

Competitiveness in a Segmented Fast-Food Restaurant: Proposal of a Business Model Supported by Enterprise Information Systems for Costa Rican's "Wings on Fire"

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Abstract— This article summarizes the design of a business model proposal for Wings on Fire, a Costa Rican restaurant that specializes in offering organic fried chicken wings. The proposal was the final project for MC7211, a master's course in management at the Costa Rican Institute of Technology that focuses on creating business model designs supported by technology. The primary objective of this investigation was to design a business model that would give the company a strong competitive advantage. To achieve this, the investigator performed an industry analysis using benchmarking and the theory of competitiveness. Porter's model of the five forces that shape industry competition was particularly relevant and considered to identify opportunities and threats posed by competitors. The primary value proposition of this company was ultimately coined as the offering of a complete gastronomic craft experience to its customers, which required redefining some of the activities that are part of its current business model. This was precisely what this research intended to provide, and this article goes over the main points of this proposal. Some enterprise information systems, including ERP, CRM, SCM, KM, and BI were determined to effectively support the consolidation of the restaurant's value proposition, its new system of activities, and business model. Therefore, the proposal of this new business model includes such systems and how they would support the value proposition of Wings on Fire.

Keywords— chicken wings, business model, enterprise information systems, competitiveness, value proposition

Resumen— Este artículo resume el diseño de una propuesta de modelo de negocio para Wings on Fire, un restaurante costarricense especializado en ofrecer alitas de pollo orgánicas a sus clientes. La propuesta fue el proyecto final para MC7211, un curso gerencial de la maestría en sistemas de información del Instituto Tecnológico de Costa Rica que se enfoca en la creación de diseños de modelos de negocio respaldados por tecnologías de información. El objetivo principal de esta investigación fue diseñar un modelo de negocio que le brindara a la empresa una sólida ventaja competitiva. Para lograr esto, el investigador realizó un análisis de la industria utilizando la comparación y la teoría de la competitividad. El modelo de las cinco fuerzas de Porter, que da forma a la competencia en la industria, fue especialmente relevante y se consideró para identificar oportunidades y amenazas planteadas por los competidores. La principal propuesta de valor de esta empresa se definió como la oferta de una experiencia gastronómica completa y artesanal para sus clientes, lo que requería

redefinir algunas de las actividades que forman parte de su modelo de negocio actual. Esto fue precisamente lo que esta investigación se propuso proporcionar, y este artículo repasa los puntos principales de esta propuesta. Se determinó que algunos sistemas de información empresarial, como ERP, CRM, SCM, KM y BI, apoyan eficazmente la consolidación de la propuesta de valor del restaurante, su nuevo sistema de actividades y su modelo de negocio. Por lo tanto, la propuesta de este nuevo modelo de negocio incluye estos sistemas y cómo apoyarían la propuesta de valor de Wings on Fire.

Palabras clave— alitas de pollo, modelo de negocio, sistema empresario de información, competitividad, propuesta de valor

I. INTRODUCTION

In the last decades, the Costa Rican gastronomy offered in restaurants has diversified as they started serving fast food dishes, which was not the standard before. Restaurants like McDonald's, KFC, and Carl's Junior have expanded operations in the country and are some of the main referents of food options like fries, onion rings, hamburgers, and fried chicken. In addition, other small local restaurants currently compete in the fast-food market offering the same products as big companies yet with different marketing strategies and food's cooking styles like the one known as "craft". This is the case of Wings on Fire, a restaurant entirely focused on serving organic fried chicken wings. As Wings on Fire opened in 2015 and is still a small company, it lacks an e-business model suitable to its operations and ideas of expansion. Other than social networks and a billing software system, it lacks tools to compete effectively in the aggressive fast-food market and to become a real electronic business. The following pages explain how the implementation of management systems like ERP, CRM, SCM, KM, and BI can help the company achieve the positioning of a temporary competitive advantage based on its value proposition to customers of its two restaurants. This work also states the strategic plan to implement the e-business models and the justification for all of the systems suggested. The information required for this study was retrieved from various sources that were brought to class in the course MC-7211 Electronic Businesses of the Costa Rican Institute of

Technology in the master's degree in computer engineering and information systems. No implementation of the systems mentioned was performed as that was neither within the scope of the course nor the paper.

