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Abstract: A whole slew of companies have chosen to adopt multi-channel distribution strategies wherein a given customer induced to visit several channels simultaneously to derive the specific advantages that each channel offers at a different stage of the decision-making process. The present article examines the way in which visits to a retail chain's website affects actors' evaluations of perceived in-store quality; and variations in the relative importance of quality's different components. Empirical analysis of a convenience sample of 635 consumers, all customers of one specialist retail chain, reveals that whereas perceived quality levels are not affected by channels' visitor profile, visits to the chain's website do alter the significance attributed to the various components constituting an in-store service's perceived quality.

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INTRODUCTION

Perceived quality, which can be defined as "a set of attributes contributing to the perception of a product's quality, at a level stipulated by the consumer" (Evrard, 1993), constitutes an important indicator of the value delivered to a customer.

Past research has already shown that corporate quality and performance are strongly correlated. For example, quality is positively correlated with profit via a quality-customer loyalty-profit relationship (Fornell and Wernerfelt, 1987; Reichheld and Sasser, 1990). It reduces the costs of managing customers, increases purchase volumes and makes it possible to sell goods at a higher price while creating a positive word-of-mouth effect (Danaher and Rust, 1996; Heskett, Sasser and Schlesinger, 1997). Like trust (Morgan and Hunt, 1994), perceived quality makes a major and even crucial contribution (Venetis and Ghauri, 2004) to customer loyalty (Zeithaml, 2000; Rust, Moorman and Dickson, 2002). These effects, which are important both for the customer relationship and for profitability, explain why quality management and control are paramount nowadays.

A company will organise several channels (i.e., retail outlets, telephone, post, website, SMS) to distribute its product offer. However, given the heterogeneous nature of the characteristics of the services or customer experiences on offer, each channel must have its own quality monitoring system. Specific measures have been suggested for physical channels like agencies or stores (Parasuraman, Zeithaml and Berry, 1988; Dabholkar, Thorpe and Rentz, 1996) and for technological channels like websites (Wolfinbarger and Gilly, 2003; Parasuraman, Zeithaml and Malhotra, 2005).

A multi-channel strategy consists of offering several channels simultaneously. Irrespective of the type of channel in question, this will be based on an attempt to integrate the customer-company relationship. A strategy of this sort does help to improve market coverage

(Geyskens, Gielens and Dekimpe 2002), but in the main what actors often seek within a relational marketing framework is superior quality and customer relationship performance (Morgan and Hunt, 1994). Note that it is also possible that the companies which have opted for a multi-channel strategy perform better than mono-channel companies (Gulati and Garino, 2000; Porter, 2001, Vishwanath and Mulvin, 2001). Multi-channel strategies raise several questions about quality measurement, relating to (1) the development of quality measurement tools specific to each channel; (2) the measurement of each channel's contribution to overall quality when the customer in question visits several channels successively or simultaneously; and (3) necessary changes in the interpretation of in-store quality measurements based on an analysis of the way in which multi-channel visitor behaviour impacts actors' expectations and perceptions of traditional channels. The present article tries to broaden knowledge of this third issue by comparing levels of perceived in-store quality with the relative significance of this quality's various determinants. This is crucial for companies given that their main sales location continues to be their physical point-of-sale, accounting for 97% of stores' total retail revenues (versus 3% only for online sales, c.f., Jupiter research, 2003).

By comparing three samples comprised of customers who have all visited the same store, with two out of the three also having visited the website for informational or transactional purposes, the study broaches three issues. The first pertains to the *level* of perceived quality: will a consumer's in-store quality perceptions be altered if s/he has visited the company's website beforehand ? Is there such a thing as a self-selection effect, wherein the only actors to visit a store are those Internet users who were satisfied with the outcomes of their previous online research of the product offer ? This second issues touches upon the *weighting of perceived in-store quality's different dimensions*. This is because channels are not only substitutable (in purchasing terms) but can also be complementary and satisfy various customer needs (like information gathering or comparing). They can also correspond to varying levels of perceived risk (Cases, 2001). The third issue incorporates a possibility of customer segmentation, depending on actors' motives for visiting the website beforehand. An Internet user may be merely seeking information on-line and refuses to purchase anything using this channel (for example, because s/he considers it to be risky). What this signifies, however, is that each channel specialises in a different stage of the choice process. Inversely, where an Internet user buys an item online, what this means is that s/he has been induced to use standards that are common to both channels, with the superior level of perceived quality

having exerted a definite influence on his/her expectations (in which case, the perceived in-store quality will have suffered from the web's strengths).

