INNOVATION IN SERVICES USING THE DYNAMIC CAPABILITIES APPROACH: A STUDY OF RESTAURANT CHAINS IN RIO DE JANEIRO

INNOVACIÓN EN SERVICIOS UTILIZANDO EL ENFOQUE DE CAPACIDADES DINÁMICAS: ESTUDIO DE CADENAS DE RESTAURANTES EN RÍO DE JANEIRO

Júlia Gouveia de Melo do Rego Monteiro – PhD Candidate - COPPEAD/UFRJ, Brazil – juliamonteiro@coppead.ufrj.br
Eduardo Raupp de Vargas – Associate Professor - COPPEAD/UFRJ, Brazil – eduardo.raupp@coppead.ufrj.br

Abstract

This article aims to identify the routines and processes that promote dynamic service innovation capabilities (DSIC) in restaurant chains. The study of innovation in chains is distinctive due to the need for uniform results in the chain's units. Thus, a permanent tradeoff exists between innovation and standardization. This research encompasses innovation-promoting processes both at the restaurant-units level and at the chain level. In order to handle different managerial levels, the study was divided in two parts. The quantitative part resulted in a DSIC measurement scale for restaurant chains and an innovation indicator that considers the type of business expansion. Methods used, therefore included exploratory factor analysis, confirmatory factor analysis, and structural equation modeling. The result enables the development of indicators for innovation management. In the qualitative part, besides categorizing the restaurants interviewed, we investigated how the routines linked to the DSIC are managed.

Despite the lack of studies in this area, this work investigates the management of innovation and the measurement of this capacity as decisive aspects for success. Thus, we believe that the results of the research, besides being applicable in innovation management, contribute to the academic debate.

Keywords: Dynamic service innovation capabilities; restaurant chain; innovation in restaurants.

Resumen

Este artículo tiene como objetivo identificar las rutinas y procesos que promueven las capacidades dinámicas de innovación de servicios (DSIC) en cadenas de restaurantes. El estudio de la innovación en cadenas es distintivo debido a la necesidad de resultados uniformes en las unidades de la cadena. Por lo tanto, existe un equilibrio entre innovación y estandarización. Esta investigación abarca procesos de promoción de la innovación tanto a nivel de unidades de restaurante como a nivel de cadena. Con el fin de manejar diferentes niveles de gestión, el estudio se dividió en dos partes. La parte cuantitativa resultó en una escala de medición DSIC para cadenas de restaurantes y un indicador de innovación que considera el tipo de expansión. Los métodos utilizados incluyeron el análisis de factores exploratorios, el análisis factorial confirmatorio y el modelado de ecuaciones estructurales. El resultado permite el desarrollo de indicadores para la gestión de la innovación. En la parte cualitativa, además de categorizar los restaurantes entrevistados, se investigó cómo se gestionan las rutinas vinculadas al DSIC.

A pesar de la falta de estudios en esta área, este trabajo investiga la gestión de la innovación y la medición de esta capacidad como aspectos decisivos para el éxito. Así, creemos que los resultados de la investigación, además de ser aplicables en la gestión de la innovación, contribuyen al debate académico.

Palabras clave: Capacidades dinámicas de innovación de servicios; cadena de restaurantes; Innovación en los restaurantes.

1. Introduction

The importance of services in the economy cannot be overstated. Currently, about 70% of Brazil's GDP derives from services (IBGE). Consistent with this sector, eating outside the home has recently seen accelerated growth. It is estimated that restaurants represent approximately 23% of the sector and, of all the restaurants operating in Brazil, about 20% are associated with some type of chain. The trend is for this percentage to increase. In the United States, 60% of restaurants are part of a chain; thus, this service segment clearly has growth potential in Brazil (IFB, 2016).

In light of the trend for food businesses to be part of a chain, it is worthwhile taking a closer look at this specific group. This is because replication has been somewhat overlooked by academia, despite being a widespread phenomenon (Winter & Szulanski, 2001).

Eateries that opt to expand using the replication strategy face two major challenges: the constant endeavor to homogenize the services in units; adapting to new realities via innovation capabilities. On one hand, standardization of service is essential for restaurant chains to preserve their brand and value (Bradach, 1997). The capability to innovate, on the other hand, is vital to the sustainability of the chain. A restaurant chain must be capable of innovating by adapting to new realities in order to accrue a competitive advantage (Bradach, 1997) (Harrington, 2004).

