Journal of Technology
Management & Innovation

USE OF CORPORATE PORTAL IN AUTOMOTIVE INDUSTRY

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ABSTRACT

Corporate Portals are applications which integrate information and company services, making them available in one unique access spot. The automotive industry concentrates a huge quantity of information in several areas, considering the centralization of information before the existence of corporate portals hard to implement, due to lack of a convenient technology. The knowledge management concept aims to ensure that everybody inside the organization has access to the knowledge generated, therefore sharing it. In such context, this paper purpose was to identify the use of corporate portal for knowledge management in the Automotive Industry, more specifically the corporate portal for relationship with customers, identifying its possible use for knowledge management.

Keywords:

Corporate Portal; E-Commerce; Automotive Industry; Innovative use of Internet; Knowledge management

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1-INTRODUCTION

According to a study by McKinsey (2003), in the next ten years, the automotive industry will be shattered by a third "revolution" following the invention of the Assembly-Line Production by Henry Ford and the lean production of Toyota. Customers expect "more car" for the same money, which means continuous cost pressure and innovation for OEMs. This fact leads to a range of transformations in the structure of the automotive supply chain. For example, in order to improve customer satisfaction and increase revenue growth and shareholder value, large OEMs and their suppliers are forced to build large automotive networks.

Automobiles are developed and manufactured by OEMs and their supplier networks, which produce as much as 70 percent of the value of a vehicle. Consequently, the cost and quality of a vehicle are a function of the productivity of a network of firms working in collaboration.

According to Spies et al. (2005) for big organizations, information integration has become a major issue during the last decade. The most prominent inhibitors and risk factors are: -the vast amount and the huge growth rate of all kinds of documents, ranging from e-mail to project descriptions and reports; the significant variety and complexity of IT infrastructure in use in medium to large enterprises, ranging from legacy systems to modern web servers; the dissemination of corporate knowledge across structured formats, like in relational databases, and unstructured formats, like in text and office documents; partly missing know how or missing time of employees to scan results from these heterogeneous resources for content relevant to their work and to learn improved searching techniques; the variety of languages and terminologies in use.

A possible answer to these concerns was the creation of the Corporate Portal, applications that are compatible with a variety of different platforms and written in different languages that can be accessed at one single point. Corporate Portals (also known as EP – Enterprise Portals) integrate information and services within the company, collecting them in a single place.

According to Chan and Liu (2007) a Corporate Portal is an IT strategy to aggregate a selected subset of information into a central location by using Extensible Markup Language (XML). From corporate portal, employees in the organization or between the organizations or customers can easily access information that is relevant to their roles or business and personal requirements. The Corporate Portal was created as a possible solution to the lack of integration between external and internal information flowing in and out of the company, extending its application to the Intranet and also being used as a single access point for all information and knowledge resources within the company.

Terra and Gordon (2002) says that Corporate Portals are an important advance to collaborative software that can be used to develop and implement initiatives of Knowledge Management (KM). According to Terra and Gordon (2002), Corporate Portals allow personalized access to information, automation and improved decision cycles.

Bukowitz and Williams (2002) define knowledge management as the process where the organization generates wealth from its knowledge or intellectual capital. Knowledge management considers the four basic processes of creating, storing/retrieving, transferring, and applying knowledge.

From this view of knowledge management, the use of the Corporate Portal seems to be a good tool to fulfill the automotive industry basic knowledge management needs.

In this present work, of an exploratory nature, the case study methodology was used showing the corporate portal of two automotive industries in Brazil (General Motors and Renault), with the objective of showing what primary information was available on these portals and how the industry can use this information to knowledge management throughout its supply chain. More specifically, the paper intended to highlight which communication channels exist among automotive industry and its customers, available on its corporate portal.

2-LITERATURE REVIEW

The company perspective based on knowledge arose in the literature about strategy (Nonaka and Takeuchi 1995). Such perspective was built up on and extended from the company theory based on resources as initially proposed by Penrose (1959) and exploited by other authors (Barney 1991; Conner 1991; Wernerfelt 1984). The company perspective based on knowledge states that the services delivered by tangible resources depend on how they are combined and applied, what by its turn is function of the knowledge of such company. According to Alavi and Leidner (1999), the concept of coding and transmitting knowledge in organizations is not new: trainings and employee development programs, organizational policies, routines, procedures, reports, and manuals have served this function for years. As said by Alavi and Leidner (1999), knowledge can be understood under several perspectives: (1) a state of mind, (2) an object, (3) a process, (4) a condition of having access to information, or (5) a capacity.