Our article is structured as follows. It starts out by reviewing literature and outlining hypotheses, before presenting methodology and measurements, notably a scale of perceived in-store quality that has been translated and adapted to a French context for our present purposes. It goes on to cover statistical analyses and findings, before finally discussing our limitations and contribution to general research, along with paths for further study.

CONCEPTUAL FRAMEWORK

Our research topic begins by presenting existing literature on the motivations and behaviours of consumers dealing with a multi-channel situation. It goes on to specify our hypotheses and the framework used to measure perceived quality.

Visiting a multi-channel sales system: motivation and behaviour

A purchasing process follows several stages: constitution of the unit in question; search for information; choice; and purchase. Depending on the customer's capabilities and the context, a service search will vary (search for information and/or prescription, choice-negotiation-purchasing, delivery and after-sales). Each stage has its own specific costs and expectations.

A consumer can complete the entire purchasing process via a single channel, or take advantage of the relative strengths of each channel and use whichever one is most suitable at a given stage (Alba et al*., 1998). The advantages that consumers seek, translating their expectations of a given sales channel, are important variables influencing the point-of-sale decisions and inter-channel arbitrages they make, one example being between in-store trade or e-commerce (Filser, 2001a).

Online experiences generally influence off-line behaviours and expectations (Burke, 2002). A multi-channel visit can be thought of from a broad and competitive perspective or else solely within the framework of a given retail chain. A consumer can consult a price comparison website before visiting Curry's, but s/he can also look at an Argos catalogue, order by phone

and pick up the item in one of the chain's stores. The present study only focuses on those channel interactions that are to be found within one specific retail chain.

Web advantages and purchasing process

An online channel is more efficient for compiling and processing information, and for the decision-making phase. It reduces the perceived overall cost of the purchasing process and improves its quality.

The web's relative advantage stems firstly from its ability to provide, quickly and efficiently, the information needed to make a choice (Alba et al, 1998; Ratchford, Talukdar and Lee, 2001; Kwak, Fox and Zinkhan, 2002). By so doing, it reduces the cost of information search efforts (Hoque and Lohse 1999; Helme-Guizon, 2001). Secondly, the web provides an opportunity for improving the information's perceived quality by reducing informational asymmetry (Gilovich and Medvec, 1995) and by offering the Internet user better control (Hoffman and Novak, 1996; Dandouau, 2001). The perceived freedom of visits to this channel offer a great deal of potential gratification (Korgaonkar and Wolin, 1999). Thirdly, the web can improve the rapidity and quality of the decision being made by directly facilitating the evaluation of alternatives, notably for products that are largely comprised of non-sensorial attributes (Degeratu, Rangaswamy and Wu, 2000). It allows for a clarification of preferences (Dandouau, 2001), a hierarchisation of alternatives (Alba et al, 1997) and an efficient evaluation of multi-attributes (Volle, 2000). It indirectly facilitates choice by providing access to other consumers' evaluations (Meuter et al, 2000).

During the final purchasing phase, the web channel raises transactional efficiency by making purchasing more convenient and rapid (Mathwick, Malhotra and Rigdon, 2001). At the same time, it has some major shortcomings: online transactions are perceived to be more risky; and where a product purchase is involved, a delay will occur before the good is actually available.

Relationship between a multi-channel visitor profile and a perception of quality

The central hypothesis is that visiting a retail chain's website modifies expectations as well as the relative importance of the components of perceived in-store quality, hence ultimately the level of perceived quality. This is because a consumer who, after consulting the retail chain's website, goes to a store to make a purchase has: (1) different informational needs; (2) advanced further along the decision-making process; (3) what may already be a specific purchasing intention; or (4) already clarified his/her in-store evaluation criteria thanks to the online purchasing experience.

More specifically, the expectation here is that perceived in-store quality will be greater for website visitors than it is for customers who only visit the store. This is first and foremost because perceived in-store quality, as the ultimate stage of the purchasing process, could benefit from a perceived reduction in the costs of the process's earlier stages, and from the satisfaction that ensues from this. After all, customer satisfaction rises when cognitive costs fall (Johnson and Payne, 1985), notably when they fall during the information search phase (Anderson and Sullivan, 1993; Oliver, 1980; Meuter et al, 2000). Similarly, the optimisation of the evaluation of alternatives ensures a better fit between the choice a consumer makes and his/her expectations, even as it raises levels of satisfaction (Assael, 1987).