Although the challenges are the same for all restaurant chains — standardization vs. innovation — the literature suggests that the method of expansion is decisive in the way the chain will tackle them. Therefore, the study of innovation in restaurant chains is essential for optimal management of these chains. Thus, this study sought to understand the strategic management of innovations in chain restaurants from the standpoint of the standardization vs. innovation tradeoff.

Innovation in restaurant chains will be approached from the perspective of dynamic service innovation capabilities (DSIC), a theoretical model proposed by Hertog, Van de Aa and Jong (2010) for the strategic management of service innovation.

Therefore, based on this scenario of theoretical debates, we seek to analyze the profile of the chains and their influence on innovation activities, DSIC in restaurant chain units, and DSIC at the strategic level of the chain. To reach these objectives, the article develops along two fronts: a quantitative study of the units of chain restaurants in the city of Rio de Janeiro; and a qualitative study based on semi-structured interviews with strategic managers of chain restaurants. In addition to this introduction, the article is organized in the following four sections: theoretical framework and conceptual model, method, results, and final remarks.

2. Theoretical framework and conceptual model

Relevant literature topics are covered in this section. Subsection 2.1 looks at the business replication strategy; subsection 2.2 then describes the different possible forms of expansion in a restaurant chain. Subsection 2.3 analyzes the concept of DSIC.

2.1 Strategy of expansion

The opening of several units performing the same service is known as replication. The strategic decision to achieve business growth through replication means, according to Winter and Szulanski, "create value by discovering and refining a business model, by choosing the necessary components to replicate that model in suitable geographical locations, by

developing capabilities to routinize knowledge transfer, and by maintaining the model in operation once it has been replicated" (Winter & Szulanski, 2001, p.730).

Two distinct processes inherent to replication are discernible: exploration and exploitation. The first process consists of development of the arrow core, that is, the set of attributes that are subject to and worth replicating (Winter & Szulanski, 2001). In contrast, the exploitation process consists of applying the model, i.e., opening multiple units.

The two phases of replication happen, a priori, at different times. Güttel et al (2012) argue, however, that despite being independent processes, a company that expands by replication must implement both phases at the same time. Companies must develop the capabilities for an ambidextrous strategy and manage these two processes simultaneously. Thus, the arrow core will always be improving and the expansion will occur gradually (Güttel, Konlechner, Müller, Trede, & Lehrer, 2012).

Although all chains grow through replication, there are different approaches to organizing the units. Each approach has its own characteristics, as presented below.

2.2 Forms of expansion in chain restaurants

The units of a business chain can be organized in three different ways. Some chains use the franchise system; some are company-owned; while others prefer a plural form.

According to Bradach, each of the expansion strategies offers different characteristics vis-à-vis the challenges inherent in chains: standardization and innovation (Bradach, 1997). The author highlights essential attributes in which chains with different forms of expansion behave differently, the main attributes being structure, control system and strategy-making (Bradach, 1997).

Bradach (1997) argues that company-owned chains have a greater capability to streamline their internal processes and thus achieve more uniform results. Meanwhile, at the same time, the company can become large and overly branched, which increases bureaucracy. In these cases, the company structure favors hierarchical relationships. Thus, while growth through company outlets facilitates standardization, the rigidity of the processes is detrimental to adapting to new contexts (Bradach, 1997).

In contrast, franchise chains face the opposite challenge, i.e., difficulty in obtaining uniformity in processes. The multiple character of franchises favors adapting to new scenarios; however, the uniformity of the results may be compromised (Bradach, 1997).

Finally, plural chains can better dribble the challenges inherent in restaurant chains by exploiting the opportunities present in each form of expansion(Bradach, 1997). Thus, the plural more successfully balances the standardization-versus-innovation tradeoff.

So far, we have presented topics related to chain growth. The next subsection presents the DSIC concept and its developments vis-à-vis innovation management.

2.3 Innovation in services from the perspective of DSIC

Hertog et al (2010) propose the DSIC conceptual model. This model is derived from the theoretical lines of the resource based view (RBV) and the dynamic capabilities view (DCV) (Hertog et al, 2010). RBV and DCV offer a dynamic vision for the management of innovations in services.

Aligned with this approach, Hertog et al (2010) define DSIC as "those hard to transfer or imitate service innovation capabilities which service provider organizations possess to develop, (re-)shape, (dis-)integrate and (re-)configure existing and new resources and operational capabilities" (Hertog et al, 2010, p. 498). Having such DSIC is a prerequisite for a company to innovate in services. Thus, DSIC are tools for the company to manage the innovation process, creating competitive advantages.

