Chapter 28

Strategic Management Plan for the 3D Museum Extension Project. A current paradigma

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ABSTRACT
The development of strategic planning for an academic extension project is a promising approach from a project management (PM) perspective. Project-oriented management presents a set of essential practices to lead the work of a team, and lead the project to achieve all the proposed goals and meet requirements, through efficient and effective planning to this end, the similarity to businesses. This article shows that it is possible to treat a university extension project as an enterprise, using the best management practices and tools, such as the SWOT matrix among others so that they contribute to specific strategic planning that meets the goals of an extension project.

Keywords: Management, Strategic Planning, SWOT Matrix, University Extension, Organizational Diagnosis

1 INTRODUCTION

1.1 MAIN OBJECTIVE OF THE STUDY AND THE PROJECT

The study presented here sought to create a strategic planning (PE) to be applied to the Extension Project Museum 3D. The adoption of a PE for this project, seemed feasible precisely because associated with the management tools chosen (*Business Model Canvas and SWOT matrix) would* allow to treat the project with an enterprise and with the flexibility of management (CORREA-GILLIERON & SILVA, 2021), allowing adjustments according to its demand. The choice of pe for the Project was not random but based on the classic planning models usedin business management and already applied to public routine, and more contemporary models applied in universities, which has a relevant performance in the context of higher education in the country.

The focus of this study was the 3D Museum Extension Project, which was from 2008 to 2019 at the Institute of Biomedical Sciences (ICB) of the Center for Health Sciences (CCS) of the Federal University of Rio de Janeiro (UFRJ) as a University Extension Project duly proven by documentation required for university extension programs. Elaborated and coordinated by its author (Associate Professor/ICB and PhD from UFRJ), the project had a Consulting Council (three Profs. Doctors), and the participation of teams of

undergraduate students (from 8-10), students of the médio teaching of CAP UFRJ, and graduate students who acted as extensionists, some including university extension fellows; with emphasis on biomedical sciences and collective health, the project served a specific target audience (students from ensin schools the elementary, high school and high school teachers, student population and their responsible users of outpatient clinics in hospitals, and students with visual impairments - low vision and blindness). His work involved pedagogical workshopsthat had as methodology the dissemination in sciences through a broad didactic methodology and 3D models, representative of the human body and physiological processes, created by the project, and which even generated a cultural collection for UFRJ (CAMPOS & CORREA-GILLIERON, 2021a,b)

1.2 BIBLIOGRAPHIC FOUNDATIONS

1.2.1 Entrepreneurship and University Extension Projects

Entrepreneurship in Brazil has been gaining ground mainly in the educational field and its implementation is reflected, nodits, in the development of new methodological strategies, especially in the justifications of inclusive educational proposals and projects (FILION and COUTINHO, 1991). The definitions of entrepreneurship go through broad concepts (REYNOLDS et al., 2005) and some authors define the term as a new action where something different from the existing one is created and that adds value.

According to some authors, although research and teaching activities are not directly included as activities of a start-upnature, this has been changing over the years and entrepreneurial activities in teaching gain the respect and legitimacy of political and academic authorities" (ARAÚJO et al., 2005). Directly in the business sphere, the actions taken to undertake arewith plexes by themselves and depend on the type of enterprise. In the educational sphere, obviously, entrepreneurial action will be added to interdependent factors characteristic and specific to the educational universe, and involving several pedagogicalaspects s. This process of *entrepreneurship* in education has increased in recent years, with a significant number of scientists and students involved in projects for the future or to start a company in the academic sphere (a junior company for example), including evenraising funding (ARAÚJO et al., 2005).

The educational model, according to Dolabela (2003), was based on a culture that aimed to prepare children, young people and adults, exclusively, to get a job. The author disagrees with this model and insisted on the idea of practicing the principles of entrepreneurship in education and thus changing this model, which he deems anachronistic. It wasthen designed to expand the concept of entrepreneurship, from the business field to other fields, as an advantage for application in the various perceptions of the world, thus, through what was called Entrepreneurial Pedagogy, entrepreneurship ceasesto be an arid word restricted to the field of business and acquired pedagogical methodologies. Despite this articulation, to achieve an entrepreneurial goal in education it is necessary that advisors, educatorsand educational managers have knowledge and if possible experience in "managing", an action inherent to the field of

administration, science considered to manage business, study the behavior and standards of organizations, with the objective of achieving defined goals as happens in a process dand management.

In the University Extension, the third pillar of current universities, the term entrepreneurship and the consequent dissemination of an entrepreneurial culture is still very recent. In practice, a bibliographic survey demonstrated that within the area of University Extension (which aims at the process of formation of the individual as a modifying agent of social and political society), there is not a significant number of studies combining extension and entrepreneurship, as is largely the case in the active administscope. Faced with this scenario, one wonders: Why and how to be an entrepreneur in extension ist action? What is the importance of entrepreneurial culture for an extension project? What is the motivation in creating a strategic planning (PE) for an exten projectthat is already in progress? The answers to these questions begin to emerge when we direct our entrepreneurial gaze to technical planning. In university extension, extension projects and projects involving the scientific knowledge themselves are public goods and not only services provided, therefore, they must have an effective planning and an efficient, ethical and transparent management, even if they follow pre-established rules and standards, since they involve actions aimed at the collection needs(CORREA-GILLIERON & SILVA, 2021).

According to Article 53 of Law No. 9,394 of December 20, 1996 (BRASIL, 1996) "it is the responsibility of the university to establish plans, programs and projects for scientific research, artisticproduction and extension activities", which consolidate academic knowledge and bring improvements in the services provided to the community. University extension is one of the basic functions of the university, and as pointed out by Gatti (2004), because it treats projects, programs, courses and events, it is necessary that higher education institutions carry out an adequate planning about the work to be developed in the extension, which has foundations in a sociocultural and ethical perception.