Secondly, since the consumer has already at least partially completed the information processing part of the purchasing process, in-store expectations will be fewer and less stringent (Shankar, Smith and Rangaswamy, 2003). This reduces the risk that expectations may be disappointed.

Lastly, visiting a website can lead to customer self-selection. Thanks to the information found online, an Internet user is more aware of whether a retail chain's products and services can satisfy his/her needs. Thus, the only customers to visit the stores will be those Internet users who have a positive evaluation of the retail chain's product offer as depicted on its website, but hope to benefit from specific store channel advantages (contact with the objects, immediate availability, etc.). Customer self-selection reduces the risk of being let down, since those clients who are most apt to be disappointed end up by not visiting the store.

By defining consumers' multi-channel visitor profile in light of website practices, we can differentiate between situations marked by (1) no previous consultation of a chain's website, (2) consultation of a chain's website for informational purposes, and (3) consultation of the website for purchasing purposes. This justifies the following hypothesis:

> *H1. Users of a retail chain's website will perceive a higher level of in-store quality than non-users will.*

Hypothesis 2 offers an additional distinction by incorporating prior online purchasing. Here we hypothesise that the improvement in perceived quality due to the visit of a site might be less significant for Internet users who have already purchased something online. Indeed, where consumers have visited both channels during the same stages of the purchasing process, the Internet user will be the one comparing the different channel's respective qualities. This evaluation of quality by the Internet user-purchaser turns into an inter-channel comparison process. As for the components of perceived quality, the attributes delineated in the information received clearly favour the website channel. With respect to the other dimensions, online purchasing offers greater tolerance for risk and more sensitivity to factors like convenience and the autonomy of choice. The transfer of expectations to these on-line (web) evaluation criteria within a framework defined by an actor's offline (store) evaluation leads to a perception of lower in-store quality. In this case, an Internet user-purchaser should perceive less in-store quality than an Internet user who has only ever been involved in an information search.

> *H2. Purchasers who use a retail chain's website perceive less in-store quality than web visitors who have not purchased anything on the site.*

Relationship between a multi-channel visitor profile and significance of the various determinants of quality

When faced with several channels, consumers tend to modify their behaviour (Vanheems, 1995). The channels' visitor profile will influence the way in which perceived quality is constructed, i.e., the relative importance of the dimensions comprising this quality.

The list of the dimensions that consumers use to evaluate a point-of-sale is relatively stable, but the significance attributed to each of the criteria involved will vary according to the channels' particular visitor profile (Filser, de Garets and Paché, 2001). Consumers' expectations are influenced by circumstances and by the characteristics they seek, which are a function of the product's expected usage (Haley, 1968). The purchasing situation also affects the significance scores associated with store choice criteria, including quality (Filser, 1985). Since the evaluation of a product dimension is likely to undermine a consumer's overall aim, alter its criteria evaluation and modify its hierarchy (Assael, 1987), assessments of a quality dimension (irrespective of the channel involved) could have the same effects.

Information-related dimensions are the ones that are most likely to lose significance. This is because a website visit undercuts the in-store information compilation and processing activity (comparison and choice) and the associated cognitive efforts. Inversely, if no pre-purchase research takes place, the individual will have to undertake all of the tasks involved in compiling and assessing alternatives at the point-of-sale itself. Prior online consultation thus induces a more instrumental type of in-store behaviour (characterised by less time spent and fewer actions) for Internet users than it does for non-Internet users (Belvaux and Labbe-Pinlon, 2004), which is why our third hypothesis refers to the link between the visitor profile and the weight of the dimensions of perceived quality.

H3. The weightings of the dimensions that contribute to the store's perceived quality will differ depending on the visitor profile of the retail chain's website.

As noted by Belvaux (2003), it is possible to fine-tune analysis of a purchaser's in-store behaviour by a continuum ranging from exploratory behaviour in an unprepared purchasing situation that occurs before the trip to the store, to a purchasing situation that has been completely planned out through in-depth research.

The significance attributed to the different dimensions of a store's perceived quality would be modified, for example, by taking an average weighting of all the quality dimensions for a non-planned situation; a more preponderant weighting for the quality of the reception offered to customers in-store in a purchasing situation preceded by a web visit; and a preponderance

of the quality of the after-sales service in situations where a purchase has already been made online. Hence the following hypothesis:

H4 The weightings of the dimensions that contribute to a store's perceived quality will differ between web user-visitors and web user-purchasers.

