful	
<b>3:</b> Question busi-	Company's organizational cul-	4.4.1: Organizational
ness decisions made	ture allows and motivates be-	Culture's Influence;
by business teams	havior	4.3.2: Open communi-
		cation at the BizDev
1. Donahmark com	Personal for colving aumont	A 4.5. Data Drivon, por
4. Dencimark com-	product's issues: Validate and	formance: 4.4.6: Point in
deta)	justify prioritization of fea-	time: IT people acting in
	tures and requirements pro-	business led to the cre-
	posed by the technology team	ation of a new business
	Posed of the teelinerogy teelin	Unit
5: Get requirements	Open communication allowing	4.3.1: Routine Dis-
clarification directly	developers to directly reach	cussions; 4.3.2: Open
with business people	business people; Company's	communication at the
	organizational culture (sense	BizDev interface
	of ownership): Whoever is in	
	charge of a task should be re-	
	sponsible for all the necessary	
	steps to fulfill it	
6: Participate on pri-	Get prioritization for features	4.4.3: IT people working
oritization discussions	and requirements proposed by	on prioritization; 4.4.1:
with business area	IT people; Process Reengineer-	Motivations for IT Sec-
	ing Project included technol-	tor to act in business;
	ogy teams in more business	4.4.2: Process Reengi-
	discussions; Negotiate prior-	neering Project
	itization with business area;	
	Company's culture influence	
	(sense of ownership)	

Table 5.4: Practices in the BizDev interface, alongside with motivations and related sections (Part 2)

Practice	Motivation	Sections
7: Proposition of new	Company's organizational cul-	4.4.4: IT people work-
features and require-	ture influence (sense of own-	ing on definition of re-
ments	ership and Meritocracy); Pro-	quirements; 4.4.1: Mo-
	cess Reengineering Project in-	tivations for IT Sec-
	cluded technology teams in	tor to act in business;
	more business discussions	4.4.2: Process Reengi-
		neering Project; 4.4.6:
		Point in time: IT peo-
		ple acting in business led
		to the creation of a new
		business Unit
8: Leadership con-	Not enough information	4.3.1: Knowledge Shar-
stantly sharing busi-		ing
ness results to the en-		
tire company		
9: Centralization of	Fulfil Product Manager's	4.2.1: Centralization and
for different toop	responsibilities of connecting	Promotion of BizDev
(from business and	avoiding loss of information:	Efforts to continuously
(nom business and dovelopment areas)	Controlize information on fea	improvo BizDov commu
development areas)	ture's requirements progresses	nication: 442: Process
	and deadlines: Process Reengi-	Reengineering Project
	neering Project introduced	Reengineering i rojeet
	these practices	
<b>10:</b> Centralization of	Fulfil Product Manager's	4.2.1: Centralization and
Issue Tracking Tools	responsibilities of connecting	Promotion of BizDev
for different teams	teams from different areas and	communication; 4.3.2:
(from business and	avoiding loss of information;	Efforts to continuously
development areas)	Centralize information on fea-	improve BizDev commu-
	ture's requirements, progresses	nication; 4.4.2: Process
	and deadlines; Process Reengi-	Reengineering Project
	neering Project introduced	
	these practices	
<b>11:</b> Multidisciplinary	Increase alignment of different	4.3.2: High frequency of
Squads composed of	teams working with the Prod-	BizDev communication;
people from Product,	uct (only the teams working	4.4.2: Process Reengi-
Design and Develop-	closest to the operation); Pro-	neering Project
ment teams	cess Reengineering project in-	
	troduced the practice;	
12: Roadmap Meet-	Make decision-making pro-	4.2.3: Responsibilities
ings	cesses more transparent; Fulfill	motivating and support-
	Product Manager's responsi-	ing IT people to act on
	bility of ensuring the necessary	business; 4.3.1: Kecur-
	teams are involved during de-	ring Meetings
	cision making process	

to make business decisions for the proposed ideas without having the proper business expertise, which, according to some participants (Product Manager, Designer, Product Analyst), could have prevented the proposed ideas from reaching success.