In Brazil, there is a large number of higher education institutions (GARCIA E BISNETO, 2014), to develop and execute strategies able to meet external demands, the supervisory bodies, what the students and the community crave, the laws and government requirements for institutions to formulate adequately, their PDI (Institutional Development Plan) (MEYER, SERMANN, and MANGOLIM, 2004). All the challenges mentioned and others, require the formulation of a strategic management and a strategic planning by parte of the managers of educational institutions. Strategic management is a current field in the management subject that at every moment applies more to education and management of educational organizations.

According to experienced authors and classic concepts, a project can be defined as a temporary effort, which mobilizing human, material and financial resources, presents a defined life cycle to achieve specific results, whether to perform a service or create a product (SCHEILINI et al., 2017; RABECHINI JR and CARVALHO, 2009). Several organizations are guided by projects that are temporary enterprises (SCHEILINI et al., 2017; RABECHINI JR. and CARVALHO, 2009) applied to various areas and with the objective of "producing new products, services or having exclusive results" (PMI, 2014). Since the 1980s,

organizations in general have realized that the use of project management provides many competitive advantages such as: creation of better products, faster service delivery, quality and integration of processes and activities, greater periodic control, among other positive factors (KERZNER, 2011). However, the success of a project depends reasonably on the type of interpersonal relationship between the manager and other collaborators, transparency and clarity in the information that is passed on to employees and partners, and the correct alignment to strategic processes (monitoring of activities performed and delivery of results) (RABECHINI JR and CARVALHO, 2009).

Toerencia a project would be to apply "knowledge, skills, tools and techniques to the activities of the project in order to meet your requirements" and develop it more efficiently (PMI- *Project Management Institute,* 2014). For some authors (RABECHINI JR and CARVALHO, 2009) a targeted project management has been a better accepted alternative by organizations in general, since it directs companies to achieve their goals and use their resources more appropriately. A very expressive example of project management can be the grandiose feat of antiquity - the construction of the pyramids from Queóps to Pharaoh , making an analogy between the techniques of construction of this work and the modern practiceof project management; the pyramid was a project that involved about 80,000 workers for 20 years and showed the competence of men who, in addition to developing the project had skills to manage human resources, costs, risk, qualityand other factors. It is crucial in a project to minimize risks, prove value *to stakeholders* and accurately lead human resources.

The knowledge of strategic processes (those essential to the activity that the company or project carries out) by the manager, as well as the relationship he has with his employees and external partners, are differential examples for a project to achieve its objectives. In the university context, projects are assets in the public sphere, being crucial a transparent and ethical management, as well as the best management practices for the project to be successful and fulfill its objectives, which are in the sphere of teaching, research and extension, considering the indissociabilida ofthese three pillars, as recommended by the constitution (BRASIL, 1988).

The life cycle of a project is linked to its size and complexity (PMI, 2014); and this has defined beginning and end, and its deliveries in this time vary according to the specificcities and demands. The closure of the project occurs when it achieves all its objectives (PMI, 2014) or when it is evaluated that these objectives will not be able to be achieved, and thus, due to its unfeasibility, the project is finalized. The temporality ofthe project, however, should not be linked to a limited duration, and the term "temporary" is not only linked to the development and/or delivery of a product or service (PMI, 2014). Each project is responsible for creating a unique and unique delivery that isup to a long term. Even in projects with a set of similar techniques in product development, each final delivery is always specific and unique, giving a peculiar and entrepreneurial character to each one. Therefore, it is important for the projeto manager to know well the life cycle of the project, its tools and appropriate techniques to be used for the project to meet its objectives.

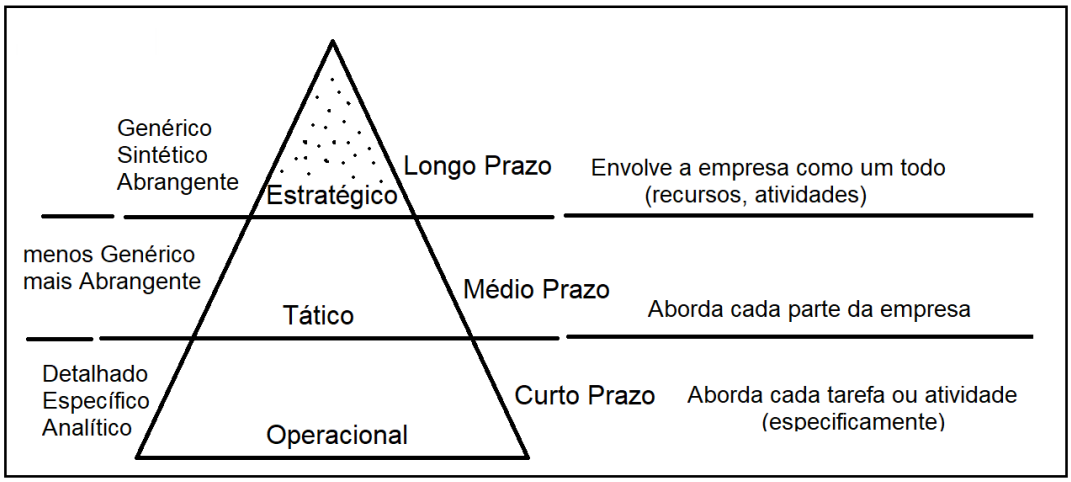
1.2.2 Strategic Management and Planning

In strategic management it is important to describe the business model (KALLÁS, 2012). An interesting model for this purpose is the *Business Model Canvas* (BMC or CANVAS) model (OSTERWALDER, 2010), a practical tool to detail the panoramaof the undertaken (or project) that is to be developed or created, where the organization of information is made available in nine blocks (OSTERWALDER, 2010); it is a simple instrument that allows adaptations and changes at any time, thus ensuring the premise of flexibility to strategic planning.