The knowledge perspective as a state of mind focus on how individuals can expand their personal knowledge and apply it to the organization needs. The view of knowledge as an object (Carlsson et al. 1996; McQueen 1998; Zack 1998) states that the knowledge can be seen as something to be stored and manipulated. When understood as a simultaneous process of knowledge and action, it focuses on the "expertise" application (Zack 1998). The biggest implication of such diverse conceptions is that each one of

them suggests a different knowledge management strategy and the role of the systems that support it. Three main points arise from the discussion above: (1) a great emphasis is given in trying to understand the difference among data, information and knowledge and in describing the implications of such differences; (2) As knowledge is something customized in order to be useful to several individuals and/or groups, it must be expressed in such way it can be fairly interpreted and understood by its receptors (3) Great deal of information has little value; only the one which is actively processed in mind of an individual through clarification or learning can be useful.

Nonaka and Takeuchi (1995), emphasize that only the human being can have a central role in the knowledge creation. They state that the computers and their systems are merely tools. While the information generated by computer systems does not have a human interpretation for potential action, the knowledge resides in the subjective context of the user action based on information. On the other hand, Coakes (2006) cites that it is now common in the knowledge management literature to lower the value of technology for knowledge sharing and to emphasize the human aspects of knowledge sharing; in her paper she agrees with this perspective but illustrates how technology can be used successfully to assist in the knowledge sharing processes across time, space and virtuality.

One can say to corroborate what Coakes (2006) says, that what is new in the knowledge management area is the potential of using modern information technologies (e.g., the Internet, intranets, browsers, data warehouses, data filters and software agents) to systematize, facilitate, and expedite firm-wide knowledge management.

According to Mohamed et al. (2006) the advent of communications network and internet access brought greater speed and agility, knowledge sharing, collaboration, lower costs and greater satisfaction through customer and supplier integration and self-services. In its natural progression, technology moves from supporting functional systems to process oriented systems. This helped to lead a technology-enabled revolution dominated by the perceived efficiencies of process reengineering.

Several times the information is stored in IT equipment in a not so integrated way, spread in its data bench, making its access hard and consequently, the performance of activities necessary for the full functioning of the company. When bringing the Web concept to the corporate environment, big companies face a set of problems: Which data and services release to users? How releasing the information if it is found in different platforms? How to discipline the access to such information? How to integrate existing services in different technologies?

Govindasamy (2002) suggests the development of corporate portals as a solution for these problems. Corporate Portals are applications that run in heterogeneous platforms and written in different languages that can be accessed in a single point. When centralizing information, formatting business processes and connecting people for a mutual cooperation, the corporate portals can increase the operational efficiency; reduce costs and build up loyalty (Voth, 2002). What makes corporate portals different from the static pages of the *Web* is its ability of including data from different sources, different forms and present it in a unique and consistent way through a single access point (Nielsen, 2003).

The Corporate Portals integrate information and service which are within the company, placing them in a single spot. This gives the employees substantial time advantage in their job.

In this sense, Remus (2005) says that corporate portals have become the backbone for the integration of a large number of different applications, content and services. Nowadays, electronic business can hardly be imagined without the use of these portals as central entry points, as they promise to provide secure, customizable, integrated access to dynamic content from a variety of sources, in a variety of source formats, wherever it is needed.

In this paper, the focus is on how the *Web* can support the Knowledge Management, focusing specifically on Corporate Portals as an emerging platform to improve the alignment, the businesses central processes, the information dissemination and the ample cooperation of companies based on knowledge, like the automotive industry.

Inside this context, one of the most competitive segments of the worldwide economy is the automotive industry, bearing a large quantity of information and knowledge in its processes. Driven by challenges such as shorter product life cycles, increasing cost pressure in stagnant markets and increasing technological complexity, the automotive industry is currently facing increasing demand for rapid innovation in order to meet the customers requirements, reduce costs and stay competitive (McKinsey, 2003 apud Gerst and BUNDUCH, 2005). By capturing, codifying, and disseminating this knowledge, the company reduces the level of know-how required for its managers while improving the effectiveness and efficiency of its operations (Peters, 1992).

In this paper, the automotive industry portal is centered, it is seen as a company, which has its suppliers, customers, employees and generates a great quantity and variety of knowledge considering the communication in this kind of industry as being rather diffuse – suppliers, employees, customers; all this communication has to be aligned, has to be centralized.

Up to the existence of corporate knowledge portals this communication was not centralized. With portals, such centralization can occur.

From this view of knowledge management, the use of the Corporate Portal seems to be a good tool to fulfill the automotive industry basic knowledge management needs.

