VALUE CREATION IN THE CERAMIC TILE DISTRIBUTION CHAIN THROUGH ICTS. AN EMPIRICAL STUDY

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ABSTRACT

At the present moment in time, in the global context in which organisations are engulfed it is becoming more and more difficult to attain the kind of lasting product differentiation that can guarantee customer preference, and subsequently, the success of a firm or even of a specific industry. Because of this, organisations are continually looking for new ways to create and to offer greater added value to their clients.

In this sense, the Information and Communication Technologies (ICTs), Internet for example, comprise a powerful tool for generating innovative and profitable means (such as Service Innovations) to interact with the clients themselves and more efficiently satisfy their needs and expectations.

The results of these innovations are especially important in mature industries, which are continually called upon to improve their offer of products and services. And indeed, it is precisely these results that can serve as a productive conjunction that can drive such processes as marketing, strategy, and product development all along the chain.

The aim of this article is to contribute to the understanding of the role of the ICTs in value creation, within the context of Spanish ceramics. With this in mind, we have made an empirical analysis of the industry, evaluating principally its offer as regards Service Innovations as offered through web sites, as well as the penetration into the realm of electronic commerce by two elements in the chain: producers and distributors.

1. INTRODUCTION

Despite the companies' investments in ICTs, there still exists considerable controversy as regards the benefits and value generated by these companies. This can partly be attributed to a general lack of understanding as to the nature of value creation through the use of ICTs (Tiernan and Peppard, 2004).

Nevertheless, the global character and the impact of Internet has been widely recognised, and the Net itself has evolved from being a basic communication tool into a market of goods, services and ideas with more than 240 million users throughout the world (Miranda and Bañeguil, 2004). For this reason, a growing number of organisations are constantly attempting to participate in this market, generally without adequate knowledge of the expectations of the potential users, or without a strategy related to the firm's objectives, a fact that one sees reflected in the creation of web sites and tools with serious limitations in terms of design, information and services, among others.

2. OBJECTIVES

The main aim of this article is to carry out an exploratory analysis which will allow us to evaluate the kind of content and service offered through Internet which is capable of generating value for the consumers, and to determine how these activities relate to the performance of said companies and of the sector itself, all this using value chain approximations. Additionally, we will look through existing literature on the evaluation of commercial web sites, in order to identify the most representative dimensions. Finally, we will evaluate the offer of distributors and manufacturers in the Spanish ceramic industry, and study the empirical relation between that offer and the performance of the organisations.

3. CLIENT-CENTRED VALUE CHAIN AND INFORMATION MANAGEMENT

According to Porter, later approximations to value chain analysis have suggested a greater emphasis on the client as the first link in the chain (Slywotzky and Morrison, 1997; Norman and Ramirez, 1993), and these perspectives require relationship and information management regarding the client in order to realise their objectives.

These authors point to the relevance of information as a value resource. Nevertheless, information management constitutes an active process, present in all phases of the chain, which allows us to obtain the necessary knowledge to determine the needs and priorities of the client; the channels which best can be adapted to those priorities and needs; the products and services which best flow through the identified channels; the production elements and the materials to create products and services; and lastly, the basic capacities for transforming the production elements (Walters and Lancaster, 1999).

Information management includes the application of a series of steps such as gathering, organisation, selection, synthesis and distribution of the information, after which the company will be able to create or to identify value-creation alternatives for the client (Rayport and Sviokla, 1995). And it is precisely at this point that the use of ICTs, Internet for example, acquire an extremely relevant role, given that these

technologies facilitate the supply of information management services by the company through services such as data acquisition, data systems based in Internet, business intelligence, client links, processing, storage, access and analysis of information (Tiernan and Peppard, 2004).

4. ICTS AND VALUE CREATION

On their own, ICTs have no intrinsic objective. Only when one constructs the desired information system can they be considered as possessing a potential value, which is based on the range of information management services they provide (Tiernan and Peppard, 2004). In this way, the relationship between ICTs and value creation essentially depends on the improvement of information management processes, improvement which will permit the company to fulfil the requirements of the client and perform more efficiently.