Regarding Strategic Planning (PE), this administrative technique is responsible for identifying opportunities and threats from the analysis of the environment to which the enterprise is inserted (ZABOTTO & ALVES FILHO, 2019; BARBOSA & BRONDANI, 2005). It is in the EP that we discuss how to properly employ resources (physical, financial, human) focusing on the objectives previously established in the project. The main objective of the EP is to give managers and their teams a tool capable of supplying them with information that leads them to more appropriate decision-making, thus helping each manager to act proactively and, in advance, to the changes that may occur (BATAGLIA & ABRAHAM, 2008). As this tool andnvolve project the future, know where one wants to get and what the best actions and paths to be taken to achieve the desired goal, the EP also prevents possible mishaps that may appear along the way. A good PE increases the chance of the project to achieve its objectives (BOMFIN, NUNES and HASTENREITER 2012), but, there is a great diversity of definitions and types of PE (ALBANO & GARCIA, 2013), there is no closed form or standard of application thereof.

Chiavenato (2003) classified the PE into three distinct levels (with no relation of superiority between them): strategic, tactical and operational (Fig.1). To achieve the objectives of a project, everything must be in accordance with the strategiclevel, however, these levels dialogue, with no relation of submission between them or plastering (MOTTA, 2000), being the main focus of planning to achieve the objectives of the enterprise.

Figure 1. Comparative characteristics inthe three levels of planning.



Text adapted from CHIAVENATO, 2003.

At the business level, the PE has steps used to ensure good results, and several factors help to define the number of steps present in the planning according to the enterprise, among them are the clarity about the context of the enterprise, its specific characteristics, the best choice of the model that best aligns with the specificities of the enterprise. This is also appropriate and valid for a university extension project. The classic planning models (MEYER JR., 1988; ARGUIN, 1989; BRYSON, 1995) have a distinct number of stages (from 4 to 10) but, despite their differences, have three points in common: a) development and establishment of the mission; b) the analysis of strong and weak points, opportunities and threats; c) the development of action strategies (ESTRADA, 2000). In the case of universities, PE models range from the simplest to the most complex, but keep these three points in common between them. An example of a model (with 5 stages) that considers more clearly the concept of "entrepreneurial university" is that of the Technological Park of the Federal University of Rio de Janeiro - UFRJ (2016); in this, teaching assumes responsibility with society and interacts more closely with the private iniciativa (companies), intending to qualify actions and deliveries.

1.2.3 Strategic Planning Steps

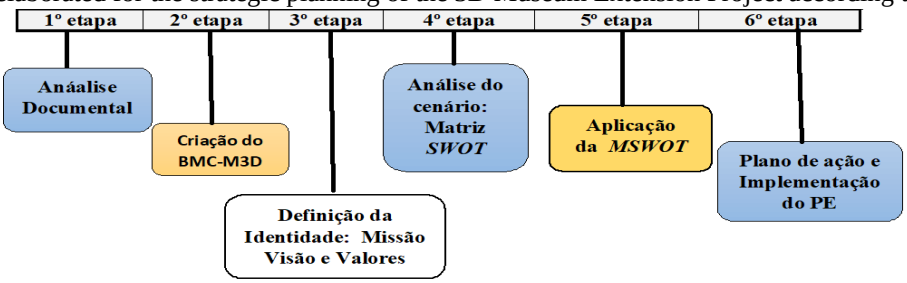
In the EP some steps are determinant, such as: a) the creation of institutional identity (Ii) and the analysis of scenarios (or environments) (CA): Institutional identity (Ii) serves to clarify principles that guide the enterprise or project. In Ii, clarifications are made about the mission (thepurpose of the preendimento or project), the vision (perspective of the future) and the values (principles). This identification from a strategic point of view is responsible for enabling greater clarification about what the enterprise or project does (its actions); b) the CA or organizational diagnosis, is very important because it provides knowledge about the environment in which the project/enterprise is inserted (GOMIDE, et.al, 2015), giving the manager the appropriate knowledge so that he can make decisions about how to approve the opportunities and/or minimize possible threats.

The BSC matrix (*Balanced Scorecard*) is an instrument that could be applied to the EP for the analysis of the scenario, but despite being widely used in strategic management, it presents limitations for theplanning of future actions (KAPLAN and NORTON, 1997), requiring complementation with other tools to achieve the objective in strategic management. A better suited instrument for THE would be the SWOT matrix (short for *Strength*, *Weakness*, *Opportunity*, *Threat, this tool* emerged in the 1960s (FAGUNDES, 2010) and is widely applied in strategic management, with the purpose of collecting important data that characterize scans in project/enterprise (strengths and weaknesses) and external (opportunities and threats). The SWOT matrix, useful for a long-term PE, and versatile for application to any circumstance and context (public or private), is suitable for applying the universitary extension. Even if the EP can be flexible to meet educational projects, to consider the project as an undertaking such as strategic management, it must have steps that fit some of the basic principles used to qualify social and/or educational enterprises (see Chart 1) (BASTOS; RIBEIRO, 2011; DOLABELA, 2003) .

2 METHODOLOGY

For the creation of the PE of the 3D Museum project, steps (6 steps) were idealized according to the diagram seen in Fig. 2. For each etapa, the context of the extension action was taken as the basis, that is, that the project fits the guidelines of the University Extension Standards, and the parameters addressed in the classical models of planning mentioned, and the basic principles reported in figura 1, were relevant for each stage elaborated.

Figure 2. Stages elaborated for the strategic planning of the 3D Museum Extension Project according to its specificities.