The conceptual model proposed by Hertog et al (2010) has six DSIC. The first DSIC is *sensing user needs and potential technological options*. It is the ability to identify consumption demands and convert them into technologies. The second DSIC, *conceptualizing*, is the ability to define the service by transforming perceptions and processes into the concept of a new service. Another DSIC is *(un-)bundling*, which is the ability to gather or dismantle elements to services, thereby producing new services. The fourth DSIC, called *coproducing and orchestrating*, is the ability to find partners who add value to services and to coordinate that relationship. The DSIC of *scaling and stretching* is the ability to scale up company operations, either with the same type of service or with different services. Finally, the DSIC *learning and adapting* consists of the ability to learn from innovation processes.

In addition to the theoretical effort in terms of the DSIC conceptual model, the results of the practical analysis of this model will be considered. Janssen et al (2012) carried out a study assessing the applicability of DSIC vis-à-vis the realities of several service companies. The result corroborates the model, albeit with certain adaptations suggested. The capability *sensing user needs and technological options* was separated into two distinct capabilities. Moreover, the capability of (*un-)bundling* was considered inherent to the capability of *conceptualizing*; thus, these capabilities were merged. In addition to these initial changes, the exploratory factor analysis (EFA) showed that the capabilities *conceptualizing* and *learning and adapting* were related to the same processes, which were, therefore, considered as underlying, thus creating the capability *deliberate learning*. The DSIC considered after the empirical study are: (1) Sensing user needs; (2) Sensing potential technological options; (3) Deliberate learning; (4) Coproducing and orchestrating; (5) Scaling and stretching (Janssen, Alexiev, Hertog, & Castaldi, 2012).

2.4 Proposed conceptual model

The impetus of this study is to highlight the DSIC with the most relevance in the context of restaurant chains and, thus, to contribute to the field of innovation management in the sector. Thus, the proposed conceptual model articulates the DSIC in restaurant chains with innovation, taking into account the chain profile; see Figure 1.

[Figure 1]

It is worth noting the capability *scaling and stretching* will not be evaluated because it is inherent to all business chains. Thus, the conceptual model relates the other four DSIC to innovation in restaurant chains; this relationship is permeated, then, by the chain profile.

The conceptual model explores the relationship between DSIC and innovations in services, taking into account the influence of chain profile on this dynamic. This model served as a starting point for an analysis as to which DSIC are most relevant in the context of restaurant chains, given their specificities (different managerial levels, form of expansion, and growth strategy). The idea is that the intrinsic characteristics of restaurant chains influence how they develop and manage their DCIS and the chain's innovations.

3. Method

Seeking to shed light on the relationship between DSIC and innovations in restaurant chains, we considered the processes underlying capabilities (Janssen et al, 2012). Janssen et al identify the processes that underlie to each DSIC, and this result was used.

When analyzing the activities linked to each DSIC, it is clear that some are not performed at the unit-level of the restaurant chain, but occur at the managerial level of the chain as a whole. That is, some processes are performed by the chain's strategic managers and

not by employees working in a unit. In order to take this managerial level difference into account, the research was divided into two stages.

The first stage was carried out at the management level of the chain. Nine semi-structured interviews were conducted with restaurant chain managers who had a strategic vision of the company. The second stage was carried out in the units of chain restaurants. In this case, 318 questionnaires were administered to the unit managers. The empirical basis of the study was restricted to restaurant chains that had at least one outlet in a shopping mall in the city of Rio de Janeiro.

The analysis of the interviews was informed by the literature. The data collected via questionnaires was analyzed in relation to the distribution of the responses and compared with the theory. In addition, the data was subjected to exploratory factor analysis (EFA), aiming to understand how the data were grouped; the factorial structure was then confirmed through confirmatory factor analysis (CFA). The factors extracted were analyzed in the light of the definition of DSICs. Finally, the constructs were related to innovation through structural equation modeling (SEM).

4. Results

The results obtained in the research are organized here. Subsection 4.1 discusses the results of the research carried out at the managerial level of the chain; subsection 4.2 reports on the product of the quantitative research carried out in the units.

4.1 Management level of restaurant chains

This two-part subsection presents the results of the survey of chain managers. Firstly, the profile type of the chain is discussed. Then, the interviews are analyzed in the light of the DSIC theory.

4.1.1 Profile of the chains

The chains interviewed were categorized in terms of the form and timing of the expansion, see Table 1.