After the introduction of those practices, the BizDev alignment increased, especially due to the centralization of the communication about Product on a single Slack channel, the use of common shared boards on Monday (issue tracking tool), and the recurring meetings taken by the multidisciplinary squads (the core teams). According to the Product Manager, these practices prevented information from being kept in niches, and prevented ProductP from receiving changes without all involved areas being aware of it. With the formation of multidisciplinary squads, recurring meetings started to be attended by people from development, product and design areas (Daily and weekly meetings and weekly), increasing the frequency of communication between members of those teams. At the time of the interview, the process reengineering project had finished its first cycle of iteration (2 months). The Product Manager (P8) reported the following results: 80% of the expected features were delivered on the planned deadline; the development team was able to solve unplanned technical debt; people involved in the cycle reported positive perception; lack of alignment between core teams and Branding/User acquisition teams became more evident; the first cycle delivery was not able to attend the expected Key Performance Indicators regarding user retention, engagement and conversion. Also, alongside with the Product Manager, other participants of the second phase of interviews (Designer - P2, Product Analyst - P14, Content Analyst - P12 and Growth Analyst - P13) also reported relevant results from the application of these practices: improvement of prioritization process with development team (P2); Improvement at processes for definition of new projects/features (**P2**, **P8**, **P12**); increase in transparency of BizDev communication (P14); democratization of decision making processes (P8, P14); teams increased knowledge over scope of actions of other areas different than their own (P2, **P8**, **P12**); increased BizDev alignment (**P2**, **P8**, **P12**, **P13**). According to the Product Manager and to the Designer, the adopted practices behaved as security locks preventing the technology team from making business decisions without aligning other areas. Also, the Product Manager reported that after the introduction of these practices s/he was able to perceive a higher participation of IT people on decision making processes, even though IT people had stopped making business decisions isolated.

#### 5.3 Threats to Validity

Mainly, this qualitative research is limited to the adopted investigation method, an exploratory case study in which data collection is mostly based on interviews with practitioners. In this sense, we discuss the threats to validity under a pragmatic worldview [12], even though we do not claim to achieve all of the dimensions defined by it.

#### 5.3.1 Theoretical Validity

On this section we analyze the validity of the research in terms of how we managed to handle confounding factors such as preconceived biases. We had previously analyzed and observed the BizDev interface at the context of the IT sector of an university [1]. However, we understood that the organization analyzed for this research had a very different context, and for this reason we did not carry preconceived structure or behaviors on how the BizDev interface should be. Our definitions of the interface were built on a previous study [1], where we identified roles, responsibilities and practices proposed by agile methods well-documented in the literature. Based on the synthesis of those elements and on our research goals, we structured different interview scripts to collect information regarding the BizDev interface in an enterprise context, without assuming any particular organizational structure or culture. We conducted the entire analysis of collected data through Grounded Theory procedures [9], mainly the Open and Axial coding phases. We also did not infer any cause-effect relationship that was not derived explicitly from data.

#### 5.3.2 Generalizability

We do not intended to achieve generalizability with our research. We understand that our findings about the BizDev interface, the impacts organizational culture may have on it, and the actuation IT sector can have in business are limited to organizations with similar context to the selected case. Rather than intending to propose general conclusions that can fully describe the observed phenomenon, we intend to provide detailed information that allow practitioners from different organizations to compare our findings and discuss the applicability to their contexts. To be able to generalize to a broader scope, we would need to further investigate different contexts, observing different teams and organizations, with different organizational structure and culture.

#### 5.3.3 Descriptive Validity

On this section, we analyze the validity of the research in terms of how accurately were we able to describe the observed phenomenon. We understand the data collected using interview scripts (including several open-ended questions) as free from bias as participants were free to answer as much as they need, with no time constraints, and aware of the importance of collaborating for this research. We conducted the interviews over two separate iterations, and the interview scripts were updated before the second phase in order to help obtaining more details over evidences obtained on the first phase. The interviews were audio recorded and transcribed in full, with no additional interventions. Finally, the analysis of the interview data was performed using Grounded Theory procedures for coding the data, namely the Constant Comparative Method, using conceptualization and abstraction. Finally, we performed an extra step of validating the results with a sample of participants, as mentioned in section 3.8. Thus, we understand the current state of our codebook as an authentic abstraction of the raw data.