II. CONTEXT BACKGROUND

Wings on Fire is a small company that specializes in the offering of fried chicken wings with diverse sauces and craft beers, using fresh and organic products. Currently, its competitors represent a high force as several iconic restaurants like Hooters, Hooligans, Buffalo Wings, and KFC offer the same product and are very well consolidated brands in the minds of chicken wings consumers. Wings on Fire opened its doors back in 2015 in Granadilla, Curridabat with the slogan "the best Eastern chicken wings". The originality of its business concept -a rustic restaurant serving organic chicken wings with homemade sauces- caused it to grow fast in an area that is not precisely strategic as its only restaurant back then was located relatively far from San José downtown. In 2017, Tatiana Sibaja, Wings on Fire's general manager, announced the opening of the second restaurant in the genuine gastronomic walk "Container Platz" located in Santa Ana, San José. As this is no longer the East of San Jose, the company's slogan evolved to "the best Eastern and Western chicken wings". Having two restaurants in two vastly different locations and contrasting business concepts has numerous implications for this small company as its strategy and competitive advantage depend on providing consistent experiences to the customers in both sites. Currently, that strategy in Container Platz and in the main restaurant in Granadilla are not very clear as their targets are not necessarily the same. This situation and the fact that several other surrounding restaurants also specialize in chicken wings offering are the detonators for the necessity of finding a suitable value proposition that differentiates Wings on Fire from the rest of competitors at least temporarily. In order for the company to accomplish this goal, the author of the present work concluded that the investigation's main focus must be: "Design a business model proposal aimed at providing a solid temporary competitive advantage for Wings on Fire by means of benchmarking competitors of the chicken wings industry segment and analyzing the different types of management information systems that strengthen the bond among the system of activities of the company."

III. THEORETICAL FRAMEWORK

Before This research used a theoretical framework based on Porter's model of the five forces to completeness, value chain, and the enterprise management information systems that support a value proposition and a business model. In this section, the most relevant theory and concepts are surveyed.

A. PORTER'S MODEL OF THE FIVE FORCES

In [1] the author proposes a model of five forces that shape industry competition, which is a management tool that helps to identify and analyze the industry or a segment of it, with the ultimate purpose of designing a strategy that creates a competitive advantage for the company. Figure 1 presents these five forces and the relationship between them.

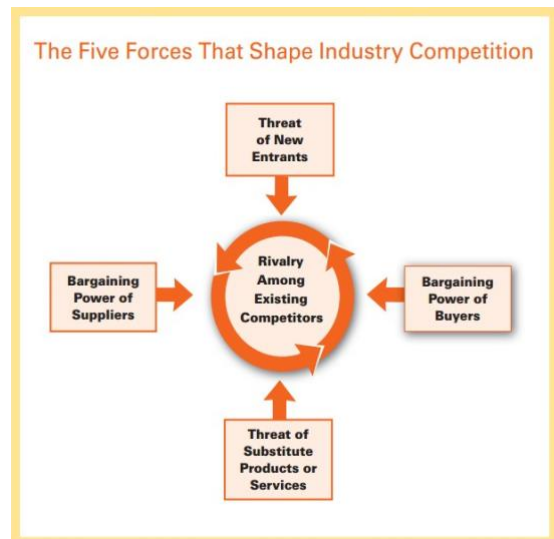


Figure 1. The five forces that shape industry competition [1].

The five industry forces according to Porter are:

1) Rivalry among existing competitors

Generally, this is the most powerful force of all. It depicts the rivalry between companies that compete directly in the same industry, offering the same type of product.

2) Threat of new entrants

It refers to the potential entry of companies that produce or sell the same type of product to a certain industry.

3) Threat of substitute products or services

It refers to the potential entry of companies that produce or sell alternative products to those that a company offers.

4) Bargaining power of suppliers

This force is based on the power that suppliers exert as to manipulate the prices and be less concessive.

5) Bargaining power of buyers

It refers to the power of the consumers in the obtaining of good prices and conditions.

These five forces are fundamental inputs to design the value proposition to Wings on Fire's customers as explained more in depth in the Proposition section.