Table 1. Chains profile

Chain	*Form of expansion*	*Timing of expansion*
Chain Restaurant 1	Plural	Exploration - exploitation**
Chain Restaurant 2	Plural	Exploitation
Chain Restaurant 3	Company-owned	Exploitation
Chain Restaurant 4	Franchise	Exploitation**
Chain Restaurant 5	Franchise	Exploitation*
Chain Restaurant 6	Company-owned	Exploitation
Chain Restaurant 7	Franchise	Exploitation
Chain Restaurant 8	Company-owned	Exploitation
Chain Restaurant 9	Company-owned	Exploitation*

* phases alternating; ** ambidextrous

Various restaurant chains were analyzed; however, no pure franchise chain was encountered. The chains interviewed were either company-owned outlets or a plural form. Thus, the chain's manner of expansion and the percentage of company-owned outlets was taken into account. Thus, chains with less than 15% of outlets being company-owned were considered as franchises. The analysis showed how chains behave as regards the attributes highlighted by the literature: structure, control systems, and strategy-making (Bradach, 1997).

In relation to the structure, company-owned chains had formats that were more hierarchical than those of franchises. The structure of small federations is particularly evident in the franchises. Franchise chain 4, for example, has a board formed of seven franchisees. In the company chains, decisions are clearly made by the business leadership; the outlet managers are not part of the decision-making process. In all company-owned chains, the

managers are heard; however, decision making does not include employees from the outlets. In the case of plural chains, the results reflect a greater balance in relation to the structure.

The control system of the chains was evaluated. All of the chains interviewed have a formal supervision team to check uniformity, with training aimed at knowledge leveling of employees. In the plural chains, persuasion as a control mechanism permeates the responses. The relationship — which favors control mechanisms and encourages adapting to new services among the company and the franchisee — was a frequent item in the responses of respondents from this type of chain.

In the attribute control system, the franchising seem to enjoy the same advantages as plural chains. The presence of specific outlets for training was an important aspect of the control mechanisms for the franchise and plural chains. This training-restaurant structure helps to inculcate uniformity, serving as a company mechanism to control franchises. In contrast, all company-owned chains train their employees, paired up with another employee, in regular outlets. The data confirm the proposal of Bradach (1997): because the company-owned chains are more likely to exhibit uniformity of processes, it is to be expected that they place less value on routines related to employee training. Thus, they invest less resources to train employees, and, therefore, do not have a dedicated training facility.

The last attribute is strategy-making (Bradach, 1997). In this regard, in company chains expertise is centralized; the strategies of these chains and direction, can be traced back to upper management and supervision. In franchise chains, expertise is diluted: the franchisee is considered a source of information for strategy formulation. In the case of restaurant 5, for example, many of the innovations implemented reflect demands originating from the franchisees and then implemented over the entire chain. It was noted, however, that the plural chains benefit from this attribute of strategy-making as much as the franchises do.

In reality, therefore, for the attributes control system and strategy-making, the existence of company outlets in any proportion is determinant for management benefits. In the attribute structure, the volume of company outlets was a crucial factor. Thus, there are clear differences between the three forms of expansion in relation to attributes. After this analysis, the interviews were evaluated in relation to the existing processes for innovation and standardization.

Regardless of the form of expansion adopted, innovation plays a prominent role at the organizations interviewed. In two own chains, however, it was pointed out that although innovations are fundamental to the image of the restaurant, they are not significant in terms of sales volume.

In franchise and plural chains, the role of innovation seems to go beyond delineating the restaurant concept. More than one chain of these modalities reported procedures in place to incentivize innovative thinking. In addition, the importance of innovations can be discerned: in chain 2, for example, the most recent offering is quite significant in sales volume — in fact, it is the third best-selling dish — very different from that reported in the company-owned chains.

The average frequency of the cited launches was two per year. All the chains use benchmarking, research and trips as inspiration for new proposals. In addition to these inputs, almost all chains had someone tasked with creation.

Efforts to maintain uniformity are plentiful. All of the chains have employee training and some kind of supervisory team. Chain 9 reported working with the mystery shopper system to detect service failures.

The company chains make more products from scratch; therefore, they take delivery of more basic ingredients for processing. For these chains, the search for standardization is proportionate to training efforts. The other chains invest in standardization of the products received. Thus, chain 7 and restaurant 1 have central kitchens where base products are made.