Measuring perceived quality

To measure perceived quality, disconfirmation model is applied. This assumes that a customer will shape perceived quality based on the variance, for a range of dimensions, between the actual and expected performance of a product or service received (Oliver, 1980). Quality differs from satisfaction inasmuch as it involves an assessment that is more cognitive than emotional (Iaccobucci, Grayson and Ostrom, 1994; Dabholkar, 1995).

This disconfirmation model has met with several criticisms, all of which constitute limitations for the present study. We will focus on the three main ones.

a. The first criticism is that expectations may not be stable. A given consumer might apply different comparative standards when assessing the quality of his/her consumption experiences, with the use of one or the other expectation standards bringing about different evaluations (for the state of the art in this field, see Ngobo, 1998). A particular consumer can also adjust his/her expectations to a context. Consistency theories, including assimilation theory (Sherive and Hovland, 1961) and cognitive dissonance theory (Festinger, 1957), postulate the existence of privileged states of cognitive systems, which tend towards stability. Any variance from these states generates cognitive efforts that will be aimed, for example, at reducing the gap between expectation and perception. This psychological mechanism leads to an expression of expectations that are influenced by current performance. In both instances, one and the same level of service quality can be obtained via different combinations of expectation or perception levels (Grönroos, 1993). This makes it impossible to interpret the level of perceived quality.

b. The second criticism relates to the principle of a positive linear relationship between perceived quality and the variance between perception and expectation. Many studies have demonstrated that variance with standards of comparison play a linear role, but only under certain conditions (Teas, 1993) or else solely for certain types of quality

attributes (Anderson and Mittal, 1997). Other studies (Woodruff, Cadotte and Jenkins, 1983; Parasuraman, Zeithaml and Berry, 1991) have shown that the link between disconfirmation and quality can be neutral if the performance as perceived by the consumer materialises within a zone of indifference, meaning a zone within which the perceived performance does not attract the customer's attention and/or has no significant impact on his/her quality perceptions.

c. A third and more recent criticism relates to the asymmetry of the factors that contribute to quality (Kano, 1984; Brandt, 1988). Rooted in bi-factorial theory (Herzberg et al., 1959), the asymmetry of factors theory postulates that there are several logics governing the way in which the various elements of a consumption experience contribute to perceived quality or to customer satisfaction. The impact of some of these perceived quality elements may be stable, but for other elements it will depend on the positive or negative sign of the perceived variance in performance (Llosa, 1996; Mittal, Ross and Baldasare, 1998; Audrain, 2003).

Despite these limitations, the disconfirmation model is maintained for the measurement of perceived in-store quality, since we note the absence of any convergence between the criticisms aimed either at the concept itself or else at the modes in which factors contribute to perceived quality or satisfaction (Ray and Gotteland, 2005).

METHODOLOGY

Our hypotheses were tested by comparing the level of perceived in-store quality and the relative importance of its dimensions across three samples, the first being a mono-channel in which actors visited the store alone, the two others being multi-channels involving on-line visits in which actors sought either to gain information or else to make a purchase.

Choice of retail chain
The retail chain had to offer a website enabling online purchasing. Our study left general, informational, recreational and auction sites to one side. Since respondents' behaviour was geared towards a specific goal, they were asked about their objectives (information, purchase) whenever they visited each channel (web and store). This is because consumers driven by utilitarian vs. hedonistic purposes would behave differently from one another, be this in-store (Holbrook and Hirschman, 1982) or online (Hoffman and Novak, 1996). The nature of this

motivation implied varying expectations affecting evaluations of the perceived quality, of both a store (Titus and Everett, 1995) and a commercial site (Hoffman and Novak, 1996).

The retail chain also had to feature a network of points-of-sale seeing as the study in question concerned changes in perceived in-store quality. Our study used a European cultural goods chain. Historically active as a store channel alone, a few years previously it had started an online sales site. The goods being marketed can be construed as "research" products (Nelson, 1974) since their characteristics were ascertained through pre-purchase research.

Field study

A self-administered questionnaire was diffused online in an electronic form.. Non-probability techniques with a snowball sampling were used. The data was compiled in France in 2004.