4.1. INTERNET AS A TOOL FOR THE CAPTURE AND DELIVERY OF VALUE. VALUE ACTIVITIES AND SERVICE INNOVATIONS.

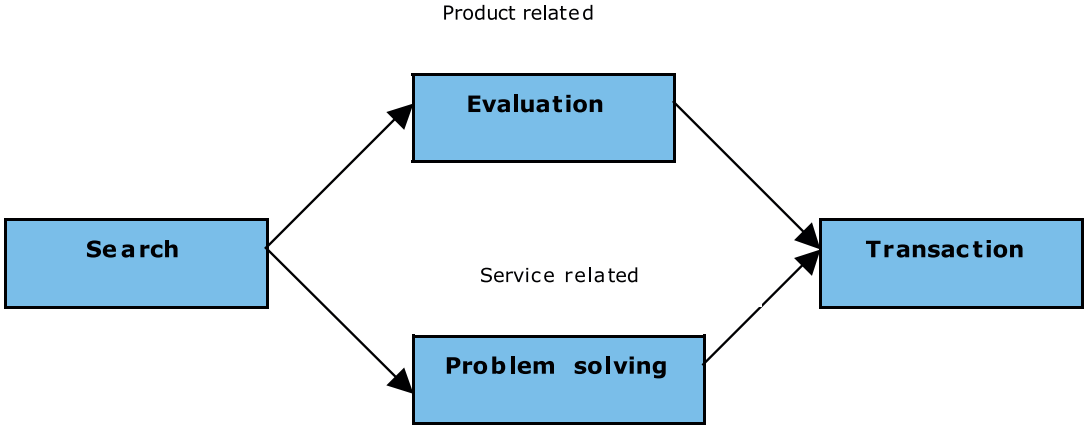
According to Porter (2001), Internet should be seen as a helpful technology, a series of powerful tools that can be used wisely, or unwisely, in just about every industry, as a part of just about every strategy. The fundamental questions therefore are: Who will reap the economic rewards created by Internet? How can the value be shared both by clients and producers? What will Internet's impact be on the industry's structure? Will it bring greater benefits? And how will it affect strategy? Will Internet support or wear away the capacity of the firms to gain competitive advantages? (Porter, 2001).

Nevertheless, and despite the contributions and the prolific growth and use of Internet for Marketing, it has been reported that the services offered by this medium are "generally poor" (Griffith and Krampf, 1998; Kolesar and Galbraith, 2000; Burke, 2002; Darian et al. 2001; Zeithaml, 2002), and many of the fiascos seem to occur because the companies are not able to provide their customers with services of real added value, or fulfil their expectations (Zott et al., 2000). Furthermore, evidence exists that the growing use of technologies based in Internet augments the expectations of the clients as regards the availability of services, and the nature of the services offered (Armistead and Kiely, 2003; MacGaughey, 2003).

What is more, the literature suggests that Internet is becoming a powerful tool to highlight the service orientation towards the firms' clients (Levenburg, 2005). This being related to the fact that in the virtual world, contact is intangible; the firm has no physical or personal environment and thus web sites are only another kind of company service, one in which the client is increasingly involved in the development and the provision of the service itself (Gounaris and Dimitriadis, 2003).

According to Zeng and Reinartz (2003), the impact of Internet differs a lot in the various stages of the client's decision-making processes and the real added value for the consumer comes out in specific points in the buying process. As these authors point out, empirical evidence shows that most electronic commercial initiatives, even though they may emphasise the increased efficiency of the online

search, pay much less attention to facilitating online purchases, and more or less ignore the importance of helping the client to make better decisions. This has brought about a tremendous discrepancy between the number of people who search for information online and those who actually make online purchases.