What occurs in an automotive industry is the creation of several specific portals to facilitate communication and exchange of information / knowledge among its several agents: in the same industry, there is the supplier portal, the employee portal, the sales portal, the "dealer" portal, the customer relationship portal. Considering the value created by the corporate portal in its application as a tool for knowledge management, we can cite Amit and Zott (2001), authors who cite that the value is created by e-business by the way transactions are habilitated. The authors elaborated a model to evaluate the value creation in e-business, where there are four conductors of value: 1) efficiency (when reducing information asymmetry between salespeople and buyers, information transmission speed, etc); 2) complementarities (when a set of goods provides more value than each one individually); 3) retention (value in e-business is increased by how much consumers are motivated to buy again); 4) news or innovation (e.g. create value connecting parts which before the innovation were not connected).

As far as the innovative character of the corporate portal use for knowledge management is concerned, the definition for innovative activity on Internet according to Timmers (1998) is that one where the Internet use allows actions which would be impossible without its use: the direct contact of consumer with the automotive manufacturer would be very difficult for an car assembly company if the facilitation offered by Internet were not around.

As far as the tendencies in the automotive industry are concerned, Benko and McFarlan (2003) explain that the automotive industry is transforming itself, from the design studios of Germany to the modular assembly of cars in Brazil to the new relationships with suppliers in Detroit to the factory floors of Japan. Three trends stand out: (1) the manufacturer's changing relationship with its customers; (2) new partnerships with suppliers; and (3) the reinvention of the factory floor. They represent a convergence of progressive thinking from major players around the globe.

Perhaps the biggest change in the auto industry is its relationship with its customers. In this sense, the customer relationship corporate portal acquires a crucial level of importance considering that through this tool the car assembly company succeeds in establishing a greater relationship with its customers, identifying needs and opening a direct channel of communication with its final customers, allowing customizations by such customers, which affect all the supply chain.

According to Dutta and Biren (2001) the Manufacturing sector, dominated by the automotive industry, has embraced the Internet as a new medium for growth and customer expansion. Customers purchasing a new vehicle spend a large amount of time researching the various models and making price comparisons among similar companies. Typically, approaching a car dealer to inquire about car features, or worse to negotiate price, is viewed as an unfavorable, often dreaded, experience. By providing consumers with the ability to shop and even finance a new purchase online (excluding actual signing of the final papers), the companies have managed to turn purchasing a car into a fun and interesting experience.

According to Lung (2001), the corporate portal is a tool which aggregates value to services in the automotive industry, once it supplies a series of information which can generate knowledge about the consumer, therefore establishing more competitive services.

This paper will develop the analysis of the customer relationship throughout the corporate portal, given the innovation of such portal by allowing a greater interaction between the automotive industry and its end customer, which before the existence of portals was practically impossible and such relationship happened basically through intermediaries.

3-RESEARCH METHODOLOGY

The development of this research has been of exploratory nature, using a case study method. According to Yin (1994) the case study is the preferred strategy when issues are put under "How" or "Why", which is the current case, where it is questioned: "HOW *to use the Corporate Portal in the Automotive Industry*?"

The study follows what Stake (1995) calls an instrumental case study research design, which examines a particular case to provide insight in to an issue. The case aims to further the understanding of the processes that characterize the use of corporate portal at the automotive industry to knowledge management.

3.1-Selection of Samples and Data Collection

In this research, the sampling used is non-probabilistic type, by convenience of access which is given to data of the selected companies. Two car assembly companies in Brazil have been intentionally chosen as cases to be studied:

- General Motors Brazil
- Renault, operations in Brazil

The choice of GM Brazil happened due to the fact that it has been operating in Brazil for over 50 years, and also be one of the leaders in sales in the country, while Renault was chosen due to the fact it has recently set up its business in the country (less than 10 years). By that it is possible to verify in the analysis whether the time being set up in a country influences in any way its relationship with the final customer, fact which is observed through its corporate portal.

The customer relationship corporate portals, which present free access, in other words: the ones which do not have restrict access and do not need any type of login for access to information available at the site, have been observed.

There are several corporate portals in an automotive industry: supplier relationship portal, dealer relationship portal, sales relationship portal, etc.

However, the choice has been placed in the customer relationship corporate portal, due to the fact the literature points out it as the major trend in the automotive industry, according to Benko and McFarlan (2003), the changes in the relationship of this industry with its final customer and the importance of understanding the customers needs by such industry for decision making, what can be made viable through the customer relationship portal. Also, the Internet effects on supply chain have been deeply exploited in the literature and the consequent relationship with suppliers; the direct relationship of automotive industry with its final customers has been much less exploited.

All companies under study in this work have a major quantity of complex information to be distributed to its internal and external users.

The data was collected directly on the company portal, through direct observation of them and also considering that no personal interviews were conducted. Inside the portals, variables that could be understood as knowledge sources, according to what had been proposed by Alavi and Leidner (1999) were analyzed, where knowledge could be seen, among others as: an object (something to be stored and manipulated), or a condition of having access to information (the organizational knowledge must be organized in order to facilitate the access and recovery of the content). In the case study, the knowledge generated by the corporate portal allows storing and manipulating data obtained from customers and allows the company to recover such content for later analysis and decision making as far as the product characteristics, promotion, price and distribution are concerned.