B. VALUE CHAIN

The definition in [2] of the value chain is conceived as a management tool that allows performing an internal analysis of a company through the separation of value activities. The value chain of a company consists of the stages that the main activities of the company go through as to add value to the final product or service. The same authors point out that every company has a value chain composed of activities ranging from product design and procurement to product distribution and after-sales services.



Figure 2. Value Chain Composition [2].

The activities of a value chain are classified into two types:

- *Primary activities or line activities*

These are activities that are directly related to the production and marketing of the product and consist of five primary activities: internal logistics, operations, external logistics, marketing, and services, which are the activities that provide value to the product.

- *Support activities*

These are activities that add value to the product without being related to the production and marketing of it; they serve as support for primary activities. These activities correspond to all those related to provisioning, infrastructure tasks, human resources, and technological development.

The analysis of a value chain involves assigning value to each of these activities as well as an associated cost (both in terms of cost and time), and then, determining strengths and weaknesses based on these values and costs with the purpose of identifying competitive advantages and threats.

C. SYSTEM OF ACTIVITIES

The competitive strategy means [3] differentiating the company's activities from those of the competence by selecting a strategic set of activities to provide a unique genuine value. In this sense, the value change helps with the process of planning the competitive strategy as it includes the system of activities of the company, the value chain of suppliers, the distribution channels, and the buyers. It is key, therefore, to design a strategic linking process that results in activities being linked to one another as a way to reinforce the overall strategy of the company. Figure 3 shows the system of activities of Wings on Fire and the relationships among them.

D. RESOURCE-BASED VIEW

The resource-based view (RBV) is an approach to the topic of competitive advantage that dates to the 1980s and 1990s. This approach, according to [4] emphasizes that resources and capabilities are fundamental to achieve a competitive advantage. The theory, as in [5], states that resources are valuable, rare, inimitable and non-substitutable, and they are distributed heterogeneously among organizations. RBV seeks to ensure that the company's resources achieve an immobile advantage over its competitors. Figure 4 shows the resource-based view approach applied to the strategic resource of Wings on Fire, which is, in fact, the value proposition to the customers.

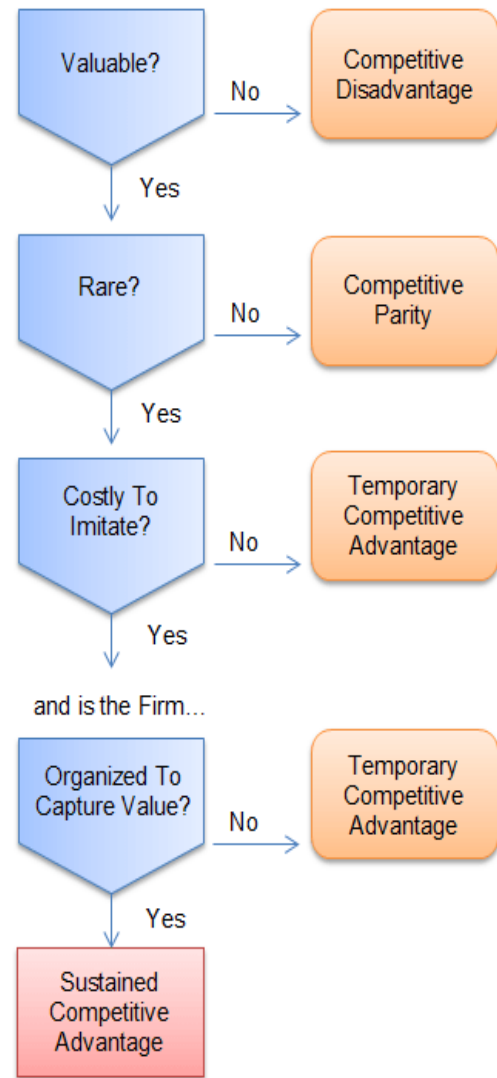


Figure 3. Adaptation of Resource-based View Categories [5].

E. MANAGEMENT INFORMATION SYSTEMS

After the analysis of Porter's five forces model and the theory of value chain management, various information systems were analyzed with the intention of selecting the ones that contribute with the improvement of Wings on Fire's processes and their alignment to its value proposition. This section describes the main characteristics of the information systems surveyed as input to choosing the most appropriate for Wings on Fire.