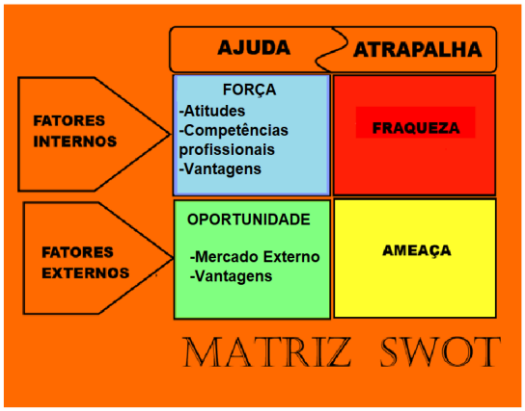


(BMC-M3D = *Business Model Canvas adapted* to the 3D Museum Project (Correa-Gillieron & Silva, 2021)

Step 1, Documental Analysis (Fig.2) cited in this study was thought of as a qualitative research (GODOY, 1995), although it is not measurable, its validity has another perspective, such as degree dand reliability, formulation, development and research result (BIANCHI; IKEDA, 2008; ULLRICH AND COLS., 2012; DEMO, 2012). Thus, documentary analysis examined evidence based on verbal and visual data (document analysis). To this end, it was a survey of all the documents of the project, which involved a working period of 10 years (2009 to 2019); in the 1st stage of this EP the contents were analyzed, through the in-depth reading of each selected document, which were separated into cate gorias, to establish the existing relationships between them and with other aspects of the project, as suggested in the current literature (BARDIN, 2016). The document classes were determined according to some elements gathered under common characteristics, as recommended for an adequate content analysis (CORREA-GILLIERON & SILVA, 2021). The classes established were: **Docs.Oficiais:** Homologation of the 3D Museum Extension project by the Congregation of the Institute, obtained in 2009; records necessary for the project to officially carry out the extension activities, in accordance with the standards of PR5/UFRJ): Registration in the Information and Project Management System (SIGProj), obtained in 2012, Single Registration of Extension Actions (RUA) obtained in 2016, with anual renewal; document of the project's office (the place that represented an institutional unit within the ICB, obtained in 2013. **Docs.own;** Documentation on the Advisory Board (03 Profs. + 01 Coordinator); document/official partnerships in the extension action (cartas of the agreement of Schools, Hospitals among others). **Docs.Operacionais:** Forms: for the preparation of pedagogical workshops and certificates; Photo authorization term; Forms for evaluation by the target audience and partners; Activity reports; Extensionlist time sheet; Project badges; Attendance list for workshops / signature of the target audience; **Docs.Gerais:** Certification of

funds and scholarships received; Participation in notices; **Docs.Extensionistas:** Registration forms of trainees; Curriculum vitae; Course history at the university with averages; Extension Manual; Term of commitment; Work plan; Scholarship term; Models (official opinion on extensionists, completion of the extension stage; **Docs.Produção científica:** Publicações em periódicos e anais de scongressos e livros; Other academic productions (monographs and dissertations); Certified participationin events; Awards. **Docs. productions and communication:** *Folders* and *posters,* Social media posts; Handouts and created games; 3D models created. **Doc. Patrimônio:** List of the physical heritage of the project; Listing of 3Dmodels produced (with location). Steps 2 and 3 shown in the diagram (Fig. 2) corresponded to the adaptation of *the original Business Model Canvas* (OSTERWALDER, 2010) to the 3D Museum (BMC-M3D) **project, which** maintained the structure in nine blocks as in the BMC original, and the creation of the project identity, as reported in publication (CORREA-GILLIERON & SILVA, 2021). In steps 4 and 5 (Fig.2), the Corporate SWOT Matrix tool (modified from OLIVEIRA, 2007) (Fig. 3) was adapted to the project (MSWOT-M3D), and allowedthe analysis of external and internal scenarios to the project. This matrix was the basis for the creation of the PE, and in it the internal (strength/weakness) and external (opportunity/threat) factors to the project were evidenced, configuring the analysis of the scenario capable of inteto infer in the execution and productivity of the project. This tool allowed evaluating the project within the context of extensionist action, seizing internal and external issues, able to help the project reevaluate objectives, formulate new strategies, meetchallenges and improve their opportunities. As in a company the strengths and weaknesses of the 3D Museum were established considering: 1. **Strong point,** is a controllable variable that represents the differentiation achieved by the company that givesit an operational advantage in the business environment (where are the issues not controllable by the company); 2. **Weak Point,** a controllable variable that would be the inadequate situation of the company and which provides it with an operational disadvantage in the resarial empenvironment; 3. **Opportunity**, the environmental force uncontrollable by the company, which can favor its strategic action, provided it is known and used satisfactorily, and while it lasts;

Figure 3. SWOT 3D Matrix Model. The schema shows a SWOT matrix, which when populated with the specific topics shows the points cited according to the context of the enterprise or project .



Adapted from Klusacek (2004) and Oliveira (2007).

4. **Threat**, the environmental force uncontrollable by the company, which creates obstacles to its strategic action that may or may not be avoided, provided that it is recognized in a timely manner. Based on the SWOT matrix adapted to the project, it was possible to think of suggestions for the planning of the activities of the 3D Museum and make the necessary adjustments, creating a Planning Review (Fig. 4), and move on to phase 6, the Action Plan and implementation of the EP, which was subdivided into categories to better adjust to the actions of the project.

Figura 4. Planning Review (RP) - 3D Museum Project.

MONTHLY WORKSHOPS + PARTICIPATING TEAM	OFFICIAL CAMPAIGNS	COMMUNICATION IN SCIENCE	SCHEDULED DATES AND TIMES	

Suggested table with the objective of organizing the activities within the scope of the extensionist action, and elaborated based on the information provided by the SWOT matrix. Prepared by the authors.

3 FINDINGS

Through the documental analysis it was possible to describe an overview of the development of the 3D Museum project, since its creation (2008) and in a trajectory of activities of ten years of work. In business life, data collection (step 1, Fig. 2) in a qualitative research should be interactive and establish credibility with the people involved inthe study. In this sense, a qualitative study should be considered as to its ability to become public, correctly represent what the researcher proposed as a hypothesis, and contribute to implicit knowledge. This was the principle used in qualitative research made for the 3D Museum, which culminated in a research consistent with the purposes and that brought consistency to the results. As was necessary, to qualify the project as an enterprise, the basic principles used in general to qualify enterprises were applied to the 3D Museum, comparatively, with excellent results:

Table one. Similarities between enterprise and extension project.
The fourteen items below represent important and essential conditions that an enterprise or project must have to be classified as a social and educational enterprise, within the scope of business management.

a - Extension Project b - Social Enterprise c - Educational Enterprise	1. Creativity a,b,c	2. Ability to achieve a,b,c
3. Commitment to improving people's lives a,b,c	4. Reducing inequalities a,b,c	5. Ability to make a difference a,b,c

6. Strengthening the role of children and adolescents a,c	7. Valuing the paradigms of education a,c	8. Education as a goal a,b,c
9. Focus on the social impact of your activities a,b,c	10. Education and social transformation a,b,c	11. Exercise of the dialogical process a,b,c
12. Absence of hierarchies a,c	13. Sustainability and independence a,b,c	14. Privilege of the collective a,b,c

Prepared by the authors.

