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Criteria definition for the SELECTION OF STRATEGIC DESIGN PROJECTS in product development companies

ABSTRACT

The need to stay in business has led companies to adopt a project-based management approach, and this practice has been considered as an important mobilizing tool for building and updating their strategic guidelines. In this context, project selection plays a crucial role as a critical factor for success. Project selection methods are present in day-to-day activities of organizations, whether formal or ad hoc, but the effectiveness of these methods has been the major concern of managers and researchers. To be effective, the project selection process should be linked to the strategic objectives of companies; however, although the relevance of the matter is widely understood, research on selection of strategic design projects is still incipient. This study aims to present a set of criteria that executives use for selecting strategic design projects and, thus, help companies strengthen their processes and deepen their knowledge on the subject.

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INTRODUCTION

The need to stay in business has led companies to adopt project-based management (Parker et al., 2013) and this approach is an important mobilizing tool for building and updating their strategic guidelines. In searching for results, projects are essential to create economic value and competitive advantage (Dutra et al., 2014). In this context, the project selection process is a critical success factor (Meade and Presley, 2002).

A selection process should set the project mix that will provide greater adherence to the strategic objectives of the company (Bard et al., 1988).

According to Bard (1988), this selection process is perceived as highly complex, since it is affected by many factors outside the business environment. This view is complemented by Dutra et al. (2014), who believe that its complexity is due to the fact that project selection is a process of strategic decision-making and, as such, has gained increased attention from business managers (Wang et al., 2009; Hall & Nauda, 1990).

In order to achieve the maximum return on projects, selection criteria should be consistent with companies' strategic objectives (Dutra et al., 2014; Meade & Presley, 2002). Several studies

on the subject are available in the literature (Daniel et al., 2003; Dutra et al., 2014; Jiang & Klein, 1999; Oral et al., 2001; Wang et al., 2009); however, they do not show innovation as a means of competitive differentiation.

Selection criteria reviewed in the literature (Daniel et al., 2003; Dutra et al., 2014; Jiang & Klein, 1999; Oral et al., 2001; Wang et al., 2009) usually address strategic projects, regardless of their nature. This approach raises the issue of the importance of innovation as a strategic element, since it is one of the main drivers that the company must master to have a competitive advantage (Moon et al., 2013).

Although it is widely understood that design is important for organizations to achieve their strategic objective, the literature about project selection process is extensive, and many researchers have developed theoretical and methodological systems that are relatively mature for this purpose, research on strategic project selection in design is still incipient (Wang et al., 2009).

This finding shows a gap in scientific knowledge, and it is a fertile field for further research. For this reason, this study aims to present a set of criteria for selection of strategic design-centered projects.

Research on the criteria will be developed initially through interviews with senior business executives in order to identify what considerations guide their decisions when selecting strategic design projects.

A second stage of this study involves understanding the criteria used by each sector for selection of strategic design projects at the operational level, for final choice of the executive management. However, but this stage is beyond the scope of the present paper.

1. Literature Review

Strategic Project Selection

The project selection process is currently referred to as one of the major problems faced by many engineering companies during decision-making (Yu et al., 2012), and identifying the best project or portfolio to obtain maximum benefits and better meet the goals pursued by companies is a central problem for researchers (Wang et al., 2008). In turn, the selection of strategic projects reflects the ability of organizations to wisely allocate their scarce resources to achieve their most important goals (Zhang et al., 2008).

The term “strategic projects” was coined to identify projects whose aim is to help achieve one or more strategic objectives of companies (Medaglia et al., 2007). They are defined in terms of the focus and strategic objectives associat-

ed with them. These projects are begun to create the future of the company (Shenhar, 2004). They are named as such for their capacity to leverage organizational performance. According to Kerzner (2012), the result of such projects should be the creation of sustainable business value.

Strategic projects are crucial to the implementation of strategies (Grundy, 2000). They are considered as the core of business growth, business changes and wealth creation (Asrilhant et al., 2007), and they are required when an organization aims to achieve, maintain and renew its long-term goals and prosperity (Asrilhant et al., 2004). According to Schoemaker (1992), strategic projects are the means whereby a robust business vision is accomplished, i.e., implemented and accomplished.

Project selection is a strategic decision problem, and it is characterized by multiple purposes which are very often conflicting and incommensurable (Liesjö et al., 2007). One of the problems faced during project selection is that decision makers need to allocate limited resources to a set of projects while considering one or more strategic objectives (Medaglia et al., 2007).

Project selection methods are present in day-to-day activities of corporations/institutions, whether formal or ad hoc, but the effectiveness of these methods is a relevant concern to managers and researchers. According to Libertore (1987), the criteria for selection range from quantitative and measurable indices (e.g., ROI - Return on Investment, NPV - Net Present Value, payback) to qualitative and difficult-to-measure indices (Wang et al., 2009).