- *Enterprise Resource Planning System (ERP)*

Based on [6], the main objective of an ERP system is to integrate the information and the various activities that are carried out in the company in a single through complete system. An ERP unifies and sorts all the information, which streamlines the processes and the information flow within the organization.

- *Customer Relationships Management (CRM)*

According to [7], customer relationships management is a business philosophy that integrates different business areas (sales, marketing, and services) to provide added value to the customer. Its objective is to create a business model that benefits both the company and the customer, and that it serves as a way of approaching and interacting with customers. In this sense, CRM nourishes the individual treatment of the services provided to the customers with information technology systems that store and manage the resulting information.

- *Supply Chain Management (SCM)*

The supply chain is defined by [8] as a group of interconnected participating companies that add value to a stream of inputs transformed from their source of origin to the final products or services demanded by final consumers.

- *Knowledge Management (KM)*

As stated in [9], knowledge management involves the identification and analysis of both the available and required knowledge and the planning of actions to develop that knowledge in order to achieve organizational objectives. The definition in [10] about knowledge management is understood as the management and mobilization of intangible assets of the company, on which the learning capacity and continuous improvement of the organization must lay. By his part [11], refers to knowledge management as the coordination and exploitation of organizational knowledge resources in order to create benefits and competitive advantages.

- *Business Intelligence (BI)*

The concept of business intelligence includes methodologies, applications, and technologies that make it possible to collect, access, transform, and analyze data, transactions, and unstructured information, in order to provide companies with solid inputs to make better business decisions. BI systems can be defined as systems that combine information extraction, information storage and knowledge management with analytical tools to present complex and competent information to decision makers.

- *e-Commerce*

The term e-commerce refers to the sale of products or services over the Internet seizing advantages of the new information technologies such as online interactivity with customers, simple procedures to purchase items, and the expansion to international markets. In line with [8], through e-commerce, individuals and companies can sell their products as pretty much everything can be bought and sold through this means. In order for a system to be considered "e-commerce", the purchase orders of the items have to be performed through electronic interactions in telematic means, and the payment must be done by means of services provided by the Internet (i.e. PayPal).

IV. METHOD

As stated above, this research was conveyed as part of the MC-7211 Electronic Businesses of the Costa Rican Institute of Technology in the master's degree in computer engineering and information systems. This course was taken by the author in the fall period of 2017. The research paper was initially written in Spanish, and then, the corresponding author who also holds a degree in English Teaching and Translation translated it to English.

The methodology followed for addressing the problem of this research consisted of dividing the implementation of the proposed business model into two phases:

- *First phase:* Analysis of the industry and creation of a business value proposition.
- *Second phase:* Analysis of the management information systems to support that business value proposition.

In the first phase, an industry analysis was carried out using Porter's model of the five forces that shape industry competition applied to Wings on Fire. Thanks to the application of this model, it was possible to determine Wing on Fire's current market situation and, thus, identify and analyze its opportunities and threats in it as well as the strengths and weaknesses of the company in its current market. After that, the Chain Value model and the System of Activities model were studied to characterize both the primary and secondary activities, propose and classify new activities that were missing for implementing the designed value proposition, and link all the activities among them to achieve a suitable competitive advantage. This implied the organization of a new system of activities and its display on a diagram that can be reviewed in the Proposal section.

For its part, the second phase encompassed the analysis of the information systems that would best support and strengthen the value chain of the company. The systems surveyed and analyzed were ERP, CRM, SCM, KM, BI, and e-Commerce. On the same token, the theory surveyed in this investigation sought to maximize a resource (the company's value proposition) under the Resource-Based View model to achieve a solid temporary advantage for Wings on Fire in its industry. It was also determined that a strategic plan to implement the business model is necessary as not all of the management systems are equally critical and beneficial for the company's market segment. Therefore, ideas on how to implement these systems are provided as part of the proposal.