The analysis was made by comparing what had been prescribed in the literature about corporate portals and knowledge management with data found in the portals of the companies cited above.

It has been opted to investigate the local portal, it means: the customer relationship corporate portal in Brazil, as this is the country of origin of such research and because it makes the necessary analysis easier.

4-RESULTS: CASE AND ANALYSIS PRESENTATION

Initially, a brief introduction of each car assembly company will be made, so that after the data obtained can be presented through observation of sites and related analysis. General Motors Corporation is the biggest car manufacturer in the world. It arrived in Brazil in 1925; it is the biggest subsidiary of the Corporation and the second biggest operation outside the United States. In 2005, GM Brazil reached the end of the year ranking the second place and overtook Volkswagen for the first time in accumulated Sales in the total market. The company has also succeeded in another advance: consecutive records in exports. In 2003, with combined exportations of GM Brazil and Argentina, it registered the best year of its history, with revenue of US$ 1.205 billion.

Renault opened its first factory in 1998 in the Ayrton Senna Complex in São José dos Pinhais, in the Metropolitan Region of Curitiba (PR), Brazil. One year later, it started its second industrial unit of the complex, the Engine Factory. The Ayrton Senna Complex factory has a total area of 2,5 million square meters, with a built area of 105 thousand square meters. The estimated capacity for the first phase of the operation was calculated for 120 thousand vehicles per year in three production shifts. In 2005 the total production of Renault vehicles in Brazil (cars and light commercials) was 60.507 vehicles and the total exported was 19.257 vehicles. The table 1 below presents some comparative data between the studied companies, in the year 2003:

TABLE 1: Data about GM and Renault in Brazil, 2003

Companies	Products		Plants	Dealers Dec/2003	Revenue R$ millions dec/ 2003	Employment Dec/2003	DomesticWholesaleDec /2003
	Cars	Light Commercials					
GM Brazil			4	393	9.700	16.945	333.429
Renault Brazil			3	176	1.770	2.499	58.021

Source: ANFAVEA (http://www.anfavea.com.br/Index.html)

4.1- Presentation of the variables generating Marketing Knowledge found in the corporate portals

From the study carried out by Dutta and Biren (2001), the following variables have been chosen which describe the types of information available at the Car Assembly company site, under the point of view of Marketing (Kotler, 2000), given the relationship with customer involves knowledge of this area. In the table 2 below the variables related to the 4 P´s of marketing (point of sale, product, promotion and price), are made evident on the corporate portals and which can be considered as information that generate Marketing knowledge:

TABLE 2: Criteria for Corporate Portals analysis

		Criteria	GM Brazil Portal	Renault Brazil Portal
Price	1	Does the site mention products prices?	yes	yes
	2	Is it possible to negotiate price by the Portal ?	no	no
Product	1	In case of a on-line sale, is there adequate information to effect purchase by the Portal ?	yes	no
	2	Is it possible to customize the product on-line?	yes	yes
	3	Is there customization of product / special services for a specific target audience?	yes	no
	4	Does the internet user participate in specification items and design of the product by web?	no	no
Promotion	1	Does it use on-line advertising?	yes	yes
	2	Doe the consumers participate in on-line promotions?	yes	yes
	3	Are there differentiated promotions for on-line consumers?	yes	yes
	4	Are there links for other Portals?	yes	yes
	5	Does it advertise the company participation in events by the Portal?	yes	yes
Point	1	During the Purchase, is the Portal protected by safety items?	yes	no
	2	Can the purchase be effected on-line?	yes	no
	3	Is the Portal easy to be found in search sites?	yes	yes
Relationship with the customer	1	Does the site offer address or form for contact via e-mail?	yes	yes
	2	Does it offer chat (to solve doubts with help desks or appointed chats specialists)?	yes	no
	3	Does it offer information services?	yes	yes
	4	Does it offer recreational services or any other type of interaction ?	yes	no
	5	Does it offer customization services for whom is already a client?	yes	no
Level of technological sofistication	1	Is it necessary identification to surf freely through the Portal?	no	no
	2	Is the Portal easy to surf ?	yes	yes
	3	Are there specific shortcuts for users who already know where they want to go?	yes	Partial
	4	Are there technological innovations in the Portal, for example, video or audio?	yes	no

Source: made by the author based on Dutta and Biren (2001)

4.2- Analysis

From the literature review, some characteristics and criteria of usability of a portal which must be analyzed, according to Nielsen (2002) are: the portal informs the site objective: transmits information about the company; accomplishes the content creation; allows navigation; has tools and shortcuts for the tasks; has interface components with the user. For The first difference once it comes to usability arises when considering speed: Renault portal is much slower; the transition from one screen to the next is slow, what does not happen in the GM portal, which has a rather faster navigation.