Based on the items in Chart 1, the 3D Museum project can be considered an enterprise, as will be explained comparatively below, and thus this corroborated with the objective of building a PE for this extension project. In relation to item **1.** Creativity wasa striking cystic face of the 3D Museum Project products demonstrated by the inclusion of three-dimensional models, which are identical 3D copies to human organs, to use in pedagogical workshops; the inclusion of comic books (COMICS) to accompany the workshops as educational material for each theme is another example; the creation of three-dimensional educational games to accompany workshops and events, the association with 3D models and histological slides with tissue preparations representative of the anatomical areasseen in the 3D model (an exclusive action created by the 3D Museum project for their workshops), which allowed to understand the different dimensions (the macroscopic and anatomical seen in the 3D model and the microscopic and histological seen in the slides); **2.** The capacityof realization, is exemplified by the application of several pedagogical workshops every six months (in elementary and high schools, NGOs and outpatient clinics of public hospitals) bringing various topics to this target audience (CAMPOS & CORREA-GILLIERON, 2021b), in addition to the dissemination in science made in events such as the Science and Technology Weeks (2008 to 2018) and the National and International Weeks of Brain (Brain Awareness Week), in which the 3D Museum participated as a peer; other examples were the extension is conducted in several annual health campaigns (Breast Cancer Week, Prostate Cancer, etc.), participation in all ufrj events (Knowing UFRJ, Academic Integration Week, dentr and others), and in official congresses (Extension Congresses, and Congresses of the Federation of Societies of Experimental Biology, this as a unique opportunity for extensionists of the project who were high school students), and more, the ability to rea lizaçãoof the project through official publications in social networks, and the preparation of theses and articles (CAMPOS E CORREA-GILLIERON, 2021 a,b); **3.** The commitment to improving the life of its target audience (and indirectly its leaders) was carried out through the activities, messages and teachings that the 3D Museum project offered and that empower its target audience as proactive citizens in a society; **4.** The reduction of inequalities, a primary goal of the project, was accomplished through the teaching and scientific divution of important topics in science and collective health, which qualified individuals in a competitive society,

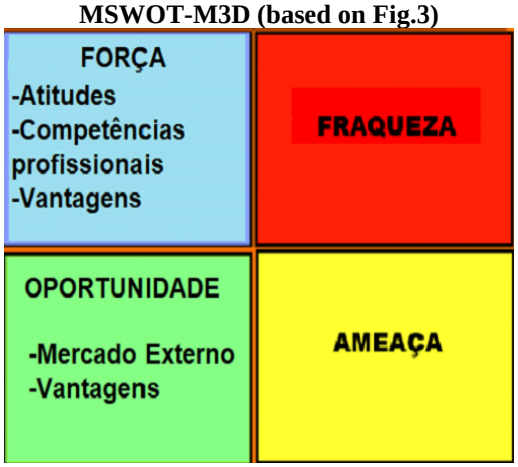
which generally did not provide everyone with information, and another fundamental goal was the inclusive action of the project aimed ateducating individuals with visual impairments, through textured 3D models; **5.** Making a difference and motivating its participants were actions that occurred in the project through the dissemination of their workshops, at events and on social networks. And through criticism and suggestions from their peers and the target audience in evaluation forms opinions were valued and the project sought to overcome itself, be more creative and positively interfere in the formation of knowledge for society and thus makethe difference. **Six, six**. The child and youth protagonism in the project involved the actions of extension students focused on solving real problems of society, with discussions about citizenship, diversity, social inclusion, among other topics; the return of this contributed to the formation of the knowledge of the young extension ist, a future professional, who already interfered in the extension activity of the project decisive changes in the social, environmental, cultural and political reality of its community. **Seven, seven**. Respecting educational paradigms, it was always a keynote in the workshops and extension action of students who, in the act of teaching other students, learned, thus increasing their educational potential; **Eight**. Teaching for all was the theme of the project, which developed facilitators of the learneras the 3D models for various themes and textured to help visually impaired people, in addition to games, comics and personalized educational booklets; **9.** Acting with society, an extensionist activity responsiblefor the project, brought the experience and academic knowledge to society and exchanged knowledge with society in order to build positive social changes and create proactive individuals. **10.** The project bet on education as a factor of social transformation and always believed in the process of teaching others, and in education as a mechanism of change. **11**. Through clear dialogue, the project believed in the exchange of knowledge and the incorporação of diversity according to the principles of university extension to generate learning; **12**. The absence of hierarchy was clear in the project, and the transmission of teachings in the workshops was made by any extensionist (student or teacher) who created and prepared to lead the teaching-learning process in the workshops offered to society; **13**. The coordination of the project was competent to adopt necessary actions in times of absence of funds and funds, investing in economic educational performance and betting on recycled and sustainable materials, and seeking other sources of donation. It was a standalone project; **14.** Respect for the collective was encouraged by the project in the production of knowledge for the individuals of society, in their atividades, their different products and their objectives in the field of university extension.