Cheng and Li (2005) developed a survey based on a project selection model and showed how to prioritize a set of projects, empirically, by using a five-level selection criterion.

Archer and Ghasemzadeh (1999), consider that there are many techniques to estimate, evaluate and select projects, but they are not widely used because they are very complex and do not adequately approach the dimensions of project management.

Oral et al. (2001) consider that the complexity of the selection methods is due to the involvement of various stakeholders that must evaluate alternatives with respect to a certain set of criteria and then make a decision on which project should be implemented. This procedure is typical of a company with business units and divisions whose values and preferences are different.

Daniel et al. (2003) developed a study focused on the selection of research projects, considering that companies often have little capital for investment in strategic programs. As a result, there is a growing quest for the value of collaborative efforts aimed at shared benefits, with costs and risks being shared between partners; in this context, Industry-University. As a result, this focus on collaborative work

ultimately creates the need for a new perspective in innovation management and strengthens its strategic significance because it sets the timelines of corporate projects, allocates resources through the link between ability and commitment, and builds the performance evaluation process.

Jiang and Klein (1999), in their research to identify the importance of selection criteria in project selection, found that the criteria vary depending on strategic posture. In other words, organizations with strategic guidelines assign a high value to the criterion Organizational Objectives. One of the several conclusions of the authors is that when organizations use strategies consistently, they understand the need to carefully align projects with the strategic objectives of the company.

Bordley (1998), throughout his research on the application of a project selection system based on analytical decision-making, found that the greatest benefit of project selection systems is not about finding the best project to implement, but encouraging researchers to develop better projects.

According to Meade and Presley (2002), in order to be effective, the project selection process has to be linked to the strategic objectives of the organization. They also believe that resources are scarce in many organizations, which turns wrong decision-making into a significant loss in project selection. Under these conditions, there are at least two major negative consequences for organizations, namely: loss of valuable resources that were used, and failure to achieve the competitive advantage that the companies aimed to achieve by implementing a given strategic goal associated with that project.

Concerned about the high failure rate in projects, Young et al. (2012) estimate that in order to reduce failure, conventional methods seek to focus on project methodology, involvement of users, high-level planning and qualified staff, but rates remain high, however. The authors pointed out that there must be a systemic flaw in the way projects are selected and managed, and they consider that even if projects are successful, deficiencies in the selection process do not guarantee that they will support the strategic objectives of companies.

Young et al. (2012), highlighted the relevance of their findings because they believe that projects are essential for corporations to improve performance and, thus, respond to structural changes and achieve strategic objectives.

Grundy (1998) argues that, at the strategic level, project management needs to include a number of interdependent and fluid criteria in order to be truly effective. In other words, criteria that permeate the entire organization and are sufficient to implement strategies into projects.

Selection of Strategic Design Projects

The selection of strategic design projects is a process whereby managers perceive and understand the role of design as a crucial factor for the successful implementation of

corporate strategies (Marion & Meyer, 2011), and projects as capable of meeting the strategic objectives of organizations with regard to growth and wealth creation (Asrilhant et al., 2007). This scenario makes for a highly complex environment (Wang et al., 2009) because it takes into account the strategic objectives of the organization. Such a scenario becomes more complex when there is no a method for selection, and decisions are thus made in an abstract context, which happens based on the understanding of managers alone.

As a decision-making process (Yu et al., 2012), the selection of strategic design projects must involve various decision-making levels within the organization. According to Vijay Kumar (2012 p130), this environment is characterized by a dense network of interconnected parts.

Therefore, to select, among the available projects, those that will bring the best return for the company, the manager should evaluate them based on a set of criteria that provide a clear understanding of both internal and external environments, and reflect the critical success factors of the organization (Gray & Larson, 2007). This view emphasizes the importance and scope of the criteria for selection of strategic design projects. Vijay Kumar (2012, p. 133) states that the search for insight and understanding at the frontiers of contexts is a very useful practice when one is looking for new opportunities to develop concepts. This approach fits perfectly with the process of selecting strategic projects, which are the tools to develop a concept whose aim is to create new values for the organization.

Although the selection of strategic design projects is a rational process, guided by strategic objectives, it should be noted that, as a decision-making process, it is influenced by managers' intuition (Giddel et al., 2005). Ling et al. (2014) explain that intuition is an unconscious process and, therefore, very difficult to control. In addition, the authors found that intuition does not occur in isolation but receives input from rational information. Thus, intuition can be seen as part of the rational processing of information and vice versa.

Because design in business is considered as a potential amplifier of innovation (Bruce & Bressant, 2002, p. 33), and decision-making in design is based on "ill-defined" or "wicked" problems (Rittel & Webber, 1973), this set of criteria has to exist so that these features are addressed and the decision-making process is supported properly.