However, the level of depth once it comes to the information offered is different: in GM´s portal, there is a field "about GM", which contains the following fields: Company Profile; The Company; Vision ; intrinsic Values; The Presidency; Environmental Principles; GM on the World; GM Institute; Time Machine; Work with us. On Renault portal, the information about the company is "hidden" in the "News" field, which connects to the following fields: Renault Group, Contexts, Innovation, Promotions, Hints, Human Resources.

The main page of Renault portal has a highlighted product (one picture of a car model - "Kangoo"), a field where one can choose some car models to obtain information, a field called "configure" to configure a car model as wished, a field called "dealers". With less distinction, it is possible to find the following fields aligned on the upper part of the page: "Renault Range" (about the several other types of models); "Renault Services"; "Renault Companies" and "News". Above this line, with less distinction, there the following fields "Talk to us"; "Newsletter"; "my Renault"; "dealers"; "site map"; "doubts" and "legal information".

The GM portal has an animated advertisement in its home page, inviting the people to know its new Vectra model. On the home page superior line, there are the following fields: a line listing all GM models in Brazil, followed by a car drawing to identify it; amount the models, in the line center, there is a bigger picture covering the "Zafira 2.0 Flex power" model – probably a new launch; above this line and highlighting the GM logo, there is the "about GM", beside the "talk to us" and "registration" fields. Also, there is a highlighting in this part of the page for the "find one retailer" field.

On the side of the page, there is a highlight for "news" : "Chevrolet S10 keeps ranking as number 1 in the first semester of 2006"; "Chevrolet Vectra is supported by a new marketing campaign"; "Chevrolet accessories launch an electrical set for the Classic Sedan model". In other words, the "news" block function is to highlight the success of its products or innovative launches to customers, in order to generate knowledge for consumers about the brand leadership or innovation features. On the lower part of the page, there are the "Chevrolet – the best technical assistance in Brazil", "the GM card"; and "Always a Chevrolet Plan" fields with pictures being highlighted.

In one first analysis of the fields offered in both portals, one can verify the main concern is to highlight products and promote information to customers about them.

It can be noticed in GM portal a worry in choosing the proper adjectives in order to highlight the brand and its leadership position. The "news" field confirms this information provided to the customers: GM is a leader and innovative company.

The better sophistication about introducing content in GM when comparing it with Renault probably is connected to the time of presence in Brazil - GM, 50 years versus 10 years of Renault- where the brand GM is also responsible for the biggest market share in the Brazil automotive market, with the biggest revenues and sales in the country, investing more and with better knowledge of such market once compared to Renault.

As far as the analysis of table 2 – item 2 from "price", one can notice that neither of the portals allows price negotiation through them. This is probably due to the fact that price negotiation involves a very large quantity of objective and subjective information to be accomplished "online". On the other hand, prices are made available "online", one the portal is a tool to facilitate decision making by customers and the price factor is fundamental in this decision making, allowing the consumer to quickly compare a description of the product versus price through Internet, what was impossible before the existence of portals.

This highlights this tool advantage, according to what was cited by Dutta and Biren (2001), who stated the time advantage for the consumer from the existence of portals, which allow them to compare this information in details and very quickly.

As far as the "Product" item is concerned, GM portal allows direct sale to consumers, through the site, since the car configuration to the final payment, while Renault does not allow such activity: the customer can only configure the car according to some pre-determined options. Both portals allow product customization, through the "configuration" tool, from some options pre-determined by the manufacturer, such as color, car model, some types of accessories, etc. This is one of the portal strong points, which allows customers to have access to coverage for his/her needs, different from the purchase option through the concessionaire, where the available models are already established.

This is one of the moments when the industry obtains the possibility of knowing the customer better, as the customer needs to fill out a registration with some information, which allows the company to have a profile of the customer without the dealer intermediation.

Another interesting point is the fact that the consumer has access to more information about design, performance and other technical information, with more details than when being at the dealer, where the information is "filtered" by the salespeople, who is commonly not well trained and does not have available the same amount of information about the product as it is available at the site.

As far as the existence of product customization / special services for specific target audience, it can be noticed that GM has such issue, as a field specially designed for GM already customers, which can customize its products according to a range of options. From the "my Chevrolet" field, which is highlighted in the Portal home page, the customer can register and by using his/her login, customize the car, besides having access to a range of services, such as notices about his/her car inspections, service appointments for his/her vehicles, hints on how to take good care of his/her Chevrolet, among others.