To create a specific PE for the project it was necessary to understand how the project detailed its business model (KALLÁS, 2012), which was possible with the parameters found with the *Canvas instrument* adapted to the 3D Museum project (CORREA-GILLIERON & SILVA, 2021), which allowed in a diagram of 9 blocks the visualization of the project quickly and the visualization of the fittings and the relationships between the different areas of the project. With the *Canvas* developed for the 3D Museum and the information obtained with the SWOT matrix presented in the present study, it was possible to structure the steps of the PE (Fig. 2). These two tools (Canvas and Swot Matrix) are important because they

allow adaptations over time and each time a demand requires (extension projects are dynamic), and are tools that make it easier for the project to achieve its objectives properly.

In the construction of the SWOT matrix (Fig. 3) adapted to the **project (MSWOT-M3D**) were addressed as follows the divisions:

MSWOT-M3D (based on Fig.3)



Adapted from Klusacek (2004) and Oliveira (2007).

STRENGTH/ Attitudes - items representative of strength: A present and experienced leadership of the coordination of the 3D Museum, always close to the extension students, in a friendly and productive relationship brought the reliability of the extensionists, and leveraged the results of the project; the formation of teams with an auxiliary leadership (the oldest student as a team leader) brought dynamism and enthusiasm to the extensionists in all activities; the choice of exclusive teams for the project(trainees had a single internship activity in the period) favored dedication and reinforced the results; discipline of the teams regarding the schedules in the internship and attendance in the development of extension work; the motivation, importantfact r for the participation of extension actions; support of coordination for the choice, preparation, and development of the themes of pedagogical workshops; certification of workshops made by declaration was an incentive to the student's curriculum; proactive attitudes of extensionists in the search for events to participate (seminars, congresses); acceptance by extensionists of rules, suggestions and corrections in the application of the workshops showed the professionalism of the internship in the project; the team spirit between the partof the project and the feedback *to* the partners.

STRENGTH/Professional Skills - items representative of strength: the skills and abilities for the development of 3D models produced by the project and for other teaching materials used and dissemination materials (folders, pamphlets, posters); the scientific knowledge applied to the activities was academic/scientific and improved according to social needs; the resourcefulness of the teams at the time of the presentation of the project products (the ficinas, *banners*, oral presentations) showed the knowledge; the excellent institutional relationship on the part of the extensionists with the target audience;

STRENGTH/Advantages - the crediting of extended workload for undergraduate students is an educational and curricular advantage; the learning of extension students in various topics allowed to apply

this knowledge in their professions; the project provided the learning for the construction of textured 3D models that favor the inclusionof people with visual impairments, a goal that values the maker culture (CORREA-GILLIERON & SILVA, 2020) and prototyping learning.

OPPORTUNITIES/External market - items **representative** of opportunities: the project was open to partners outside the universityrsity who were interested in dissemination actions in science and health;

OPPORTUNITIES/Advantages - items **representative of** opportunities; the constant acquisition of new knowledge, *competitive know-how* based on the relationship with partners (knowledgeof each one's needs); extension action of the project associated with the progression of teachers and technical servants in the ufrj career.

WEAKNESS- items representative of weakness: determined time of internship for each extension student in fanoint of their courses, required the constant repetition of the guidelines to the new ones; absence of periodic meetings with the team, due to the course schedules of the students at the university; lack of own transport to take the teams to the spaces where the ofi cinas were performed; the planning of actions could not always align the availability of partners; the inadequate size of the physical space where the project worked at the university, for the construction of 3D models and for the large number of equipes; lack of a project management specialist supporting the coordinator (who accumulated the functions of university professor and researcher); inactive and efficient participation of the project advisory board;

THREAT - representative **items** of threat: Limitation of the number of scholarships destined to extension action (or poor distribution by UFRJ); inadequate appreciation of the extension in the university when compared to other areas (teaching and research); difficulty of funds in comparisonwith other projects (in the research area) and appreciation of the extension.

Considering the official 12-month time of an extension project, the creation of the Planning Review - RP (Fig.4), pointed out some points committed to the project and whichshould be resolved: thus the PR should show a number of workshops necessary monthly (for evaluation even for the following year); the PR should indicate which and how many dissemination activities in science and official health campaigns, could have the participation of the 3D Museum in the proposed year. In the PR, meetings should be included in the year for project evaluation, monitoring and control related to the development of extension actions, which could be in quarterly meetings (in January, June and September) and in December a final meeting. Preferably, the meetings should have the majority of the participating extensionists (undergraduate students, technicians, teachers, advisory board, management team) and be scheduled on the agenda assembled by the project manager, who can be a partner of the project. Another important item of PR is the hours used by extension ists in the action (which are raised to credit extensionists) and a statistic should be made, which will serve as a basis for divisions of work teams, to optimize the presentations of the workshops with the partners, and also discuss other ways to allocate the extensionists within the main actions developed by the 3D Museum. project should receive information (may be a spreadsheet) of the PR about the workshops or other schedules with the number of hours of each activity, so that they can

organize their participations. The 3D Museum project did not have an RP and this was included witha weakness in the project matrix SWOT. It is expected that the suggested PR will be a monthly monitoring tool of activities, and can list several points planned for the current year, and thus can assist extension projects as a simple and practical instruction that promotes dialogue betweenextensionists and partners, strengthening decisions, improving actions and, therefore, perfecting the design.