2. Research Method

Methodologically, the research objective of understanding the criteria considered for selection of strategic design projects was pursued by the application of interviews with senior corporate executives (C-level executives). The interview model, as directed by Ceribelli (2003), was chosen in order to make a qualitative analysis by characterizing the business environment and, in particular, to assess the per-

ception of the individuals involved. Seven executives of five companies who participated were interviewed.

Product development takes place in all the selected companies. They are part of the group of companies participating in a larger project being developed at the Federal University of Rio Grande do Sul (UFRGS). Therefore, the sampled companies were conveniently available, which facilitated the present study.

All executives invited to the interviews belong to the strategic management group of their respective companies; thus, they have power of decision and participate in the selection process of strategic design projects.

The seven interviews with the executives were made in three days, and five of them happened in one day. The first two interviews were scheduled by direct contact between the researcher and the executive and occurred on separate days. The researcher contacted the assistants of the other five executives, and they arranged for all of them to be interviewed on the same day.

The interviews took place in a location other than the executives' workplace, where they had previously scheduled appointments. The appointments were confirmed one day in advance, and only one executive missed it; otherwise, the total number of interviews would have been 8.

The executives were interviewed individually for an average of 45 minutes. The interviews were divided into two parts: in the first part, the research scope was presented and clarified the purpose of the interview. The researcher also emphasized the importance of focusing on the selection of strategic design projects. The second part was the interview itself, which followed an open format and dealt with the following question:

What should be considered for selection of strategic design projects?

The researcher allowed the executives to express their views freely, interfering only to maintain the dynamics of events. He was careful not to suggest subjects or guide the answers. Most interventions by the researcher were requests for clarification and details of a particular approach. All interviews were recorded with the permission of the executives and were later transcribed by a specialized contractor. The transcripts resulted in seven files with 79 total pages of data.

The researcher double-checked the transcripts against the original audio recordings to ensure accuracy. Subsequently, the material was carefully evaluated to identify information records about criteria for selection of strategic design projects.

First, the criteria cited by each executive were selected and linked to the justifications given in the interviews. Next, the criteria were compared across companies, by subject and relevance, to create common identifications and, thus, allow comparison. This work of analysis and classification was

important for collecting the information and designing the tables that are listed in the following section.

The next section compiles the results of the interviews and presents a set of criteria which, in the executives' opinion, leverage the achievement of the strategic objectives of the organization and reinforce the possibility that value innovation (Kim & Mauborgne, 2005) occurs, when such criteria are considered for project selection.

3. Results

Seven executives¹ representing five companies participated in the interviews. The companies, which are labeled A, B, C, D and E, were represented by their senior executives. They will be referred to as CXO₁, CXO₂, CXO₃, CXO₄, CXO₅, CXO₆ and CXO₇.

All the companies participating in this research are product developers in the following markets: consumer goods, brushes and painting tools, toys, shoes, and housewares. These companies are among the largest of their segments and have cutting-edge manufacturing technology and highly qualified professionals, and they have international reach.

The following section will present a compilation of the information gathered in the interviews.

Company A

The interview with enterprise A was conducted with the Director of Operations CXO₁. First, his understanding of what turns out to be a strategic project added the variables of time and change of position to the definition of Hauc and Kovač (2000) and Medaglia et al., (2007), when he mentioned that, "I see as 'strategic', a project that demands, perhaps, a longer period of time and places the company at another level, another position".

By declaring, "Our strategic or operational plan starts with a need for revenue, in order to meet all the needs of the company and produce a result that can leverage the company for the future," CXO₁ equates strategic plan with operational plan. Similarly, when he states that, "There are product release projects that I would even say are operational. They are those that we already know and that will leverage a need to increase sales". CXO₁ states that projects aimed at achieving the objectives presented in the strategic plan are called operational projects. However, for purposes of this research, projects referred to as operational in A, will be addressed as strategic.

Table 1 shows the criteria for selection of strategic design projects identified in Company A.

¹ With a view to ensuring confidentiality of information, all executives will be referred to as 'he', regardless of sex.

Company B

For Company B, the interview was conducted with the CXO₂. Based on the statements, “The life cycle is very short, so we have no time to test everything” and “... you know, it’s always a hit and miss situation ...”, CXO₂ explains the dynamics of Company B’s market, and shows the need for criteria that allow rapid screening of strategic design projects and ensure a high degree of assertiveness.

In this environment, CXO₂ states, “... I could put it like that, all that is really new is a strategic project, something different from what we had been doing ...” and “the main thing, I would say, it has to be something different from what is on the market”. These two quotes illustrate the importance given to the company’s projects and identifies as strategic every project that showcases innovation to the market.

Table 2 shows the criteria for selection of strategic design projects identified in Company B.