It is important to point out that the Chevrolet brand is very strong in Brazil; to illustrate it, at the site it is mentioned "my Chevrolet" and not "my GM", therefore respecting the Chevrolet brand tradition as one of the pioneers in Brazil.

Renault also has a "my Renault" field, in spite of presenting less facilities to customers, focusing only on: store the customer information in order to "win time" (so the

company says); activate reminder e-mails for vehicle inspections; receive adds of second hand cars which might be of the customer interest.

Anyway, independently of the sophistication level of the content in this field, both portals can use the information and knowledge about the customer to create this customer-loyalty tool with reminders about car inspections, etc. However, GM gives a step ahead by creating a tool to customize customers who already have GM products.

On both corporate portals, the Internet user does not participate in specification items nor in product design by the web. This possibility would imply in an engineering capacity and supply chain management which is not available yet in the current status of automotive technology, due to the high costs generated by such action. However, this is a field to be exploited by the automotive industry: the capacity of suggestions/ interventions of the consumers to participate in projects and designs changes.

What happens is that the existence of direct communication channels between the car assembly company and its final customers, which allow the remittance of suggestions directly, what was intermediated by dealers in the past.

The "Promotion" item evaluation shows on both Portals that no differences were found: They use on-line advertising; consumers participate in on-line promotions; there are differentiated promotions for on-line consumers; there are *links* to other Portals; they advertise the participation of the company in events by the Portal. Therefore, the promotion component of the composed marketing is implemented adequately through the corporate portal.

The on-line promotions are used as stimulus to Internet users to request quotations, check products details and obtain information directly about the site, without the use of intermediates (dealers).

As far as the point is concerned, the big difference between GM and Renault is the fact that the first one accomplishes Sales directly on Internet, while Renault does not use this facility. It is important to comment the fact that GM was pioneer when launching its first site for direct Sales in the world, with the launch of *Celta*, a small car, with Sales being made by Internet only (Zilber and Vasconcellos, 2005).

The opportunity to be the first one happened due to the fact GM carries out all car Sales steps directly, without intermediation, since the initial configuration to the final payment. The car used to be taken away in one dealer indicated by the manufacturer, from the customer choice. It is important to remember that one of the fundamental facts so that such operation could be carried out, was the existence of a plant with flexible and modular production, allowing little changes in the product, without implying in extended delivery terms, which was fundamental in determining the competitive advantage in such industry.

It is interesting to notice that since May 2006, when the GM direct sales site are accessed, there is a message informing the direct sales have been temporarily suspended. No interview has been made to find out why this temporary situation occurs, however, when contacting Ford Brazil, which has also suspended its on-line Sales, one of the reasons mentioned was the high costs of such operation and its low financial return. Maybe this is a possible hypothesis for suspending direct sales as GM has done.

In the "relationship with customers" item, both portals present a communication mechanism from customer to manufacturer by email. This mechanism enables the company to know issues that worry their customers, allowing them to have a profile of their customers, without intermediation of dealers. However, only GM offers such chat (to solve doubts with help desks or chats appointed with specialists), showing a differential aspect of this company, which has more resources to keep contact with its customers. The Chat is a way to provide knowledge from the car assembly company to its customers and also to obtain information from these consumers directly and quickly, allowing quick actions by the company, whenever they are necessary.

Both portals offer information service, however, only GM offers recreational services or other type of interaction, such as marking campaign visual advertisements (animated ones), the auto show GM, showing the Automobile Trade Fairs in New York, Los Angeles, Detroit and Chicago.

GM also offers customization services for the ones who are already customers, just by registering to be enabled to access some customization options. As far as the technological sophistication level is concerned, GM portal uses the animation resources quite a lot, what is not exploited by Renault, besides being rather quicker than Renault.

By summing up the information above, it can be said that both portals allow the information customization and integration as said by Remus (2005) and Terra and Gordon (2002), conditions which are necessary to the corporate portal be seen as a useful tool to the knowledge management: with the use of a customer relationship corporate portal, the automotive industry can offer lots of information and knowledge about its products, payment terms, promotion, besides a series of other information available for customers in a single point of easy access, aggregating value to customers, who rapidly takes this information and knowledge, making it easier to make a purchase decision.

It can be said that the use of customer relationship corporate portal considers knowledge as object (Carlsson et al. 1996;McQueen (1998); Zack (1998), Alavi and Leidner (1999)), once this focus makes one considers knowledge as something to be stored and manipulated, what happens in these portals, once to configure your car according to your needs, the customer needs to fill out a form with some

information, which is an input to the company data base, enabling it to provide a rather precise profile of its consumer without the intermediation of the dealer for this.