#### 5.3.4 Interpretive Validity

On this section, we analyze the validity of the research in terms of how reasonable were the conclusions made base on the acquired data. Qualitative analysis naturally faces subjectivity due interpretive synthesis and conceptualization. However, we understand the reasoning leading to our findings can be traced back to raw data in a reasonable way through the generated codes and categories in the codebook. Three researchers performed and constantly reviewed the analysis to reduce possible bias. After finishing the axial coding phase, we traced all the used codes back to interview segments, in order to perform additional validation that reasoning was directly extracted from raw data. Finally, we validated the findings with a sample of the interviewees, which confirmed the results.

# Chapter 6

# Conclusion

### 6.1 Drawing Conclusions

From this qualitative study, we could obtain relevant information over the BizDev interface. Not only we acquired data over roles, responsibilities and practices in this interface, but we also identified a phenomenon in which IT people acted in business, working in prioritization of requirements, extracting and analyzing business indicators, and using this acquired knowledge to propose, validate and implement new features for Company's products.

We observed that the organizational culture was the major motivator for IT people to act in business. At the case organization, company's values were strongly present in employees' routine, and IT people were strongly motivated to acquire business knowledge. The stimulated sense of ownership towards the company and its products, combined with strong sense of meritocracy and lack of structural and hierarchical barriers, motivated and empowered IT people to take an extra step towards impacting the business. We also observed that some roles possessed responsibilities that would also influence IT people to act in business, such as developers having direct responsibility over customer's retention and engagement and also people from the business area having responsibility of validating business ideas from IT people and having responsibility of guaranteeing IT people participate in decision making processes.

We claim the open communication at the BizDev interface was essential for helping the IT sector to act in business, mainly due to how business people were open for receiving business questioning from IT people and were available for validating their business ideas. Also, we observed that business people having technology knowledge improved communication at the BizDev interface, especially in cases when development analysts had difficulties communicating without excessive use of technical jargon.

The data-driven behavior was strongly stimulated at the analyzed company, with developers constantly extracting and monitoring business indicators, from the company's products and also from benchmarks performed on competitors. We observed a strong influence of the organizational culture on this behavior, with many employees reporting how the leadership constantly shared business knowledge through recurring meetings in which company's results and business strategy were presented to everyone. This datadriven behavior shaped how IT people act in business, with developers using data to come

up with new requirements for the product, to convince business people of prioritizing their proposals and also to evaluate the results of the implemented requirements.

We observed having IT people acting in business brought positive results to the analyzed company. Having IT people present in prioritization sessions allowed them to bring technical points of view to business people and helped them to achieve healthier negotiation moments. With the acquired business knowledge, IT people were also able to prioritize their tasks autonomously, even being able to determine which parts of a feature to deprioritize in moments when it would not be possible to deliver all of the requirements until a planned deadline.

Another observed benefit of having IT people acting in business was developers constantly thinking on new ideas for Company's products, bringing suggestions and questioning to the business area, which were in general well appreciated. Also, IT people were able to implement and successfully release features that were idealized and proposed by the IT sector. At total, we observed nine features that fell on this scenario. Besides product's features, IT people also idealized and implemented automation for recurring demands of the business area and implementations to reduce operational costs and increase product margin. Finally, there were two different products of the analyzed company that were idealized by IT people, one of them being so successful that led to the creation of a new business unit inside the company, dedicated to it. Although the positive outcomes of the requirements proposed by IT people, we observed the majority of requirements still came from the business area. We also concluded that the case regarding the proposition of two new products should be considered a specific case rather than a generalization of how successful were the requirements proposed by technology, even though we observed many similarities between the motivations and main attributes of both contexts.