Company C

In company C, interviews were conducted with the Managing Director CXO₃ and the Commercial Director CXO₄. When addressing strategic design projects, CXO₃ showed a very particular view which enhances the alignment of strategic projects with the strategic purpose of the company. He cited that, “strategic is what brings you competitive advantage, let’s say, it’s where you can lose advantage very easily and where you can gain advantage very easily. This is what strategic means.” CXO₄ reinforces the alignment of strategic design projects with the vocation of the company by declaring that, “when considering prospective strategic design projects, we analyze factors such as: the role of this product, this line or this project within our portfolio” and “sometimes a project comes up and we could manufacture it; it could be done in our type of equipment, and it would have a competitive cost, but it is completely beyond our vocation ...”

Executives were unanimous in considering adherence to the strategic positioning of the company as a guideline to be followed, as can be seen in the quotes by CXO₃, “... we currently remain within our line and increase the productivity of these items” and by CXO₄, “ ... so there is no point in thinking that this area would fit within our distribution channels, that it would be easy to sell, that we could even do it and then sell or buy it. No. If it doesn’t fit into our plan, we won’t work with it ... “

Table 3 shows the criteria for selection of strategic design projects identified at company C.

Company D

In company D, the interview was conducted with the CXO₅. In addressing strategic design projects, CXO₅ argued that “... the projects are important to improve image, improve sales volume, strengthen brand concept...” and he reaffirmed that, “... company D has a more premium posi-

tioning, focusing on design and quality ... always looking for differentiation ... “ It’s a very strong practice in our business culture to focus on design...”. Given the importance of projects for company D, CXO₅ reported that “... I, myself [CXO₅] follow up the projects along with the development team..., then I keep up with all the details, I’m aware of everything that is decided in the meetings and arranged for releases throughout the year.”

About strategic projects, CXO₅ added that this rating is assigned to a project “... every time we decide to design the product, because every product we add to the line has to represent the brand really well ...”

Company E

For company E, the interview was conducted with the Chief Financial Officer CXO₆ and the Director of Planning and Strategic Management CXO₇. Before addressing strategic projects, CXO₆ made sure to contextualize the sector and referred to this approach as strategic positioning, and he added that, “... this strategic positioning determines the sectors where the company operates, the sectors where it does not want to; it also defines what kind of customer the company has, it sets the characteristics of products, value attributes that products must have, the channels in which these products should be marketed and the geographic regions where the company operates... “. As for strategic objectives, CXO₆ added that “...if the projects to meet the strategic objectives, they are considered strategic projects ...”. Focusing on the strategic context of projects, CXO₇ explained that such projects should compose a “... set of initiatives that are actually strategic in the sense of rethinking the business, rethinking the structure, rethinking the future, the ways to achieve something bigger... “.

Table 5 shows the criteria for selection of strategic design projects identified in company E.

4. Identified Criteria and Discussion of Results

Given the scope of strategic projects, and because they are meant to meet one or more strategic objectives (*Medaglia et al., 2007*) and to be the means for transition from a strategy into its implementation (*Hauc and Kovač, 2000*), the selection of strategic projects requires the full involvement of different sectors of the company. When this approach is directed towards the context where strategic projects are design-oriented, there should be even more consideration, because all people involved should understand the effects of design on project results. In this case, a holistic approach (*Whyte et al., 2003*) to the business is essential for identification of these projects.

Evidence	Criteria Identified	Code
This criterion considers the degree of design innovation. CXO1 notes that “... product innovation considers what it (product) offers different features to the market that justify its release. As a newcomer, it always has to add something new. “	Innovative Project	CR1
This criterion assesses the economic viability of the project. CXO ₁ adds that “... when in doubt between two projects, the rate of return criterion is used for making the decision.”	Return on Investment	CR2
In this evaluation, CXO ₁ argues that “... the price can’t be different from the one set on the market.”	Target Cost	CR3
According to CXO ₁ , “... design has to please the customer ...” and “... the appearance has to be at least equal to the one offered by our competitor ...”. Since this is a rather subjective criterion, CXO ₁ stresses that “... we advise very careful evaluation, because we can’t measure it.”	Visual Design	CR4
In this evaluation, CXO ₁ adds that one is needed “... prior research to assess whether the company really understands its position as regards the product being proposed.”	Strategic Positioning	CR5
Assesses whether the project is suitable, according to CXO ₁ , for “... blocking the entry and / or expansion of competitors.”	Lock-in strategy	CR6
According to CXO ₁ , this criterion assesses whether the project will give support to “... grow of the customer base.” And it also assesses whether “... the project may place the company in a better position in the market.”	Market Share	CR7
CXO ₁ stated that one must consider that “... if the product is very innovative, you have to publicize it very well on the market otherwise it will not generate the expected demand and you have to invest in product, publicity, distribution. “	Budget	CR8
According to CXO ₁ , “... the main criterion for starting a strategic project is to add technology to company A.”	Technology	CR9

TABLE 1. Criteria for the Selection of Strategic Design Projects - Company A.