Considering knowledge as a condition to have access to information (Alavi and Leidner, 1999), the corporate portal suits this function, once it allows the final consumer to have access to information about products, prices, configurations, promotions, etc as the car assembly company to have direct information about the final consumer.

The evidences found in these cases confirm what had been said by Benko and McFarlan (2003) about the changes in relationship with customers: the corporate portal is a tool that enables the car assembly company not only to show its products, but also to offer promotions which solidify a direct relationship of the car assembling company with its final customer, avoiding intermediates and creating a bond which is aimed to obtain loyalty.

Also the cases presented confirm the saying by Lung (2001), which points out an emphasis in services as a tendency for this sector as a way to make up for the decreasing margins found during the last years, considering the portal as an adequate tool for this function, as by the portal, it becomes possible to make a wide range of services to customers available, which is faster, agile and clear.

As far as the differences found between the two sites are concerned, it can be noticed a higher level of technological sophistication in GM portal, due to the fact it has been set up for a longer in the Brazilian market, therefore acquiring more market share, bigger Sales and revenue, enabling the company to invest more in this customer relationship tool. Its stronger brand allows the portal to have a reinforcement of such brand in the customer mind through a series of fields existing in the portal, as explained in the previous paragraphs.

However, what can be noticed is that the use of the corporate portal fills its role in the knowledge management, according to what has been mentioned above for both companies.

5-Conclusions

One change caused by the use of corporate portal by the automotive industry is its relationship with its customers. Increasingly, customers are being given the opportunity to customize their purchases, including everything from the exterior shape to the interior features. In addition, as manufacturers and dealers build stronger relationships with their customers and better understand their needs, they can personalize their interactions with them through corporate portals. For both the manufacturer and the dealer, this opportunity is substantial. By better understanding the customer's needs and preferences, they also begin to understand which customers create the most value for them. By combining a better understanding of customer needs

with a more precise targeting of their most profitable customers, manufacturers and dealers can focus spending on retaining and growing relationships with their most valued customers. The buying experience is increasingly predicated on a new relationship, in which the entire value network – the automaker, its suppliers, the dealer, and the customer – are collaborating to build each customer his or her own ''perfect car''. In Brazil the consumer can use the portal to buy a car, since ordering to the payment, in a revolutionary model introduced by GM, with Celta car and followed by many car makers in Brazil.

The great impact of the use of such tool on the automotive industry has been the possibility of avoiding the intermediation of dealers, in order to know and obtain further useful information, besides reaching its final customer in a direct way.

Much has been said about the impact of e-business on the supply chain; however, there is little literature about the impact of such tool – the e-business, in format of corporate portal – about the relationship in the automotive industry with its final customer, what was one of the reasons which generated the interest for such investigation.

The creation of a Corporate Portal can be used to centralize information and provide a unique point of contact/access to it, besides helping in the distribution of information related to the technical aspect – information about products – related to the promotional aspect - on-line promotions, promotional prices, offers or even information related to loyalty - configuration of product, offers for special services to the company customers and even information to know better the final customer profile – through tools which enables the direct contact of such customer with the company - e-mails, chats.

The Portals make information to the general public and company employees available, once the information sent to customers is processed by the company for placing an order – in case of direct Sales - for dealing with doubts / suggestions and service orders sent by customers, serving as a communication tool, so that it can flow smoothly, bringing an ample and cooperative approach as characteristic.

According to Cunninghan (2000), the knowledge management serves to boost resources which will serve to eliminate the excessive time spent by the team in specific tasks, improve the transfer of information and generate efficiency inside the company. The use of corporate portal objecting the knowledge management make these benefits effective for the institution, enabling time saving for employees when waiting on customers, as dealers, for example, considering the final customer can obtain the information requested directly through the corporate portal, therefore providing the company employees with more available time for other operational activities, not only the waiting on customers exclusively.

Using knowledge management concepts of Alavi and Leidner (1999) and Davenport and Prusak (1999), who define knowledge management systems as those management systems towards creation, obtaining, organization and dissemination of "knowledge", it can be observed that both companies have used the corporate portal with such purpose, through the several fields existing in the portal, as previously explained, despite the level of technological sophistication of both companies is diverse, once GM has been operating in Brazil for longer, with bigger market share, higher revenue and power to invest in the portal.

Considering Alavi and Leidner (2001) in relation to the understanding perspectives about the knowledge concept - (1) a state of mind, (2) one object, (3) a process, (4) One condition to have access to information, or (5) a capacity – it can be noticed that the two companies use their corporate portals considering the knowledge as an object and one condition to have access to information, once all of them allow the knowledge to be stored and manipulated, besides being organized to facilitate access and recovery of content, with special emphasis on accessibility of knowledge objects.