Source: Adapted from Lumpkin and Dess (2004)

Figure 1. Internet Activities which Add Value

In view of the foregoing, Lumpkin and Dess (2004) propose a model that describes the Internet activities that add value from the client's point of view, through increasing the number of buying processes and facilitating these. These activities are: search, evaluation, problem solving and transaction.

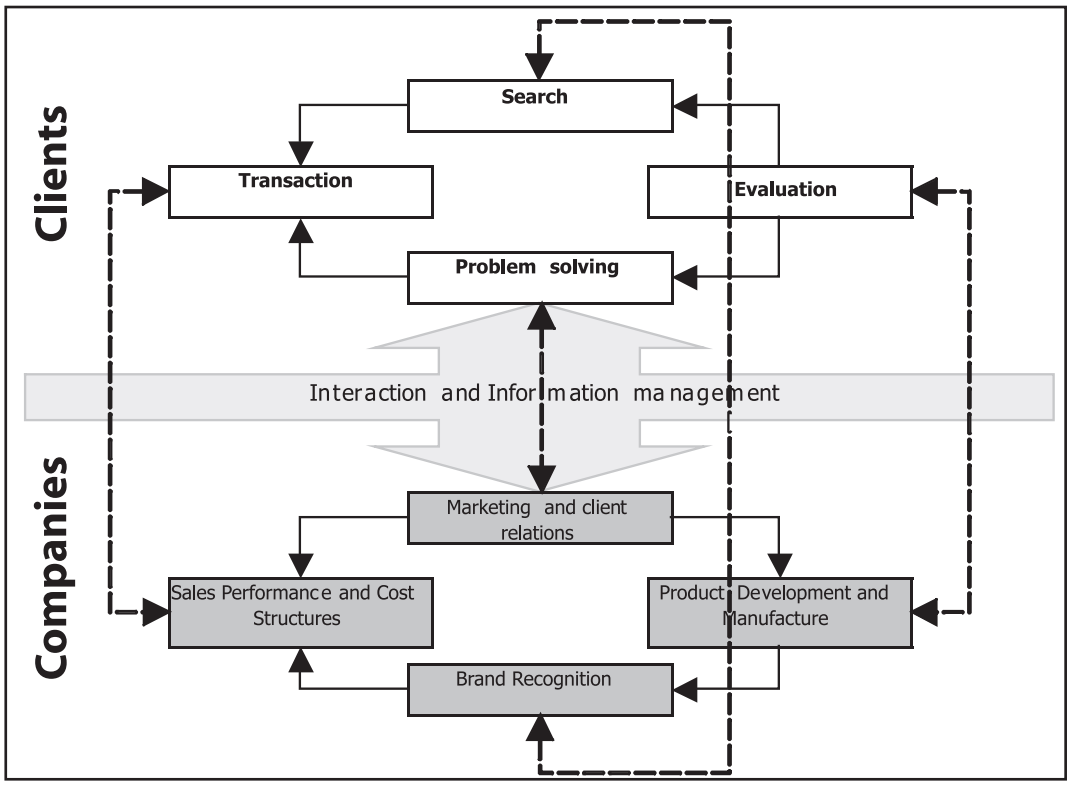
Search here refers to the process of the collection and identification of information and the purchase options. Internet has increased not only the speed, but also the range of information one has access to (Zeng and Reinartz, 2003). **Evaluation** is defined as the process wherein the costs and the benefits of the different options are considered. The online services that facilitate the comparison of possible purchases, offering comments on the products and listing the performance evaluations of the clients themselves convert Internet into a valuable resource. **Problem Solving** is the process of identification of the problems and the needs involved and the generation of ideas and plans of action to enable those needs to be satisfied. While evaluation is principally concerned with products, problem solving is typically used in the service context, since most products comprise both service and product components. Finally, **Transaction** is related to the process of completing the sale, including the negotiation and the contractual agreement, payments and delivery. Internet can reduce the costs and time taken by the transaction process (Lumpkin and Dess, 2004).