Evidence	Criteria Identified	Code
Every project has to have some degree of innovation with respect to market products. According to CXO ₂ , “... the main thing, I (CXO ₂) would say, is to be different from what's in the market, so that's something we're always concerned about ...” CR1	Innovative Project	CR1
According to CXO ₂ , “... has a previous cost, that we call target cost ...” and “... we already have in mind, based on the style of the product, on similar products on the market, an idea of the ideal price of the product. “	Target Cost	CR3
The project has to be beautiful. CXO ₂ adds that “... it combines sales, marketing, production, to select the most beautiful models in the line of products”	Visual Design	CR4
According to CXO ₂ “... we have to take care of these very two main pillars: Quality and comfort ..., the third pillar today ... we say, is trend”	Strategic Positioning	CR5
For the selection of projects, CXO ₂ adds that “... we have to check productive viability as well.”	Production	CR10
Occasionally, a project is not feasible by other criteria, but it is justified by the strengthening effect of the brand. CXO ₂ commented on this regard: “... but maybe the cost of not having something bearing, leveraging the image of your brand, is something you can't measure, it will be much higher in the medium and long term”	Brand Image	CR11

TABLE 2. Criteria for The Selection of Strategic Design Projects - Company B.

Evidence	Criteria Identified	Code
CXO ₃ stated: “we seek development projects that create real quality or functionality in the products ... I can’t begin to cut down on price and cost and give up the development of innovations ...”	Innovative Project	CR1
According to CXO ₄ , after the project was identified as technically feasible by design team, “... we start in a pre-project to set up cost scenarios, that is, how much would it cost for us to have this (project implemented)? “	Target Cost	CR3
Strategic guidelines are barrier clauses and they cannot be countered. CXO ₄ calls these guidelines criteria and states that “... some criteria already disqualify a pre-idea before it becomes a preliminary project ...”	Strategic Positioning	CR5
Occasionally, a project is implemented to complement a line and ensure leadership in a segment. According to CXO ₄ , “... we take that kind of line complementarity decision to show the relevance that (product) has to stop new entrants. Such decisions are associated with a space defense policy. “	Lock-in strategy	CR6
According to CXO ₃ , “(product design) results in quality for the brand and at the same time it maintains several other products in a line of offer ...”	Brand Image	CR11
CXO ₃ reinforces the attention to culture when quoting that “although the product be considered the best, I don’t know if really within consumer culture ...”, while CXO ₄ argues that “often, the project does not develop exactly because it does not take culture into account ..., consumers with different culture. “	Culture	CR12
As quoted by CXO ₃ “... our products have popular consumption and represent, to some extent, low price for consumers...” and “... we have to create the idea, on the market, that consumers need to use higher-quality products. “	Customer Value	CR13
According to CXO ₃ , “... we seek development projects that are sustainable, i.e. products to be consumed more often.”	Sustainability	CR14
According to CXO ₃ , “... we are working in a certain vertical integration in strategic products ...” and “... the project seeks not only a design, improved functionality, but it also seeks to obtain a domain all components, i.e. not to become so dependent ... “ and, thus, “... control of the situation through these strategic products, and therefore gain this advantage in the market ... “	Production Independence	CR15
When CXO ₄ notes that “I (CXO ₄) consider as very important the integration, relevance, and complementarity criteria, within what we work with”, there is a clear need to seek synergy with the current product line and “integrate ... our portfolio, our sales force, distribution and marketing ... “.	Synergy with Portfolio	CR16
Considered as a highly relevant, criterion, and CXO ₄ states that “... I always ask the team to assess the function and usefulness, and hence need or desire.”	Form-Function Design	CR17

TABLE 3. Criteria for The Selection of Strategic Design Projects - Company C.

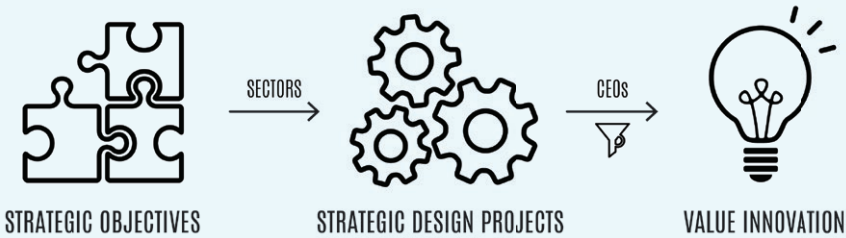


FIGURE 1. Project and the achievement of strategic objectives.