A. BUSINESS MODEL PROPOSAL

1. Proposition of Value

This research required to understand the very particular market situation of Wings on Fire. Since its two restaurants currently hold dissimilar business concepts yet same products and management techniques, the job of designing a business model based on a single value proposition was a challenging process. Initially, it was discovered that the company's value proposition consisted of promoting its organic chicken wings and homemade sauces only. However, because the restaurants also offer complementary products such as craft beer and launching of new sauces on a regular basis, the value proposition was modified to focus more on offering customers a complete gastronomic craft experience than on the sale of products in isolation. In addition, the researcher identified the way in which the company's value chain can be maximized as well as a feasible way in which the current and proposed systems of activities can be linked to provide value and, therefore, reduce the gap between the current state and the desired state of the company. The designed new value proposition of Wings on Fire towards its customers reads: Offer a complete craft gastronomic experience to our customers, which includes the consumption of organic and always fresh chicken wings, homemade sauces, and craft beers; all this while they enjoy the rusticity of our two restaurants and our guidance on the combinations of sauces and beers that best suit their likes and desired experience. The researcher of this work was able to design this value proposition thanks to the analysis of Porter's five forces that shape competition model:

- *Rivalry among existing competitors*

Rivalry among restaurants that serve chicken wings stood as high before designing the new value proposition and will continue to be high after the company eventually implements such a proposition. However, Wings on Fire will now focus on providing a unique "craft" experience, which differentiates it from its competitors.

- *Threat of new entrants*

This force represents a high threat to the company as more and more fast-food restaurants are focusing on single products to approach a highly segmented target population. That is the case of restaurants specialized on sandwiches, pizza, fried chicken, and more recently, on chicken wings. As mentioned before, this research determined that a CRM system would help mitigate the impact of new entrants as it would contribute to offer the customers an integral treatment and management in favor of their loyalty towards the company.

- *Threat of substitute products or services*

In terms of substitute products, that force represents a low threat to Wings on Fire as no substitutes for the whole craft gastronomic experience was found. Such experience cannot be substituted by serving organic chicken wings with homemade sauces and craft beer as the added value to the customer with that experience goes beyond the food itself. The experience includes the rusticity of the settings -restaurants- where the food is served, a system of recommendations and guidance for the customers to try the most suitable combinations of products according to their likes, dislikes, and history of consumption in the restaurant.

Bargaining power of buyers

This force represents a strong threat to the company as Wings on Fire depends highly on customers accepting its value proposition. However, the target population addressed by the designed value proposition is not characterized by bargaining much. It includes people who would accept to pay a little more than in other restaurants in exchange for enjoying a complete guided craft gastronomic experience.

- *Bargaining power of suppliers*

The power of suppliers is low as chicken suppliers are numerous even in the field of organic chicken wings. That power can be kept low by means of the use of an ERP to centralize the resource management, which was explained before.

2. System of Activities:

As stated in previous sections, the best of the current system of activities was kept, but the essence of the newly designed value proposition has been impregnated on the following system of activities, which exalts the offering of a complete gastronomic experience instead of only the enjoyment of organic chicken wings covered with homemade sauces.

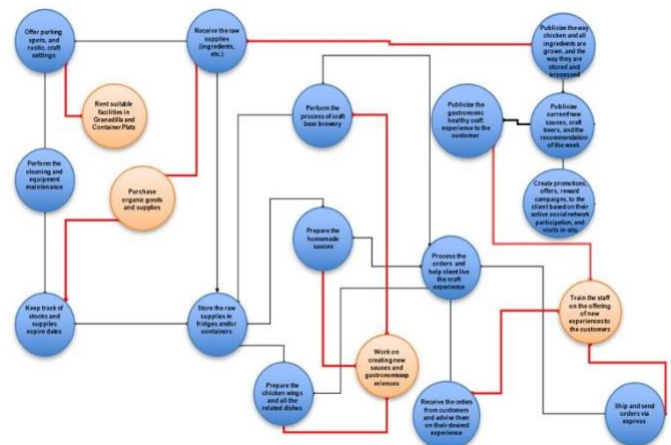


Figure 4. System of activities designed of Wings on Fire

3. Resource-Based View

As part of the elaboration of this business model proposal, a Resource-Based View was created to determine what competitive category this proposal falls into. According to the competitive categories surveyed in the Theoretical Framework, with this new proposal, Wings on Fire would gain a solid temporary competitive advantage over its competitors on its two restaurants. That is so because the proposal is valuable, rare, but not so costly to imitate. Since the proposal can be copied, it cannot be guaranteed that restaurants will not appear in the next few years offering the same gastronomic and unique experience of Wings on Fire. However, although the model could be replicated, no competitor existed that could potentially be positioned in the market to compete hand on hand with the company at the moment of elaboration of this proposal. Therefore, the researcher concluded that the temporary competitive advantage was solid.