Bearing in mind these attributes, the creation and maintenance of a web site requires a variety of innovative services that add value; that is, not only providing a great quantity of information and knowledge through the portals, but also focusing on the creation of tools that support the efficient distribution and use of that knowledge (David and Foray, 1995)

4.2. CAPTURING VALUE.

The carrying out of activities related to the creation of value through the Internet can result in important changes in the performance of the company. One can analyse the relation between Internet activities that add value for the clients, and the generation of information relevant to the organisation that becomes a potential value resource. Each activity is capable of producing critical information on the design, evaluation or performance of various areas of the company, such as manufacture, marketing, client service, finance etc. Nevertheless, value generation must necessarily include a component of "interaction" between the firm and the client, which at the same time implies a flow of information in both directions, from firm to client and vice-versa (see Figure 2).

Information management is a crucial process when one is trying to create value through the use of Internet (Marchand et al., 2000), because the creation of value, in order to realise the companies' objectives requires equally information and knowledge tools (Tiernan and Peppard, 2004). According to these writers the creation and capture of value for the organisation is produced when the proposed activities are capable of improving the performance of the firm. What is more, one must evaluate the alignment between the implementation of Internet and the company's objectives, in such a way that a plan is developed with which one can analyse the expected business benefits (Ward et al., 1996; Peppard and Ward, 2003).



Source: Prepared in-house.

Figure 2. Interrelationships between delivering value to the client and capturing value for the company.

Such a plan should include five stages: identification, structuring, planning and execution of the benefit plan, the evaluation and revision of results and the identification of other additional benefits. These considerations comprise two dimensions: the first related to economic benefits, and the other related to the realisation of company objectives.

Taking these aspects into consideration, the objective of this article is to evaluate the impact of the company's offer through its web site on its economic performance. Thus our principal hypothesis is: *The level of content offered by the firm through Internet is correlated with the company's financial performance.*

5. METHODOLOGY. EVALUATION OF COMMERCIAL WEB SITES

There are two major currents in academic literature concerning the evaluation of web sites: the first is related with the aspects and characteristics of the link: velocity, accessibility, navigability, content, functionality and trustworthiness, among others (Ho, 1997; Evans &King, 1999; Simeon, 1999; Huizingh, 2000; Young & Benamati, 2000; Bauer & Scharl, 2000; Miranda and Bañeguil, 2004). Meanwhile, other studies try to focus on the nature of the services offered through the Internet links, most of these based on the dimensions proposed by Parasuraman et al. (1994) to evaluate the quality of the service: concrete aspects, trustworthiness, responsibility, empathy and security (Trocchia and Janda, 2003; Zeithmal et al., 2001; Gounaris and Dimitriadis, 2003).

Nevertheless, the design of a conceptual framework for the evaluation of web sites should comply with the aim of the evaluation and use of the results obtained (Ross et al., 2000).

In the case of this article we have taken as a reference point the conceptual framework proposed by González and Bañeguil (2004), which includes the following dimensions: Accessibility, Velocity, Navigability and Content Quality. In this way we relate the dimensions of Velocity, Navigability and Accessibility with the Search process, shown as one of those that add value to the Internet activities (Weinberg, 2000). The relationship between the Search process and these dimensions is rooted in the consumer's possibility to find easily what he or she is looking for. González and Bañeguil (2004) suggest Quality of Content as a dimension formed by the combination of three sub-dimensions: information content, transaction content, and communication content. Additionally, we have proposed another sub-dimension, this being service content. In this way, the sum of information and communication, which contains commercial information (product descriptions), non-commercial information (company profile) and contact information, permits the user to develop the evaluation process activities that relate the product offer with the company information.

The transaction content will be used to evaluate transaction activities, analysing the possibilities offered by the web site of making orders, or carrying out financial transactions online. Finally, the service content has been included with the aim of evaluating the work of problem solving, investigating the companies' offers in terms of service innovations.