Restaurants 4, 5 and 7 have a central inputs distributor, thereby ensuring uniformity in the products received. Restaurant 2 developed partnerships with suppliers who develop products especially for the chain's demands. Another effort to increase standardization cited in the interviews with the managers of chains 2, 6 and 7 was the deployment of equipment to enable uniform results.

The interviews with the chains were evaluated in order to understand the timing of the stage of expansion that they were undergoing. Thus, all the companies are in the exploitation phase, with the exception of restaurant 1, which was finalizing development of the arrow core. This classification was made under the assumption that these steps can be simultaneous. This is the case with restaurant 1, which, despite being at the end of the exploration stage, had already embarked on the expansion.

Many chains reported having alternated phases several times over the years. The path described was as follows: restaurants emerge, develop the business concept, embark on an expansion, then, at a given moment, slow expansion in order to reorganize the company and then resume exploitation. The histories reported by chains 1 and 4 were consistent with companies adopting an ambidextrous strategy. That is, these companies were able to expand while simultaneously improving the arrow core. Restaurant 1, classified as being in the exploration phase, is already expanding thanks to its ambidextrous strategy.

The timing of the expansion and, above all, the ambidextrous strategy seem to have a strong influence on the innovations launched. Thus, according to the data collected during the interviews, it is important to note that the chains with more innovative attitudes adopted ambidextrous strategies. Restaurants 1 and 4 were the chains reporting having the most actions to encourage innovation.

4.1.2 Analysis of DSIC in restaurant chains

Data from the interviews were interpreted from the optics of DSIC, a concept proposed by Hertog et al (2010). The conceptualization processes inherent in the DSIC were observed at various moments during the interviews. To some degree, all of the chains are dedicated to developing new services. Seven of the nine companies interviewed had employees specially tasked with the development of new products; that is, the companies dedicate organizational capacity to implement the conceptualization. This function is highly valued by managers, who realize the importance of developing a well-delineated concept of innovation. The process of testing new services was also reported by some managers. All new items are tested by the creative team; however, some chains offer new services on an experimental basis to customers before being permanently cascaded to the units. Alternatively, they launch new services in all units, albeit in test mode, for example, by attaching an experimental menu that will then be evaluated and perhaps included in the regular menu.

The firms were unanimous with respect to the need for new service offerings to be aligned with the type of business. Almost all chains have a set of defined criteria for selecting innovations relevant to the business. New services development must also take into account the processes already running in restaurants. A new service that requires new equipment, for example, has more barriers to implementation and is often vetted due to the difficulty of operationalization. Similarly, decisions concerning offering a new service requiring new inputs is rigorously assessed. The goal is to minimize the range of stock items. A new offering that needs a new input may be implemented; but the chains said they would try to optimize the purchase of the new ingredient by also using it in other preparations. In the company-owned chains, this concern was low or nonexistent.

Despite the abstract nature of service conceptualization, some chains reported having procedures in place that make the service concept more tangible by producing manuals with precise descriptions, including illustrative images.

The capability of *learning and adapting* and its processes is prominent in the chains. Training is a conscious process of learning and is essential for all of the chains interviewed, who were unanimous in reporting that their trainings were frequent. From teams tasked with cascading knowledge to those in charge of developing an online e-learning platform, the chains maintain several processes aimed at organizational learning. In relation to the process of adapting business according to new realities, the chains make this a daily habit. Because some employees are especially tasked with creating new services, small adjustments to the innovation process are constantly being made.

The two capabilities that deal with perception, sensing user needs or potential technological options, require a thorough knowledge of the changing competitive environment, even though each change involves unique processes. Some of the interviewees suggested it was worthwhile to make the effort to be attentive to the macro environment. All agreed about the need to evaluate other restaurants in order to see what the emerging trends are. Many managers reported that they also use travel as a source of information.

In almost all the interviews it was evident that chain managers believe that gastronomy is of increasingly economic important in Brazil and that this trend can be exploited. Another important source of information on customer behavior and needs has been loyalty programs. The managers of brands 1, 2 and 4 partnered with a cell phone app which serves as a platform for managing customer loyalty programs. The great advantage of this platform vis-à-vis the traditional loyalty coupons is that the restaurant obtains information about the customer's consumption profile.

The DSIC of sensing potential technological options also depends on the general perception of the competitive environment. In addition to the above information sources, four of the chains reported they visited foodservice equipment trade shows. Among the fairs, the National Restaurant Association (NRA) trade show in Chicago was the most cited. Also of note was the fact that managers perform benchmarking with regard to technology. Managers' perceptions of potential technological options are usually consistent with the search for greater uniformity in chains. As previously seen, the deployment of equipment that enables consistent results is one of the efforts made by some chains seeking uniformity.