First, the process of strategic project selection should meet certain criteria (Dutra et al. 2014, Chen et al., 2003), which should, in their turn, meet the needs and expectations of the various sectors of the company at an intermediate level of the process. The selection of strategic projects and the consequent management of their implementation during each life cycle is an important organizational activity (Archer and Ghasemzadeh, 1999), because they take into account the sectoral demands that reflect the strategic direction of the company; diluted through the deployment of targets for structuring private solutions towards the achievement of macro organizational objectives.

Figure 1 shows the relationship between the demand presented to company departments, in the form of strategic objectives, and the consequent adoption of projects. These projects, which are the driving force to achieve the desired results, are implemented after authorization is given by senior executive management (e.g., the CEO). What results from such a management model is the creation of business value (Kerzner, 2012) by building an organizational artifact of innovative value.

Implicitly, Figure 1 shows the existence of a relationship between strategic objectives and projects such that a goal can be met by one or more projects and a project, in turn, can serve more than one strategic objective.

Whereas each business sector has its own characteristics and, most likely, its own interpretation of the concept, the scope and, especially, the purpose of a strategic design project, this understanding has to be consolidated, and a corporate conceptualization on the subject has to take place. This step in the process is very important because it starts to define the set of criteria for selection of corporate projects. Thus, the search for the identification of strategic project selection criteria begins by understanding what, in fact, is crucial to the classification of strategic design projects in each of the organization's departments.

Evidence	Criteria Identified	Code
According to CXO ₅ , when looking at a product design project, one must wonder whether “... the product is different, looks better, is stronger ... it has to have an identity ...”.	Innovative Project	CR1
As explained by CXO ₅ , “... then you calculate the return on these investments, since the project must have a return ...” meeting the company's expectation.	Return on Investment	CR2
The analysis that is made, according to CXO ₅ , depends on “... the project size. We use all the tools: consumer market research, research agencies, we use our own staff going to consumers' homes, we use the merchandising team to check that there is competition, prices at point of sale, photos, etc. So, before starting the project we try gather the most amount of data, and when these data are advantageous for us, of course we will go ahead”.	Target Cost	CR3
Considered to be a very strong criterion. CXO ₅ affirms that “... the product has to have good design ...” .	Visual Design	CR4
As explained by CXO ₅ , “... Company D has a more premium positioning, focusing on design and quality ... always looking for differentiation ...”.	Strategic Positioning	CR5
Both in production and in the purchase of items, CXO ₅ explains that “... (we always) search the product that fits, that can feel right in (D's) brand” .	Brand Image	CR11
The analysis that is made, according to CXO ₅ , depends on “... the project size. We use all the tools: consumer market research, research agencies, we use our own staff going to consumers' homes, we use the merchandising team to check that there is competition, prices at point of sale, photos, etc. So, before starting the project we try gather the most amount of data, and when these data are advantageous for us, of course we will go ahead”.	Company Value	CR18

TABLE 4. Criteria for The Selection of Strategic Design Projects - Company D.

Evidence	Criteria Identified	Code
CXO ₇ argues that “... there was always a established reputation as an innovative company, it was a dogma, in some units more than others, but we have had this dogma of being an innovative company ...”.	Innovative Project	CR1
CXO ₆ suggests that any “... product being developed necessarily needs to be framed within the strategic positioning of the unit ...” .	Strategic Positioning	CR5
According to CXO ₆ , “... is an analysis that I (CXO ₆), for example, as the chief financial officer, always make before I approve of a project, that is, I assess whether this project is budgeted or not... a project that had already been planned in the year, before and included in the budget, in my opinion, has much more priority. “	Budget	CR8
According to CXO ₆ , “... we use a very simple criteria, we consider that project budgeted over 100,000 reais is a strategic project ...” and “... has to go through the mandatory roadmap, that is, it will not move on to the next step unless there is a preliminary study. “	Investment	CR19
CXO ₇ explains that there is an occasional bigger amount of projects of a certain nature, changing the strategic project grid, for example, “... I have a project for innovation, growth, established capacity, I have a cost reduction project... mind you, 90% of the projects I have here are for cost reduction, but no project for innovation... “.	Strategic Grid	CR20
CXO ₆ assesses the number of strategic objectives achieved, because “... you often sort a project within a particular strategic goal, but you can see it working in other strategic objectives.	Strategic Objective Accomplished	CR21
CXO ₇ argues that “... every strategic project should enter our roadmap, be registered there, be assessed” as for “... payback analysis, through accounting, going through security, through analysis risk - in short, a series of analyses, and strategic analysis is one of them ...”.	Approval at Workflow	CR22

TABLE 5. Criteria for The Selection of Strategic Design Projects - Company E.

Most important, this understanding needs to be strategically aligned with the view of the executive management, which will select design projects according to its criteria.

Table 6 shows the relationship between the 22 criteria identified as important for the selection of strategic design projects and companies where they were cited.