The dimensions used in the article, and related with the corresponding activity in evaluation, described en Table 1, are based mainly on the contributions of González and Bañeguil (2004) and Ross et al. (2000). On the other hand, due to the fact that the

DIMENSIONS	ITEMS	Related with…
ACCESSIBILITY	Link Popularity / González and Bañeguil (2004)	
VELOCITY	Size(bytes)/ González and Bañeguil (2004)	
	Effective transfer rate	
NAVIGABILITY	Site map/ González and Bañeguil (2004)	SEARCH
	Number of Languages/ Ross et al. (2000)	
CONTENTS		
Company Information	Company Profile/ González and Bañeguil (2004)	
	Company departments (only manufacturers) / González and Bañeguil (2004)	
	Company News/ González and Bañeguil (2004)	
	Work opportunities/ González and Bañeguil (2004)	
	Information for Future Distributors (only manufacturers) / González and Bañeguil (2004)	
Product Information	Product Descriptions/ González and Bañeguil (2004)	
	Technical Product Information/ Ross et al. (2000)	
	Product prices/ Ross et al. (2000)	
	Product Catalogue	EVALUATION
	Product presentation using decorative ideas	
	Product presentation using environments	
	Offers/Product promotions/ Ross et al. (2000)	
	New products/ Ross et al. (2000)	
Transaction Content	Online Orders/ González and Bañeguil (2004)	
	Online Payment/ Ross et al. (2000)	
	Other forms of payment/ Ross et al. (2000)	
	State of online orders/ González and Bañeguil (2004)	TRANSACTION
	Security/ Ross et al. (2000)	
Communication Content	E-mail contacts/ González and Bañeguil (2004)	
	Contact formula	
	Physical contact data (telephone or postal address)/ González and Bañeguil (2004)	
	Frequent questions/ Ross et al. (2000)	EVALUATION
	After-sales procedure/ Ross et al. (2000)	
	Important Links/ Ross et al. (2000)	
Service Content	Personal client-orientated service/ Ross et al. (2000)	
	Design tools (plug-ins, software)	
	Online design tools	
	Budget tools	
	Client Opinion/ Ross et al. (2000)	
	Clients' opinion forums/ Ross et al. (2000)	
	Use of multimedia tools for product presentation/ Ross et al.	
	Services for other channel members	
	Guide/Product installation advice	
	Online attention	
	Search for product shops (only manufacturers)/ Ross et al. (2000)	PROBLEM SOLVING
	Service descriptions(only distributors)	
	Email news information/ González and Bañeguil (2004)	
	View of the product exhibition (only distributors)	
	Other services (only distributors)	

Table 1. Items evaluated in the study

principal limitation of our study is that of the evaluation being the work of a single person, each question has been given points on a binary system, where 1 indicates the presence of an item at an adequate level, and 0, the non-existence of the item. Finally, to validate our initial hypothesis, we will compare the results of the evaluation of the dimensions used to analyse the commercial web sites with the quantitative performance indices thus: Total Sales (TS), Economic Profitability (EP), Financial Profitability (FP), Profit Margin on Sales (PM) and Operative Results on Assets (ORA). These performance indicators have previously been used in studies by the Spanish ceramics sector, for example by Hervás (2004).

6. RESULTS OF THE EMPIRICAL STUDY

The empirical study was conducted using a sample comprising 44 web sites of manufacturers and 47 sites of distributors, all belonging to the Spanish ceramic industry. The evaluation was made using a guide questionnaire for each group.

The manufacturers show relatively good results in terms of navigability and speed, with an average of three languages per page. Nevertheless few sites have got links to external pages, a situation which results in the very low popularity of their pages. For their part, the distributors only use one language and hardly ever include a map of the place. Neither do their pages show good results as regards popularity, nor can they often be easily found using the most common search motors.

One can access information about the company's profile in both groups, but this is not the case in other sections, such as work opportunities, company composition, departments etc, and even company news, which, if it exists at all, is often out of date.