The final stage (step 6) of the EP, the Implementation of the EP of the project, was estimated with suggestions divided into categories for its improvement, and these should be guiding categories that may change according to the project, as follows: **Institutional Performance -** Periodically review the EP to keep the project aligned withthe National University Extension Policy and according to the institutional development plan of UFRJ (2012-2023); **Acting as Academic Extension -** Strengthen the extension, according to changes in the educational scenario, from the development ofmore actions (continuous updating of the team and active management of the social networks of the 3D Museum) in the scope of dissemination in sciences, and as establishment of new partnerships, including international, and reinforce accessibility policies; **Extensiontraining -** Improve the performance of the student body engaged in the project through periodic updates (every quarter), as a way to *improve both the expertise in the production* of 3D models, as well as in the preparation of workshops; **Performance of the Faculty -** Continuously and procedurally evaluate the performance of the teachers involved in the project, to size the participation of the faculty and promote updates as extensionists with regard to scientific contents and methodologies to be applied in the workshops; **Acting as communicator in Sciences -** Bring the advisory board closer to the activities developed, perhaps with tasks, so that they can participate in order to contribute more productively as to theobjectives developed by the project; **Financing Plan -** Periodically evaluate the scenario of action in relation to the needs of the project (creation of products, acquisition of scholarships and funds, application of workshops) and it is suggested that the matriz SWOT itself be used for this purpose; **Communication Plan -** Periodically evaluate the capacity and scope of the project in relation to the general public (via forms) and on social networks. The public recognition of the project's identity is favorable to itsgrowth and maintenance, including attracting second-degree teachers as collaborators; **Educational Plan:** Periodically review the actions of the project to verify whether the ufrj school calendar is being fulfilled, to ensure vacancy to the students of acordo with their hours of extension, thus giving ample opportunity to students for the execution of internships in Extension.

4 DISCUSSION

Higher education institutions play a fundamental role in the development of society and in the formation of its students and researchers, with the primary purpose of building and preserving the scientific, technological and cultural knowledge of the country (FRAGA, 2015). However, the current requirements imply universities that go beyond their educational function, which makes it essential that they prepare to use strategic management in the usual way as they do with enterprises. Entrepreneurship is not

restrictedonly to companies and the sectors of public administration, universities alike, should think of entrepreneurial actions. In this modern context, strategic planning (PE) is important for university projects.

Through abibliographic b usca it was possible to see that there is no expressive application of an EP for extension projects in universities, similar to what is done in companies. The 3D Museum project, used in the present study, was a real example that despite the exemplary functioning, did not have such specific planning to put the project clearly as an enterprise. Mapping the demands of a project as if it were an enterprise is very promising, and using qualitative research to takentar data is important, since this has a subjective character, that is, its result does not show concrete numbers but ideas, and the individual experiences of the participants. According to Ullrich et al. (2012), there are reliability criteria in a qualitativa research that are: (a) the detailed and in-depth description of the delimited situations, the time frame of the study and the categories for analysis; (b) the theoretical saturation with search in various points of the literature in the sense that it is not necessary to addmore data to understand the studied phenomenon (this validates the data set); (c) investigative triangulation where different observers (with different knowledge) analyze the research points and the results in the sense of its validation; (d) transparency, the detailed description of all procedures used in research and theoretical construction; (e) the clear exposure of the limitation of the research; (f) the credibility of the results that should reflect the experience of the participants in the research; (g) the creativity of research in the organization and presentation of data. The criteria used in the present study for qualitative research carried out for the Project Museum 3D, corroborated with the recommended by the cited author.

The idea of developing a PE (Fig. 2) for the 3D Museum project aimed to guide this extension project in the direction of achieving its objectives in a more innovative and practical way, and to make the purposes of the project more transparent for society and for the follow-up of university extension of UFRJ, which is responsible for evaluating the projects in action. It was also up to the interests of the project to make clear its identity, its purposes, activities and ideas that it developed over the years of extension work, its reach to the target audience, the cost involved with its actions, among other factors that are fundamental to know a project and attract Funders. And, a PE is able to broaden the view of a small enterprise as to its performance,as was the case of the 3D Museum.

As discussed at the beginning of this study, the literature presents classic PE models for the public and non-profit initiative, which guided the division of the PE into stages, which were adapted to the 3D Museum project, and can be adapted to other university extension projects. The stage of action and implementation of the PE (step 6) (Fig.2) is present in the models of Bryson (1995), Almeida (2004) and the Technological Park of UFRJ (2016), being absent in the arguin model (1989). The Extension Project Museum 3D, even having already started its activities always understood as necessary a proposal of PE, which would come not only to analyze and update its actions but to direct its activities in the medium and long term, conforme what was said by Xavier (2008) "the project is a planned enterprise, it is a set of

interrelated activities and these must be coordinated to achieve specific objectives within deadlines limited resources."

Toelaborate a PE pertinent to the 3D Museum, the analysis of the external and internal environments would bring a wealth of guiding information, and the tool of choice for this analysis was the Matrix SWOT, a simple method, easy to apply, which servesto evaluate any type of enterprise or project or part of it (GOMIDE, et.al., 2015). In the 3D Museum project this matrix evaluated its performance within the context of the extension ist activity and allowed to differentiate what is proper to the extension project (strengths and weaknesses) from what is external to it (threats and opportunities). The SWOT analysis of the project - MSWOT-M3D - was one of the steps developed without major difficulties, and one of the determining factors for this to happen was the previous treatment of information from the documentary analysis carried out with the *use of Canvas* (CORREA-GILLIERON & SILVA, 2021), which better directed the information about internal and external factors to the 3D Museum Project.

The present work demonstrates that it is possible to use business management tools for university extension projects, as these allow a clear, consistent and more simplified evaluation of each fundamental point. In the case of the 3D Museum project, it already had some knowledge about its external environment (in this case the partners and target audience), as well as the way in which its equipe (internal environment) operates, but without the rigor of a SWOT matrix. The adapted analysis of the original Matrix SWOT model showed several important points, such as project strengths, including the experience and proximity of leadership to extensionists. This attitude facilitated the understanding and conduct of extension activities by its participants, as well as the motivation in the development of actions. Other strengths in the project, as presented in the results, were the concern with the crediting of the extension to the students and the competence and skills of the participants, valuable points that differentiate projects and qualify the university extension. In the 3D Museum project, it was required of the extensionists, the in-depth study of all the temas they would present in the workshops (training) besides making them fit for the preparation of workshops and manual construction of the 3D models to be used (enabling) in addition to the creation of games, comics, infographics, handouts and other teaching materials used in workshops and events. These types of requirements on the part of the coordination were excellent stimuli to extensionists and are considered strengths of the project. In the SWOT matrix a favorable characteristic withsiderada as an opportunity, was the proximity and good relationship of the project with its partners. This was enriching from the point of view of the development of their actions, since there was an always open communication channel with the partners, which facilitatedthe tweaking of the demands arising from them, and this was also a strong point of the project.