The analysis of the criteria in **Table 6** shows adherence to the content presented in the literature, e.g. Mohanty (1992), which involves the selection of general projects by distributing the criteria into “Intrinsic criteria”, dealing with resources, experience, attitude and time; and “Extrinsic criteria”, addressing risk, market, policies and technology. In Extrinsic criteria, except for the criterion “policies”, all other referenced criteria are referenced. The analysis of specific types of projects shows that most of the criteria identified in this research are also distributed among the various sets of criteria, possibly labeled differently, but with the same purpose. One example is Okpala (1991), who deals with construction projects while evaluating capital, economics, politics, return, viability and competitiveness of the project, and Rengarajan and Jagannathan (1997), who address R&D projects focusing on production, product portfolio, patent, publicity, corporate image, time, cost, space availability, competence and technology. Although present in sets, the complete identified criteria are not part of a single reference model.

The mention of CR₁ - Innovative Project by all companies shows the importance given to innovation when it comes to design, which corroborates the findings of Mozota (2003 p.30) and the interchangeability of the terms in the description of creative processes.

It should be considered that while radical innovation is a goal, there are situations where it is not seen favorably in the market. This is the case of Company C, where CXO₃ explains that one should pay attention to this criterion, because unlike other segments, radical innovation is not desirable product-wise. According to CXO₃, “when he (*consumer*) sees something new, let’s say, a big novelty, he says

‘these guys are trying to reinvent the wheel’, and often we need to give up that product; even when we prove that it will make work easier, that it will be safer, that he (*consumer*) will provide a better service ... “Our market is very conservative.” This explains why CXO₃ and CXO₄ pointed out the need for knowledge and concern about customer CR₁₂ - Culture.

Interestingly, the CR₂ - Return on Investment criterion, which composes a set of financial criteria as classified by Gray and Larson (2007), and is, therefore, an indicator of business performance, was not mentioned by respondents very often. What can be seen is that a project with unfavorable CR₂, is often carried forward for strategic reasons. In this regard, CXO₃ quoted: “... (*the project*) involves a time-consuming and capital-intensive process, and logistics as well, it’s huge and it brings a poor result, considering the necessary capital investment, but it gives the brand a qualitative result and, at the same time, keeps several other products in a good line of supply.”

An unfavorable CR₂ may also be related to the fact that the company is focusing on CR₆ - Lock-in strategy, thus preventing the access of new entrants to the market. Consider CR₃ - Target Cost as a criterion is a strong indicator that the market determines prices. Control of cost is part of ensuring the profit expected for the projects. It can be assumed that executives who did not mention CR₂ as a criterion, may be evaluating performance through CR₃, i.e., following market prices, keeping costs within the goal, and the profit made, thus, will enable a return on investment.

CR₄ and CR₁₇’s complement those of CR₁, and they show where design is influencing the business. The various manifestations of design, such as CR₄ and CR₁₇, are the application of creativity throughout the innovation process (Bruce & Bessant, 2002, p. 33), which is directly reflected in business by addition of CR₁₃ - Customer Value. This indicator was not often regarded as important, but it is considered by Company C to work together with CR₁₇ – Form-Function Design.

The CR₅ - Strategic Positioning criterion, was quoted by all executives. This reflects their firm intention of focusing on strategic guidelines for development of their projects. This has been cited in the literature as an important direction to achieve maximum return with strategic projects (Dutra et al., 2014; Meade & Presley, 2002).

CR₇ - Market Share was mentioned together with CR₃ - Target Cost. Although they were mentioned only once, it shows the company is concerned with its space in the market. In contrast, CR₈ - Budget, was not quoted very much and this is partly justified by the financial health of companies participating in this research study. CXO₅ shared his view on financial barriers to the development of strategic design projects: “Oh, no problems in the financial department, we have enough capital, we have well structured suppliers. And we have a potential for relatively large annual investment that does not bring problems, so we do not usually have barriers.

Another criterion strongly linked to design is CR₁₁ - Brand Image, and this was significantly mentioned as important for the selection of projects. Companies were concerned about strengthening their brands in the market and, as in the case of companies B and C, usually showed no concern for return on investment. In this context, Company C shows a greater concern about CR₁₁ - Brand Image and CR₆ – Lock-in Strategy than with CR₂ - Return on Investment. This strategy suggests a concern to be a market leader. This perception is supported when COX₃ says, “basically, it’s having control of the situation with these strategic products and, therefore, gaining this advantage in the marketplace.”

Quoted by COX₁, as a major factor for the company to develop its design projects, whether acquired by the company or transferred through strategic partnerships, CR₉ - Technology was not taken into account by other executives.