As regards product information, manufacturers usually include catalogues, plus environmental presentations. Nevertheless, the information related to the product's technical aspects, to prices, other decorative ideas, promotions, and new products, is scarce. In this section, the distributors also make use of catalogues to present the products, or in many cases offer direct links to web sites of the manufacturers who also distribute. Environments are not so widely used as by the manufacturers; only in 36% of the companies evaluated. The distributors do not consider the sections with information about promotions, offers and new products important.

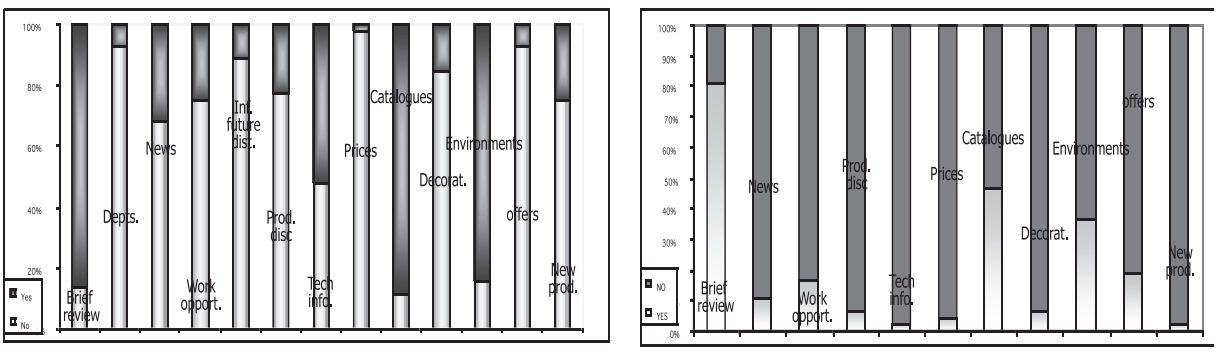


Figure 3. Results of the information content of the company, and products offered by manufacturers and distributors through their web sites.

On the other hand, the transaction content of the analysed sites is minimal in the cases of both groups. Only 3 manufacturers and 3 distributors make tools for online ordering available, and only one manufacturer gives information for tracking online purchases. Even then, none of the sites caters for online payment, while only one distributor offers alternative payment options for the orders made through the page.

As a part of the communication content the analysed firms basically provide e-mail contact, information about physical contact, or a contact form. Nevertheless in both groups the use of a section for Frequent Questions is more or less inexistent as is the section for after-sales procedure and that for important links.

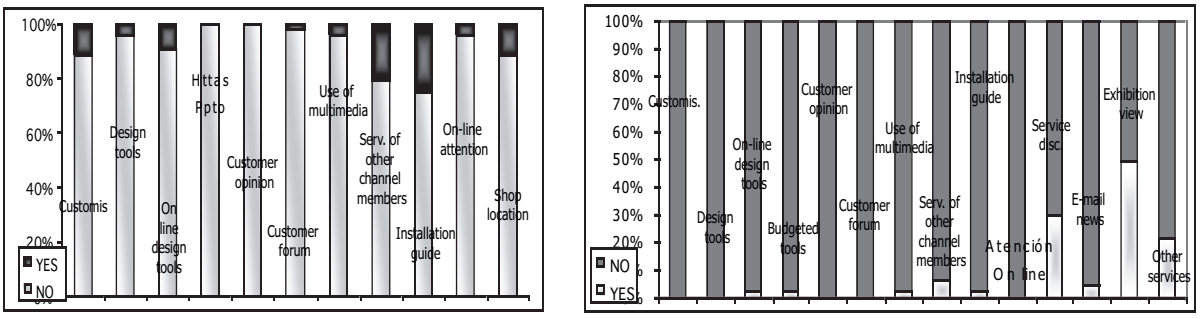


Figure 4. Results for Service Content offered by Manufacturers and Distributors through Internet

Finally, the service content is rather scarce. Few manufacturers offer their clients the tools to design their own spaces, and there is no possibility of knowing the opinions of the clients. The installation guides comprise the most notable service, and are offered by no more than 25% of the manufacturers, and only by one distributor. Furthermore, most of the distributors offer photos of their display in their sites, while few of them offer the chance of technical help or budgets through email.