The *coproducing and orchestrating* capability was identified in all chains in different ways. Network 3, for example, has two of its outlets located inside a chain bookstore. Two chains reported having partnerships for the development of new menu items in which one restaurant provides a signature dish for another restaurant's menu. When questioned about how to manage these partnerships, managers said this relationship requires using the same control and management techniques that the chain uses with its franchisees. In fact, in the final analysis, chains that have franchise units have this intrinsic partnership in the franchisee/franchisor relationship: they are two companies that need to coordinate actions. The chains showed many examples of vendor partnerships. These partnerships may come about formally (governed by equipment supply contracts, among others) and informally (in terms of advantages price-wise and in the form of purchase).

The loyalty app mentioned above is also an example of partnership. Another online platform that replaces the trip to the cashier to buy a meal was mentioned during the interviews. In this case, we clearly perceive the two processes inherent in this DSIC: the orchestrating between the companies and the coproducing. In the final analysis, using any app is tantamount to co-producing of the service. In two of the chains interviewed, coproducing was evident, as exemplified by customer self-service counters.

4.2 Unit-level management of the chain restaurant

The questionnaires were applied in 16 shopping malls spread throughout the various regions of the city of Rio de Janeiro. Of the 318 questionnaires administered, 305 were considered valid. The franchise was the most popular form of expansion (140) followed by company-owned units (107) and lastly plural (58).

In terms of innovation, a large number of restaurants reported having added new services in the last year; however, the form of expansion does not seem to have much bearing on this aspect. Franchises, plural and company-owned chains had a more than 90%-positive response rate when asked about the deployment of new services in 2016. The results demonstrate that the chain restaurants are highly innovative. Almost all restaurants have new-employee training. These results are striking and agree with the complexity involved in the strategic management of chain restaurants.

On the other hand, the almost completely positive responses regarding the implementation of innovations during the year weaken the usefulness of this question in terms of the innovative attitude when we look at the chain's form of expansion. Thus, in order to better distinguish innovative restaurants according to the form of expansion, we create an indicator that would better demonstrate the innovative trait. Thus, the Innovation Indicator considers affirmative responses to innovation issues on a cumulative basis and has proved to be quite adequate for correlating the innovative attitude with the restaurant chains' form of expansion. Table 2 shows the distribution of the degree of innovation of restaurants.

Table 2

CHAIN RESTAURANT INNOVATION INDICATOR									
		Company		**Plural**		**Franchise**		**TOTAL**	
		N	%	N	%	N	%	N	%
Affirmative responses to INNOVATION questions	0 or 1	**45**	**42%**	18	31%	41	29%	104	34%
	2	38	36%	**22**	**38%**	48	34%	108	35%
	3	24	22%	18	31%	**51**	**36%**	**93**	**30%**
	Total	107	100%	58	100%	140	100%	305	100%

The Innovation Indicator numbers are close to the scenario described in the literature. Thus, it is clear that the most innovative restaurants, according to the indicator, are the franchises. Of the chains with company-owned outlets, however, only 22% responded affirmatively to all innovation questions. The plural chains behaved in a balanced fashion in relation to innovation.

We attempted to identify the existence of processes that indicated the presence of DCIS as latent constructs. Thus, the questionnaire items (derived from the processes scale used by Janssen et al.) were submitted to EFA. The data were extracted using principal axis factoring with Oblimin rotation, since correlations between the variables were expected. The data were considered adequate for factorization based on the Kaiser-Meyer-Olkin (KMO) and Bartlett's sphericity tests; see Table 3. The criterion for factor retention was the eigenvalues-greater-than-one rule. Thus, three factors were extracted that explain a total of 66.75% of the total variance. All variables presented significant loadings in the corresponding constructs. All factor load values comfortably exceed the threshold value of 0.35, and almost all such values are greater than 0.5; thus, there remains little doubt as to the underlying factorial structure of the data. The reliability of the factorial structure was also evaluated with Cronbach's alpha; see Table 3. The values found were acceptable and the factorial structure considered adequate and reliable.