Addressed within the concept of productive viability, the CR₁₀ - Production criterion proves important for company B because its market is very price sensitive. Thus, according to CXO₂, “we have to check out productive viability as well. Sometimes I have eight models and I need to choose the top four. Then, there’s a model that has a fancy detail, which has an imported item that will cost R\$ 5.00 more than the other models in the line. So we evaluate this kind of thing ‘Oh, it was a nice mix, but it was a model that will be much more expensive. “It is not productive. “

This condition is also reflected in company B’s concern with CR₃ - Target Cost. Company C, when citing the CR₁₄ - Sustainability criterion, seeking “... products which may be consumed often,” shows a concern with the effectiveness of its projects, even if they do not mean an increase in the customer base, because there is concern no with CR₇ - Market Share. This is clear on the remakr that CXO₃ made about the company’s market when he mentioned that “our market is very conservative, ours (*market*) here (*Company C*) is purely conservative, it always follows a sort of clock-paced rhythm”.

This conservatism of the market is indicative of the mention of CR₁₆ - Synergy with Portfolio as an important

criterion. The company is probably also driven towards a domain of the processes in search of CR₁₅ – Production Independence. This concern is clear in the statement made by CXO₃: “... we are working towards a certain vertical integration in strategic products ...” and “... the project seeks not only design, improved functionality, but it also seeks to obtain a domain of all components, i.e., not become so dependent ... “ and, thus, “ ... control of the situation through these strategic products, and therefore gain this advantage on the market ... “

Associated with the other criteria cited by company D, CR₁₈ - Company Value, reflects the concern of adding value to business results, while CR₁₉ - Investment is a very simple evaluation criterion, but it defines, through the amount to be invested, the strategic nature of the projects and makes it go through more rigorous evaluation stages.

The other criteria, CR₂₀ and CR₂₂, have a concern at a more strategic level and are more geared towards guidance and prioritization than selection itself. With the aim of defining, for the company, which areas need strategic projects, CR₂₀ - Strategic Grid is established as an important criterion. Design, in this case, is considered one of the areas. CR₂₁ - Strategic Objective Accomplished, aims to identify the number of strategic objectives met by the project.

CR₂₂ - Approval at Workflow appears as an important option to assess whether the project had positive recommendations in the various stages of analysis with regard to other criteria such as: accounting, security, etc. These evaluations, with the resulting recommendation, are not intended as disapproval. This type of analysis considers the completeness of the project and provides information for the CEO to make a final decision.

5. Conclusion

This paper presented the results of the initial stage of an ongoing research study with five product development companies focusing on the identification of criteria for selection of strategic design projects. This step was accomplished through interviews with 7 executives of the participating companies.

The purpose of this study is to generate a set of general criteria for selection of strategic design projects and, thus, also meet the needs of all product development companies. The criteria identified show a similar behavior to the one identified by Dutra et al. (2014) when referring to methods for project selection and evaluation, i.e. there is no consensus on the identified set, but a formalization of the processes could be observed. None of the companies have implemented a method for selecting strategic design projects, which may explain the wide variation in the criteria considered in the decision-making process for such selection.

		Criteria																					
		CR1	CR2	CR3	CR4	CR5	CR6	CR7	CR8	CR9	CR10	CR11	CR12	CR13	CR14	CR15	CR16	CR17	CR18	CR19	CR20	CR21	CR22
Companies	A	X	X	X	X	X	X	X	X	X													
	B	X		X	X	X					X	X											
	C	X		X		X	X					X	X	X	X	X	X	X					
	D	X	X	X	X	X						X							X				
	E	X				X			X											X	X	X	X
		CR1	Innovative Project				CR2				Return on Investment				CR3				Target Cost				
		CR4	Visual Design				CR5				Strategic Positioning				CR6				Lock-in Strategy				
		CR7	Market Share				CR8				Budget				CR9				Technology				
		CR10	Production				CR11				Brand Image				CR12				Culture				
		CR13	Costumer Value				CR14				Sustainability				CR15				Production Independence				
		CR16	Synergy with Portfolio				CR17				Form-Function Design				CR18				Company Value				
		CR19	Investment				CR20				Strategic Grid				CR21				Strategic Objective Accomplished				
		CR22	Approval at Workflow																				

TABLE 6. Criteria vs. Companies

The importance of identifying criteria for selection of strategic design projects is assured, since it is the first step in a formal process of project selection (Dutra et al. 2014).

What is expected now is that this set is complete and sufficient to ensure achievement of strategic objectives. Thus, a comprehensive analysis of criteria identified in the interviews, in **Table 1**, shows that there is a concentration around a few criteria, CR₁, CR₃, CR₄, CR₅ and CR₁₁, which, based on the models cited in literature, are not sufficient to ensure adequate performance of the selection process of strategic projects.

In the next steps of the present research, the set of criteria will be further divided into sub-criteria within the strategic deployment approach. This process will allow the evaluation of the strategic design purpose in all structures

of the companies. At this stage, the set of criteria will be assessed by all business levels involved in the decision-making process for selection of strategic design projects.

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