6.1. VALIDATION OF THE HYPOTHESIS

In order to validate the proposed hypothesis of this study a cluster analysis was made with the aim of classifying the companies relating them to the results obtained in the exploratory study. In this way the analysis classified the sample in four sub-groups, both for manufacturers and distributors. In the distributors' case, the first group is formed by the companies which offer a poor information component, in all dimensions, through their web site, which provide no option of making a transaction, and very little service content. This is the most numerous group.

The second group comprises companies that offer more information, especially product information, but like the first group, they do not include a transactional component, and offer few services. The third group, the smallest, provides more services, but the other components resemble those of the foregoing groups. Finally, the fourth group is the only one that offers a transactional component, plus a variety of services.

From this classification, after multivariate analysis, only the data concerning Financial Profitability show a significant average difference. Thus, our initial hypothesis is accepted, if the variable with which we measure the company's performance is FP. The other indicators that were analysed do not show a correlation with the contents

offered through Internet, a conclusion that is in line with the results of the exploratory analysis, if one takes into consideration the poor results obtained, leading to an interpretation that the companies in general are not making use of Internet as a value-adding resource, neither for the client nor for the company itself.

Distributors						Manufacturers					
ANOVA	Average	N	SD	F	Sig.	ANOVA	Average	N	SD	F	Sig.
TS	4934,375559	47	7866,949395	1,28376311	0,29307525	TS	24807,8522	44	25665,9319	7,880145	0,0003
EP	0,04934507	47	0,048430659	1,23517657	0,30961208	EP	0,04821656	44	0,04523584	0,456037	0,71451
FP	0,170917717	47	0,151522955	2,36270955	0,08560164	FP	0,08122559	44	0,15946786	1,297319	0,28861
ORA	0,072549805	47	0,04864109	1,31728625	0,28216101	ORA	0,07531424	44	0,04095804	0,286555	0,83481
PM	0,041481864	47	0,026565144	2,07182109	0,11924385	PM	0,08206692	44	0,04753987	1,712653	0,17981

Table 2. Comparative average results of the distributors and manufacturers analysed

The cluster analysis for the manufacturers also shows four groups of companies. The first with the lowest performance in terms of all the analysed dimensions is, as in the case of the distributors, by far the largest. The second group shows better performance statistics than the first, especially in information and communication content. Nevertheless, the service content remains very low and the transactional inexistent. The third group shows an improved performance in almost all the analysed dimensions, especially the service content, but still lacks the transactional component. Lastly, the fourth group is the only one to offer the client the possibility of making transactions through Internet.

The comparison of averages shows significant differences in this only when the indicator is Total Sales. Comparing the TS figures for each group we can conclude that the groups with the best performance are those with better and more complete contents in the evaluated dimensions of the study. Meanwhile, the first and second group, those presenting the poorest results in the exploratory analysis, also show low results as regards performance.

In conclusion, the proposed hypothesis is accepted if the financial indicator used is Total Sales. And, as in the case of the distributors, the results confirm that the companies have a lot of work before them if they wish to create web pages with improved results in terms of content offer to the client.

7. CONCLUSIONS

Theoretically we have revised the implications of the uses of ICTs, Internet in particular, in the capture of value both for the organisation and for passing on to the client. Additionally, we have carried out an exploratory analysis to evaluate the kinds of content offered through the Internet, both by manufacturers and by distributors, the main result being that the greater part of the web sites rise no higher than an easily usable "presentation card", giving a basic description of the company, and its products and services (Ross et al. 2000). The content and the service innovations remain strictly limited, while the transaction content is almost inexistent. Multivariate analysis confirms the relation between the Total Sales and the contents offered by the manufacturers, while the distributors' lack of quality content influences their Financial Profitability.

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