All the respondents had shopped at a given store. Three sub-samples were compiled: (1) a sample of customers who did not visit the store website (239 exclusive store users); (2) a sample of customers who visited the website for informational purposes (218 Internet user-visitors); and (3) a sample of customers who visited the website for both informational and purchasing purposes (178 Internet user-purchasers).

The total sample (635 persons) was more or less representative of France's *a posteriori* national population. The sub-sample of Internet users was slightly more male (56%), over-represented at the level of the ABC socio-economic groups (55%) and younger (63.9% below the age of 45) than the national average.

Measuring perceived in-store quality

Quality was measured by the perceived variance for each dimension, using a generic measurement instrument adapted to the study's sectorial and cultural context. Within the framework of our disconfirmation model, perceived quality would depend on the variance between expectations and perceptions. Several approaches were suggested as ways of measuring this variance (Cronin and Taylor, 1992): (1) a subtractive measurement of disconfirmation based on a specific measurement of each component ("What are your expectations?" then "What are your perceptions?"); (2) a direct subjective measurement of the disconfirmation of expectations ("Much higher/lower than my expectations"); and (3) a direct

measurement of the disconfirmation without any reminder of the expectations, deemed redundant and useless ("Mark on a scale from X to Y"). Literature has shown the superiority of subjective over subtractive measurements (Yi, 1990) and recent summaries confirm that measurements of direct subjective confirmation provide more relevant findings (Parasuraman, Zeithaml and Berry, 1994; Dabholkar, Shepherd and Thorpe, 2000). Hence the adoption of this approach.

A multidimensional conception of service quality was generically structured in *Servqual* terms (Parasuraman, Zeithaml and Berry, 1988) around five dimensions: reliability, tangibles, assurance, responsiveness and empathy.

Studies have shown, however, that this generic instrument, despite or even because of its generality, must be adapted to the type of service under study (Carman, 1990; Cronin and Taylor, 1992).

The American scale suggested for retail business (Dabholkar, Thorpe and Rentz, 1996) (see Table 1) was adapted to a French cultural context.

Table 1 - American perceived quality measurement scale (Dabholkar, Thorpe and Rentz, 1996)

Dimension	Items of perception
Physical aspects	This store has modern-looking equipment and fixtures
	The physical facilities at this store are visually appealing
	Materials associated with store service (such as shopping bags, catalogs, or statements) are visually appealing
	This store has clean, attractive and convenient public areas (restrooms, ..)
	The store layout at this store makes it easy for customers to find what they need
	The store layout at this store makes it easy for customers to move around in the store
Reliability	When store promises to do something by a certain time, it will do so
	The store provides its services at the time it promises to do
	This store performs the service right the first time
	This store has merchandise available when the customers want it
	This store insists on error-free sales transactions and records
Personal interaction	Employees in this store have the knowledge to answer customers' questions
	The behavior of employees in this store instill confidence in customers
	Customers feel safe in their transactions with this store
	Employees in this store give prompt service to customers
	Employees in this store tell customers exactly when services will be performed
	Employees in this store are never too busy to respond to customer's requests
	This store gives customers individual attention
	Employees in this store are consistently courteous with customers
	Employees in this store treat customers courteously on the telephone
Problem-solving	This store willingly handles returns and exchanges
	When a customer has a problem, this store shows sincere interest in solving it
	Employees of this store are able to handle customer complaints directly and immediately
General policy	This store offers high quality merchandise
	This store provides plenty of convenient parking for customers
	This store has operating hours convenient to all their customers
	This store accepts most major credit cards
	This store offers its own credit card

It was translated and then enriched within the framework of a qualitative study carried out in the form of semi-directive interviews of 12 respondents and ultimately validated by three retail experts. It contained 9 dimensions and 38 items formulated as a perceived subjective performance The responses were gathered in a 7-point Likert scale (ranging from "totally disagree" to "totally agree").

Two factor analysis conducted using SPSS software on two samples of convenience of 125 persons apiece led to the elimination of those items that would reduce the scale's psychometric qualities. A replication of the factor structure, updated by these factor analysis, was carried out on the final sample (635 persons). A principal components analysis revealed four dimensions (eigenvalue above 1): personal interaction with staff members ; physical aspects (access to the store); problem solving; and atmosphere. These accounted for 78.73 % of the variance with good reliability (coefficient alpha above 0.82).

Analysis of skewness ratio and kurtosis ratio associated with each variable did not intimate any significant violation of the normality hypothesis, hence our implementation of confirmatory factor analysis. The levels of the indicators used to adjust the perceived quality structural model to the data were in line with customarily accepted norms (see Table 2).