Even though we observed successful cases of IT people acting in business, there were also cases of IT people defining and implementing features that harmed some aspects of the business. These cases were characterized by a lack of alignment between technology members and the business areas, with developers acting an isolated manner. We observed strong influence from the organizational culture in this behavior. The sense of ownership towards the product, combined with the sense of meritocracy motivated developers to act in isolated silos to deliver value faster, since aligning with other areas would slow this process and since developers usually had limited time to present results of their propositions to the business area. In these cases, IT people would end up not involving business areas that possessed expertise or political power needed for helping them achieve better results with their proposed ideas. We observed that after the implementation of the process reengineering project, there were fewer cases of such lack of alignment. The changes introduced by this project, such as centering of communication and issue tracking tools, the creation of multidisciplinary teams and more involvement of IT people on decision making processes, behaved as security measures that prevented IT people from acting in business in an isolated manner.

In conclusion, we advocate that organizations should review their organizational values and organizational culture to consider how it could motivate IT people to acquire business knowledge and impact the business not only through software development. We've seen agile methodologies claiming the business area should be closer to the development process, and correspondingly, we propose that the technology area should also become closer to business strategy. Our results indicate that in order to support such performance, the communication at the BizDev interface should be open and transparent, with business people receptive to receiving business questioning and to helping IT people validating their business proposals. Our results also indicate that having a data-driven culture supports such performance, by demanding IT people to acquire business knowledge and to use it for defining, validating, and evaluating business propositions. One important disclaimer is that we identified that, without proper process and security measures, developers may act in business without proper alignment with the business area, leading to situations where the business could be harmed. For this reason, we suggest that IT people should receive guidance from the business area and that companies should introduce security measures to prevent business decisions from being made solely by the IT sector. Also, involving IT people in the already existing decision making process presents less risks to the business than motivating them to propose new features and achieve good results on their own. For this reason, we finish raising a concern on how the stimulus on meritocracy and sense of ownership needs to be balanced with awareness of collaboration at the BizDev interface: the will to impact the business and grow alongside with the company should lean towards involving both areas to achieve better results, instead of leaning towards isolated work to achieve results faster.

#### 6.2 Future Work

Even though we believe to have reached a deep understanding over the BizDev interface at the analyzed company, there were still some questions we were unable to answer: what were the consequences of applying the changes introduced by the process reengineering project after a larger period of time? What was the effort taken (in terms of time spent) from developers to act in business and how deep was the business knowledge of IT people that worked on the definition of requirements?

We understand that our findings can be reasoned and applied to organizations with similar context than the one analyzed on this research. Therefore, further work could be done on different companies with different contexts to allow a broader conclusion on the state of the BizDev interface and to observe whether there are more cases of IT people acting in business. Mainly, it would be important to obtain information on the a context of a larger company (larger number of employees), specially a multinational company in which business and development areas were spread across different countries.

Finally, due to the time span in which the interviews for this research were conducted (September 2019 - October 2020), we were only able to get a glimpse on the effects that remote work could have on the BizDev interface. The transition that many companies have been doing to office-less and remote-first work environments presents a relevant topic of study concerning the BizDev interface, and it is a topic we envision to further research.