Table 3 - Results of data-fit

KMO	**Bartlett's sphericity test**			**Cronbach's alpha**		
	Approximate chi-square	df.	Sig.	Factor 1:	Factor 2:	Factor 3:
0.846	1,458,850	55	.000	0.917	0.695	0.715

The structure found with three constructs was different from that expected when designing the questionnaire, since the items were based on only two DSIC. It was necessary,

therefore, to watch how the variables grouped in constructs and then interpret the result based on the theory. The third factor is nothing more than the conceptualization. This DSIC was condensed into the *learning and adapting* DSIC as a result of the survey conducted by Janssen et al (2012). The data from the present study reveal that, unlike the realities of services in general (where these two DSIC belong to the same factor), in restaurant chains these DSIC are distinct. That is, the reality of chain restaurants is more consistent with the conceptual model advanced by Hertog et al (2010). In fact, conceptually, the process of conceptualizing new services is distinct from the process of learning and adapting to new realities. The conceptualization process is strongly linked to the development of innovations. Moreover, the process of learning and adapting is commensurate with standardization efforts. In the context of restaurant chains, which face the challenges of standardization and innovation, the distinction between these constructs is significant.

The EFA results were confirmed using CFA. The model proposed for DSIC measurement, therefore, considers the three factors emerging from EFA as DSIC: conceptualizing, learning and adapting and sensing users needs. The DSIC are latent factors measured through the observed variables, and the model establishes covariance among the DSIC. All indicators used to evaluate model fit were satisfactory, namely: CMIN/DF (1.542), GFI (0.972), CFI (0.988), RMSEA (0.042) and PCLOSE (0.681). Besides the indicators, three additional factors were measured using the dimensionality test.

After confirming the multidimensionality of the scale, a Structural Model was proposed where the DSIC is a second order construct related to the dynamic capabilities found. The goodness-of-fit indexes found are identical to the previously fitted model, and are therefore satisfactory. The model presented significant path values, as seen in Table 4. All goodness of fit indexes are acceptable and have a p-value <0.001, i.e., they are statistically significant.

Table 4 - Paths of the DSIC Structural Model

			Standardized coefficient	p-value
Sensing user needs	<----	DSIC	0.704	***
Learning and adapting	<----	DSIC	0.888	***
Conceptualizing	<----	DSIC	0.581	***

In addition to these data, the CR and AVE indicators were also analyzed. The parameter CR was satisfactory for all constructs, with the following values: DSIC (0.7443), *sensing user needs* (0.7465), *learning and adapting* (0.7451) and *conceptualizing* (0.7994). The AVE indicator, however, presented below-expected values for two constructs. The values were DSIC (0.5405), *sensing user needs* (0.4459), *learning and adapting* (0.3502) and *conceptualizing* (0.7538). The value presented for the factor *learning and adapting* is the lowest among all of the constructs.

Finally, the discriminant validity and nomological validity were evaluated according to the parameters described previously. The results are shown in table 5.

Table 5 - Nomological validity of the DSIC model

	DSIC	Conceptualizing	Learning and adapting	Sensing user needs
DSIC	**0.5405**	0.581	0.888	0.704
Conceptualizing	0.3375	**0.7538**	0.517	0.409
Learning and adapting	0.7885	0.2672	**0.3502**	0.625
Sensing user needs	0.4956	0.1672	0.3906	**0.4459**

The values on the diagonal are the AVE; above the diagonal are the correlation values, and below the diagonal are the squared correlation coefficients

Some indicators did not reach the desired level of fit; however, this result was expected considering the AVE value for the construct *learning and adapting*. Of course, this result must be interpreted in the light of the theory. The theoretical complexity and the difficulty of measuring the *learning and adapting* construct is notable. The results do not invalidate the scale; rather, they suggest the need to improve measurement techniques for

organizational learning. It must also be kept in mind that this study was carried out in restaurant units belonging to a chain organization. We do not rule out the possibility of improving the fit of this construct in a study with chains.

According to what was observed in the interviews, the routines underlying this *learning and adapting* DSIC are, in their totality, strongly performed by the chain's strategic management. This fact, coupled with the results of the SEM, suggests that the restaurant units — although they perform some of the routines related to organizational learning — do not do this in a rigorous manner. That is, the chain, its upper management and supervisors are largely responsible for the organizational learning processes.

After confirming the DSIC structural model, the next step was to relate this structure to the innovations that occur in the restaurants. Thus, a model was created in which questions about innovations form a construct that is a consequence of the DSIC. The objective of this model was to verify the relationship between the DSIC and innovation in the restaurant chains by analyzing the paths between such latent variables; see Figure 2.

[Figure 2]

The model fit indicators presented satisfactory values: CMNI/DF (1.145), GFI (0.957), CFI (0.979), RMSEA (0.042) and PCLOSE (0.76). After fitting the model, it was evaluated according to its paths and the p-value, with p-value <0.05 being statistically significant; see Table 6.