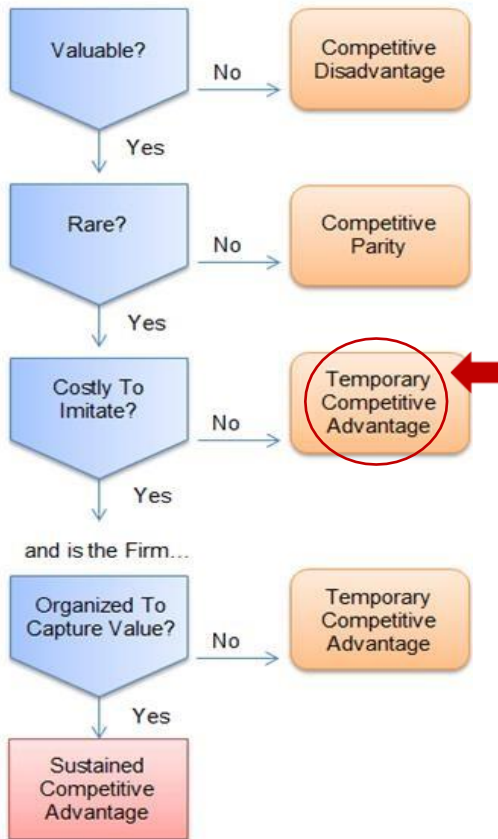


Figure 5. Adaptation of a Resource-based View Category for Wings on Fire's business model [5].

4. Support from Management Information Systems:

The investigator focused on analyzing information systems that would not only support the business value proposition for the new Wings on Fire system of activities, but also that can potentially help the company obtain an added value to offer to its customers:

- *ERP*

First, an ERP was considered a suitable system as it would provide Wings on Fire with the necessary tools to stock management, determine the hours and days when customers consume the most, determine the times of delivery of the raw material (chicken, vegetables, and organic fresh fruit), and the availability of suppliers within the defined times of delivery. It would also propitiate the integration of the company's finances and the accounting and finance modules that such ERP system provides. Finally, it would support the menu selection and menu update processes for the two restaurants as it would provide input for the combination of chicken wings, sauces, and beers as to create complete individual craft experiences for the customers.

- *CRM*

A CRM system would help Wings on Fire implement a customer fidelity system. Because the value proposal includes the offering of frequent-customer cards and specific promotions for certain dates and customers, a CRM system becomes necessary to record and manage the information related to customers as an input to determine the best time to offer customers those promotions and generate the best strategy to implement these initiatives. In addition, it allows gathering information related to customer satisfaction and their suggestions, which is valuable when it comes to assessing their satisfaction towards service in general.

- *SCM*

A SCM system would provide Wings on Fire with the tools to synchronize the delivery times of key supplies such as raw materials (chicken, vegetables, etc) based on the demand of the product, which goes along with the company's inventory management systems.

- *KM*

A KM system would facilitate the storage and preservation of chicken wings and sauces' recipes and the lessons learned during the process of offering customers complete craft experiences in the two Wings on Fire restaurants. It would also allow the company to spread the acquired knowledge among its employees efficiently. That knowledge would include the processes of cooking, preparation of recipes, customer service, clean policies, and marketing. Regarding the administration of the restaurants' menu, KM provides the guidelines to collect information about new recipes and combinations of products or sauce flavors as well as the lessons learned the customers' reaction to the clerks recommending them options of complete craft experiences. A KM system would also help the company record and manage information on people's likes and dislikes regarding the foods offered in the restaurants. This information would become beneficial for the implementation of marketing programs and promotions aimed at nailing the customers' most-desired products.