Considering the knowledge as a process (Carlsson et al., 1996), then the focus of its management is about knowledge creation, sharing and distribution, what happens clearly in both companies, with higher level of technological sophistication in GM portal, given that both portals are concerned in distributing the knowledge generated, as information availability about products, accessories, dealers, services of several types, news about cars performance, affinities associations (tracking, automobile Trade Fairs), etc.

As GM has a strong brand in Brazil (Chevrolet), the portal exploits this brand in all possibilities. The portal is made to remind the customer about this brand. Renault, which has been in Brazil for shorter time (10 years against 50 years of GM) tries to present its products in a simple way, given emphasis for example to participate in Formula 1 race car.

The corporate portal can be considered as a kind of "service" offered to customers, as it allows them to consult products and prices in a very agile and detailed way, therefore saving time and considering the aggregation of services as a tendency in this sector, attempting to making up for the decreasing margins at the automotive industry which have been found in the recent years (Lung, 2001).

Considering Timmers (1998) who defines an innovative activity on Internet as the one in which the use of Internet enables actions which would be impossible without its use, then it can be concluded that the use of a corporate portal for knowledge management constitutes in an innovative activity: the direct contact of the consumer with the automobile manufacturer would be very difficult for a car assembly company without this tool.

As far as the creation of value with the use of knowledge corporate portal, Amit and Zott (2001) cite that in e-business there are four value conductors: - efficiency (when reducing asymmetry of information between sellers and buyers, speed of information transmission, etc); - complementarities (when a set of goods provide more value than each one individually); -retention (value in e-business is increased by how much consumers are motivated to buy again); -news or innovation (e.g. create value connecting parts which before such innovation were not connected).

Analyzing the data presented in this work, it can be concluded that the use of a corporate portal for knowledge management by the car assembly company has created value, when it is efficient (it has reduced the asymmetry of information between industry-salespeople and final customers, when making knowledge and information available for the latter); it has obtained retention, when making the customer loyal, through actions as product configuration, according to his/her needs and extended service offers; also, it has created one innovation, which is the existence of a direct contact channel between the industry and the final customer, which did not exist before the portal creation.

The use of corporate portal for knowledge management in the automotive industry can continue to be exploited in a next step, with interviews as surveys to car assembly companies, in order to know how the information obtained in the portals is treated and transformed in a competitive advantage.

Anyway, this work has attempted to approach a tip of the value chain which has not been sufficiently exploited, given the contemporary state of the subject, in other words, the relation of the car assembly company with its final customers and the impacts that this relationship can potentially have on the rest of the productive chain, through the product configuration and adoption of suggestions obtained directly from final customers.

6- Contributions, limits and future questions

The following aspects of the use of corporate portal in automotive industry can be tallied up as contributions to the understanding of the mechanism of possible use of corporate portal for knowledge management:

- The companies were efficient in using Corporate Portal as a means of facilitating the traffic of information between manufacturer, customer and dealer (for car delivery). A high level of retention was attained by allowing customers to customize the details of their cars over the Internet, besides having offered innovations by putting customers into direct contact with the manufacturer.

- The innovative use of the Internet, through the corporate portal, which was used not only to let customers

configure the model of the car but, in the case of GM, to do the complete processing of the sale over the Internet; besides this, the companies use the corporate portal to offer services that allow collecting data from the consumer to better understand their needs and promote loyalty, like the service "My Chevrolet".

- The use of corporate portal improve the transfer of information and generate efficiency inside the company, once many process can be held direct on the portal, like research about consumers profile, needs, and others, what let the employees free to do other activities.

- The knowledge obtained about the consumer through the use of portal can be considered as an "object" (Alavi and Leidner, 2001), what allow the knowledge obtained from the portal to be stored and manipulated, besides being organized to facilitate access and recovery of content to future uses, like innovation on products and services according to clients suggestion and demands.

Limits

- Case studies that specifically describe the use of industry corporate portal for knowledge management trough direct observation of its portal implies that no respondent from the firm was interviewed, but as this is an exploratory study, this problem can be solved with future descriptive research, inside the firms, using the findings of this paper as basis to questions about the use of data about customers collected from the portal to knowledge management.

- The difficult to measure the contributions for knowledge management through the use of corporate portal in terms of growing of revenues or even the consumer loyalty.

Future questions

The following questions could be made for future research:

- What is the role of communication between the area responsible for the corporate portal operation and the content providers? This question is important because the updating of information and searching for new opportunities in e-business is fundamental to keep the relationship between company and customers adding value to the services providing by the portal.

- How can the company measure the impact of the use of corporate portal to knowledge management on the company results, in terms of sales growing or better brand recall and loyalty?

- Does the company use the information about clients obtained through the corporate portal to make changes and improvements in products (cars) and services (dealers, services online)?

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