Table 6. Paths of the DSIC model and Innovation

			Standardized coefficient
Innovation	<----	DSIC	0.152
Sensing user needs	<----	CDIS	0.696
Learning and adapting	<----	CDIS	0.912
Conceptualizing	<----	CDIS	0.566

The results suggest, however, that the relationship between DSIC and innovation is much weaker than expected. In reality, this relationship is conceptual; that is, innovation depends on the presence of DSIC. In this way, this result must be interpreted in terms of the theory and the elucidated context. The p-value for the relationship between DSIC and innovation, 0.082, was not statistically significant. That is, the influence of DSIC on innovation in the units of chain restaurants is low. If this relationship is indeed, as seen, conceptual, it can be assumed that the DSICs that exert the greatest influence on the emergence of innovations in restaurant chains are the DCIS performed by the chain, not by the unit individually. In other words, one of the possible interpretations is that the DSIC processes performed by the chain restaurant unit have little impact on the innovations of these chains.

Although the relationship between the constructs innovation and DSIC is low, the result is quite significant. The analysis that followed sought to evaluate this same model for each of the types of expansion (i.e., franchises, company outlets and hybrid chains). Due to the number of observations of restaurants belonging to plural chains, this modality cannot be evaluated in this respect. The results for restaurants belonging to franchise chains and restaurants of their own chains, however, were interesting. The values of the path between DSIC and Innovation in each type of chain were as follows: franchises (0.177) and company outlets (0.053). The results suggest that in chains the relationship between DSIC and innovation is even less relevant than in franchise chains. This finding is consistent with the theory. According to the literature, franchise chains tend to be more innovative because of their plural character (Bradach, 1997). From this result, coupled with the theory of forms of expansion (Bradach, 1997), it is possible to assume that units of franchised restaurants are more responsible for the final innovations of the chain than are the restaurants linked to a company-owned chain.

5. Final Remarks

This study adds some contributions to the academic debate and to practitioners. The first one that deserves to be mentioned is the operationalization of DSIC. The result of this effort is the consolidation of a scale to measure DSIC in restaurant chains. This result enables numerous applications, among them the creation of indicators related to DSIC that help the strategic management of novelty. Another contribution to the theoretical field of business administration is the development of a framework that considers the different management levels present in company chains. Moreover, this research also shows that different managerial levels must be treated according to their peculiarities.

According to the results, the form of expansion does influence the chain's attitudes to innovation. This was verified both at the chain's managerial level and at the restaurant unit-level. This result is consistent with the theory of Bradach (1997). Thus, franchise chains are more innovative than company-owned chains. Moreover, franchise and plural chains attach great importance to new launches. Regarding standardization, previous findings in the literature were confirmed; i.e., the form of expansion also exerts influence over this process (Bradach, 1997). For all the chains interviewed, uniformity of results is indispensable. Although efforts for system wide standardization in company-owned chains are based almost exclusively on employee training, such chains do not invest in a training restaurant structure: employees are trained on the job. The franchise and plural chains use the structure of a model outlet to train personnel. This structure, in addition to promoting the consistency of conveyed information, also functions as a mechanism of control of the franchisor over franchisees.

The findings suggest that company-owned chains should stimulate the creative environment to facilitate the process of innovation. Arrangements that include unit employees or franchisees in the strategic formulation process are more successful in adapting to new scenarios. The results also suggest that the DSIC performed by the restaurant units do not contribute strongly to chain innovations. The DSIC that are performed by the units can be better explored by the chain management to become also relevant in the innovation process.

The timing of the chains' expansion was investigated and, in line with the literature, advantages were discerned in relation to ambidextrous management (Güttel *et al*, 2012) (Winter & Szulanski, 2001). The ambidextrous strategy was also decisive in relation to attitudes to innovation. Chains with ambidextrous features were clearly stronger in terms of incentivizing an environment conducive to the emergence of novelties.

The focus of this paper is on the little-explored intersection among two broad themes: dynamic innovation capabilities and restaurant chains. Of course, because of this investigative trait, many possibilities emerged for further studies. Such as to measure innovation by using the volume of sales derived from it and to develop an index to measure innovation in a cumulative way. Similarly, ways of measuring standardization may improve the results opening the possibility of new types of analysis. Also, a large-scale research could make possible the development of a new scale of mensuration of the DSIC devoted to analyzing the level of chain management.

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