- *BI*

A BI system would provide Wings on Fire the necessary tools to analyze the behavior of its stock (ups and downs of products) and relate that behavior to the days and hours when the customers come to consume as to find patterns of consumption. In addition, a BI system can be used to forecast which recipes would be welcomed by both regular and potential customers. This would be possible thanks to the gathering of information on customers' tastes, behavior, socioeconomic level, and even age. Regarding the clerks recommending customers to try specific and strategic combinations of sauces and beers, a BI system would serve to collect and analyze customers' perceptions about these combinations, which would support the process of adjustments to this service based on the analysis performed with this tool. The company could also resort to a BI system in order to support marketing campaigns, offers, and launches of temporary products as it would be able to analyze the relationships between customers and the different products and offers.

- *e-Commerce*

Considering that Wings on Fire provides a highly personalized service on site, e-Commerce was not determined as a suitable system that would strengthen the company's value chain. Therefore, it is decided not to include it in the business model proposed.

B. PROPOSAL OF IMPLEMENTATION OF THE ENTERPRISE INFORMATION

The e-business model proposed aims at implementing these systems in three phases. The first phase encompasses the implementation of the ERP, CRM, and KM as they are the systems upon which the success of the designed value proposition relies. The second phase will implement a BI system that will complement the already centralized knowledge and sources of information. Finally, since the bargaining power of suppliers is a force that does not affect the company at a high rate, SCM will be implemented in the third and last phase, and because the new business model focuses on providing customers a gastronomic experience in situ, an e-commerce platform would provide relevant value to reinforce the company's value proposition at this point, but it is worth that it can be considered for implementation on the third phase. Figure 6 shows the three phases in which the enterprise information systems are recommended to implement.

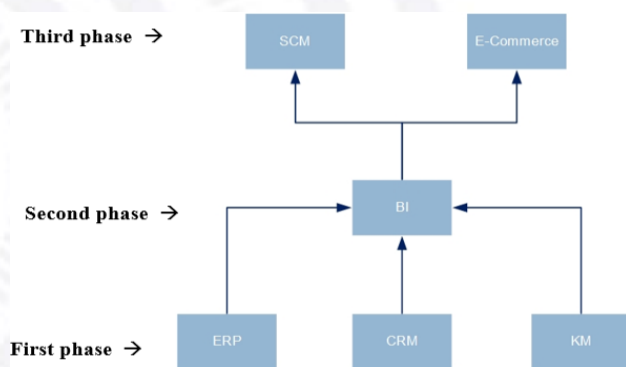


Figure 6. Phases for Implementation of Enterprise Information Systems at Wings on Fire

V. CONCLUSIONS

1. Some Costa Rican restaurants have changed the traditional focus of offering multiple foods to multiple customers and have now adopted the business model of offering their customers specialization in specific types of food, cooking methods, and even unique settings. This is the case of Wings on Fire, which can be conceived as an advantage, but at the same time, this places it in a leading position that can be brought down by competitors easily if it does not count on a strong strategy to face competition.
2. Porter's model of the five forces to shape competition stands as a solid theoretical input to determine the company's strengths and weaknesses and to benchmark the industry suitably.
3. In most cases, there is no straightforward way to figure out what IT tools can work well for a business. Rather, several approaches, benchmark processes, and evaluation of

enterprise information systems are required to determine the tools that can become part of an integral e-Business model to the company.

4. No IT tools will work for the company if it does not perform the necessary analysis to identify the key activities of the company, the missing activities for implementing the value proposal appropriately and the required link that has to be traced among them as for unifying their outputs and identifying the inputs that can reinforce them as value adders.
5. CRM, ERP, and KM are the management information systems that can provide Wings on Fire with the greatest input to achieving the company's value proposition as these systems collect fundamental data to keep the business operating, make decisions, and predict scenarios of possible behaviors.
6. SCM and BI are not fundamental to start implementing the e-business model proposal at Wings on Fire as the bargaining power of suppliers is low and KM has to be implemented first to BI as the latter is input to the latter in this company.
7. For a company so focused on providing customers a service in situ as the case of Wings on Fire, e-commerce does not provide relevant value to reinforce the company's value proposition.

VI. ACKNOWLEDGEMENT

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