# Bibliography

- Moreira, C. G., de França, B. B. N.: Towards a healthier collaboration at the business-development interface. In: XXII Ibero-American Conference on Software Engineering. La Habana, Cuba (2019).
- [2] van Waardenburg, G., vans Vliet, H.: When Agile Meets Enterprise. Journal Information and Software Technology, Volume 55, Issue 12, 2154-2171 (2013).
- [3] SAFe: Scaled Agile Framework: https://www.scaledagileframework.com, last accessed 2021/08/28.
- [4] Gruhn, V., Schäfer, C.: BizDevOps: Because DevOps is not the end of the story. Communications in Computer and Information Science, 532, pp. 388-398 (2015).
- [5] Stuart Weiss, R.: Learning from Strangers: The Art and Method of Qualitative Interview Studies. Free Press, New York (1995).
- [6] Sharp, H., Robinson, H.: Three 'C's of agile practice: Collaboration, co-ordination and communication. Agile Software Development: Current Research and Future Directions pp. 61-85 (2010).
- [7] Remta, D., Buchalcevova, A.: Product owner's journey to safe—role changes in scaled agile framework. Department of Information Technologies, Prague University of Economics and Business, Prague, 130 67, Czech Republic. (2021).
- [8] Putta, A., Uludağ, O., Paasivaara, M., Hong, S.-L.: Benefits and Challenges of Adopting SAFe - An Empirical Survey. Lecture Notes in Business Information Processing419 LNBIP, pp. 172-187 (2021).
- [9] Corbin, J., Strauss, A. L: Basics of Qualitative Research Techniques and Procedures for Developing Grounded Theory. 4th ed. SAGE Publications (1990).
- [10] Fitzgerald, B., Stol, K.: Continuous Software Engineering: A Roadmap and Agenda. Journal of Systems and Software, Volume 123, p. 176-189 (2015).
- [11] Abrahamsson, P., Salo, O., Ronkainen, J., Warsta, J.: Agile software development methods: Review and analysis, VTT publication 478, Espoo, Finland (2002).
- [12] Petersen, K., Gencel, C.: Worldviews, research methods, and their relationship to validity in empirical software engineering research. In: International Workshop on Software Measurement and the Eighth International Conference on Software Process

and Product Measurement (IWSM-MENSURA), pp. 81-89. IEEE, Ankara, Turkey (2013).

- [13] de França, B. B. N., Jeronimo Junior, H., Travassos, G. H.: Characterizing DevOps by Hearing Multiple Voices. In: Proceedings of the 30th Brazilian Symposium on Software Engineering, pp. 53-62. ACM, Maringá, Brazil (2016).
- [14] Conboy, K.: Agility from first principles: reconstructing the concept of agility in information systems development. Journal Information Systems Research 20 (3), 317-480 (2009).
- [15] Nyrud, H.: BizDev Teams in Agile Software Development A case study of coordination between business and development. Master Thesis, Department of Informatics, Faculty of Mathematics and Natural Sciences, University of Oslo (2017).
- [16] Karvonen, T., Sharp, H., Barroca, L.: Enterprise agility: Why is transformation so hard?. Lecture Notes in Business Information Processing. 314, pp. 131-145. (2018).
- [17] Strode, D. E., Huff, S. L., Tretiakov, A.: The Impact of Organizational Culture on Agile Method Use. 42nd Hawaii International Conference on System Sciences (2009)
- [18] Diel, E., Marczak, S., Cruzes, D. S.: Communication Challenges and Strategies in Distributed DevOps. 11th IEEE International Conference on Global Software Engineering, ICGSE (2016)
- [19] Brown, A. D., Starkey K.: The Effect of Organizational Culture on Communication and Information. Journal of Management Studies- Oxford, vol. 31, pp. 807–807. (1994)
- [20] Palomares, C., Franch, X., Quer, C., Chatzipetrou, P., López, L., Gorschek, T.: The state-of-practice in requirements elicitation: an extended interview study at 12 companies. Requirements Engineering, vol. 26, pp. 273–299. (2021)
- [21] Runeson, Per, and Martin Höst. "Guidelines for conducting and reporting case study research in software engineering." Empirical software engineering 14.2 (2009): 131-164.
- [22] Putta, A., Uludağ, Ö., Hong, S.-L., Paasivaara, M., Lassenius, C.: Why Do Organizations Adopt Agile Scaling Frameworks?: A Survey of Practitioners. ESEM '21: Proceedings of the 15th ACM / IEEE International Symposium on Empirical Software Engineering and Measurement (ESEM), pp: 1-12 (2021)

# Appendix A Interview Scripts

## A.1 Business Profile Interview Script

Script can be found at: https://doi.org/10.5281/zenodo.5546039

## A.2 Tech Profile Interview Script

Script can be found at: https://doi.org/10.5281/zenodo.5546044

## A.3 Head of Technology Interview Script

Script can be found at: https://doi.org/10.5281/zenodo.5546048