The weaknesses of a project must also be raised so that they can be improved, and among them was considered the limited length of stay ofthe trainees extensionists in the project, due to each course at the university (the extension students of the project came from several courses of the university), this factor was decisive and could hinder the continuity of the activities of the project. This is a type of fraqueza that

will always be present in extension projects, although the turnover of students brings new knowledge and ideas and gives opportunities to everyone. But turnover is sometimes an exhausting point that in the case of the 3D Museum project, required the task of constant reinstruction and preparation of new trainees, especially in relation to the construction of 3D models. restudied so as not to interfere with the growth of the project. The creation of team leaders was a strong point of the project, and it was an excellent strategy adopted by the project, because the leader was chosen as a scholar, which helped in his perma nência for a longer and predefined time, which balanced the shorter time of other trainees, and this exemplifies how a weak point could be transformed into a strong point, minimizing the effects of a weakness in the project.

Another factor identified withweakness in the project was the inadequate size of the place where the project operated. The laboratory in question was adapted to receive the project, but did not have the infrastructure (and the appropriate size) necessary to house all the work of the project and still serve as a room for everyone, etc., which impaired the production logistics of 3D models, for example. Likewise, the reduced space compromised the possibility of receiving large visitation groups (students, teachers, general public) in communication events in science that the project offered. Diagnosing a point of this nature (space) is fundamental for the functioning of a project, and justifies the importance of a PE, and an analysis performed by the chosen SWOT matrix.

The analysis andSWOT carried out, also identified as a major threat to the project the limitation of the amount of scholarships destined to extension action. This was configured as a major barrier to the actions proposed by the project, in relation to other projects that aremore fav orecidos by scholarships. As the 3D Museum project had many interns, it needed a much larger number than the one assigned to it. This meant that a large majority of students were non-scholarship interns, and caused the departure ofinterns for projects that had more scholarships. This created a cycle of teaching the craft and losing the trainee shortly after due to lack of scholarship, increasing the difficulties of action of the project, something that was repeated throughout the duration of the projeto.

Another threat to the project may be configured as the difficulty of funds and/or the limitation of these for the extension. In the case of the 3D Museum project, the investment, for example, in the material needed for the manufacture of 3D models was high, even the purposeseeking to minimize this with the use of recyclable materials. The lack of funds is a real and dangerous threat to any extension project, a type of project that is still undervalued in universities and competes with the funds (and *the glamour*) of research, in an inadequate procedure that still exists in academia. Thus, it is almost imperative that an extension project has an EP to guide it towards other means to maintain its activities if necessary. After having a defined diagnosis about the environment to which the extension project was inserted, it was possible to reflect more easily on the objectives of the 3D Museum and its adjustments, due to changes such as the number of extensionists, the number of partners, the types of partnerships, the types of workshops to be applied that must evidently reach the public's anides at different times, among others.

In public educational institutions superior, according to several authors (BRESSER-PEREIRA, 1996; SANTOS et al., 2009) there are many restrictions; the very complexity of the university structure, the legal and financial limitations, the lack of an alignment of organizational practices, the actions of decisões that are influenced by many interests of groups and that are decentralized and institutionalized bureaucracy, factors that prevent entrepreneurial actions and hinder the implementation of strategic planning in these institutions, although modernity is instigating public and private institutions about the application of the EP to the university context, as it is done in companies. The idea developed in this study of creating a PE for the 3D Museum project represented a deterring action within the "macrocosm" of the University Extension - a pillar within a public institution such as UFRJ - that can be followed by other extension projects.

Most individuals are not born an entrepreneur, but it is possible to developentrepreneurial attitudes by offering qualifications and technical skills, especially to young people in school. University extension helps to develop skills, and to expand entrepreneurial capacity in individuals (in society and extensionists) by their own intrinsic characteristics. This is the case, whether in the construction of scientific knowledge in the university and in the relationship of dialogue and sharing of this content with society. In the case of the 3D Museum, with differentiated teaching methodologies such as the use of 3D models associated with the other methodologies of pedagogical workshops applied by the project, in practice, the business concept of enterprise was not noticed by individuals unfamiliar with the mechanics of functionof the business world, so a PE for the project could be disregarded. However, the 3D Museum Extension project presented several points in common with an enterprise, and the PE created was a necessary and innovative reality for the 3DMuseum, which would allow the project to qualify more and more and become a provider of quality educational services to its target audience. With more and better qualifications it is possible to infer that the project would become more competitive, more visible andmay s compatible with public policies and available funding. Today's society is constantly changing, knowledge expands rapidly, technology provides new features every year, and a good PE can make an extension project an enterprise capable of constantly evolving, given the challenges of changing society.

The external and internal environments to an Extension project are subject to constant changes, whether in relation to extension ists, the target audience up tothe activities, or in relation to the partners in the extension, being crucial the continuous monitoring that will ensure that the activities offered remain always aligned with the needs of partners and the target audience and with the new demands. Therefore, this study shows the importance and suggests a model of a monthly monitoring instrument of activities, the Planning Review, to organize the project in the present and future year, comparatively. The bibliographic survey showed that there was a scarcity of studies in the literature related to the creation of a PR and a PE, in relation to university extension projects, facts that qualify the present study for the 3D Museum and encourage other projects, within current premises aligned with public management.

It is necessary a sensitive and objective look at the choice of possible tools that can be used for the process of implementing a PE and for the validation of this planning along with the universitarian extension. This is important so that the EP is not understood by the university extension itself, as a simple bureaucratic or imposing process. The present study demonstrated the use of the Swot matrix successfully applied to the 3D Museum project, and suggested that minhos be followed for the implementation of a PE. Thus, the present study establishes directions that the 3D Museum extension project (and other stakeholders) can follow, based on its objectives, which serve to develop future action plans and strengthen important and innovative links to the university extension activity.

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