Table 2. – Fit Statistics

Indices	Findings
?2*(Threshold: none)*	128.76
?2 / Degree of freedom $?_2$/dl *(< 5 the lowest possible)*	2.68
GFI *(> 0.9)*	0.975
AGFI *([0-1] Value as close as possible to 1)*	0.959
RMR*([0-1] Value as close as possible to 0)*	0.088
RMSEA *(< 0.08) Value as close as possible to 0)*	0.046
CFI *(> 0.9)*	0.983

The psychometric qualities were satisfactory in both reliability and validity terms. The scale was congruent with criteria of reliability and of convergent validity (see Table 3).

Table 3. - Coefficients of reliability and convergent validity

		?	?	?VC
Personal interaction	Knowledge	0.825	0.86	0.68
	Individual attention	0.829		
	Reliable information	0.834		
Physical aspects (access)	Transportation	0.862	0.89	0.73
	Proximity	0.868		
	Situation	0.845		
Atmosphere	Visually appealing	0.645	0.83	0.63
	Restful setting	0.829		
	Ambience	0.889		
Problem solving	Exchange	0.830	0.83	0.62
	Complaints	0.852		
	Reimbursements	0.676		

The discriminant validity criteria proposed by Fornell and Lacker (1981) were also respected (see Table 4).

Table 4. – Discriminant validity of the constructs of the perceived in-store quality scale

	Personal interaction	Physical aspects (access)	Atmosphere	Problem solving
?VC	0.68	0.73	0.63	0.62
R^2_{ij} Personal interaction	1			
R^2_{ij} Physical aspects (access)	0.22	1		
R^2_{ij} Atmosphere	0.32	0.17	1	
R^2_{ij} Problem solving	0.35	0.31	0.16	1

Each construct shared more than 50% of its variance with the other measurements and shared greater variance with its measurements than it did with the other constructs.

Analysis confirmed three dimensions of the initial scale: personal interaction; physical aspects (access to the store); and problem solving. The "reliability" dimension was only present indirectly in our scale, even though it had made a major contribution to perceived quality evaluations in the scale devised by Dabholkar, Thorpe and Rentz (1996) and had been the most criticised of all five *Servqual* dimensions (Parasuraman, Zeithaml and Berry, 1988) in terms of its ability to predict overall quality.

The absence of a specific dimension representing reliability can be explained at a conceptual level. In the aforementioned studies, the reliability dimension included many items relating to the reliability of deadlines, items that were seemingly all the more important because the services involved had been "intangible" in nature. It remains that meeting deadlines is barely

relevant to the objects of our study, which we must remember are stores where customers can serve themselves. The only reliability item preserved after cleansing related to the information provided by salespersons. Thus, in-store reliability became a question of the trust placed in the salesperson. This proposition was coherent with studies by Barnes (1997) who, within the framework of a relational marketing paradigm, included (interpersonal) trust as part of the theoretical conceptualisation of a relationship's quality.

Inversely, the emergence of a dimension reflecting the customer's point-of-sales experience meshed fully with a more experiential approach to shopping. An "atmosphere" dimension could be found in the initial scale, albeit under the more restrictive heading of "Physical aspects". The reinforced weight given to this dimension in our scale finds its justification in studies of consumption trends and innovative retail concepts (Volle, 2000; Filser, 2001b) that have revealed the need to envisage the point-of-sale from a new perspective, no longer simply as a logistical services space but also as a place where one finds social life, discovery and relaxation.

RESULTS

MULTI-CHANNEL BEHAVIOUR AND PERCEIVED QUALITY LEVEL

The hypothesis of an inter-group equality of variances for the perceived quality factor can be sustained in the aftermath of our Levene test findings (probability associated with a F value above 0.05). Table 5 recaps the findings from the means comparison test.

Table 5. – Testing the means perceived quality levels in the different sub-samples'

Sample		Means perceived in-store quality	Variance	Levene test	t	Sign.of means Diff.
Non-web		$\overline{x} = 5.05$	-0.01	F = 0.855 Sig = 0.356	0.157	Sign. = 0.875 Non Sign.
web		$\overline{x} = 5.06$				
web	Visitor	$\overline{x} = 5.07$	0.03	F = 0.054 Sig = 0.816	0.367	Sign. = 0.714 Non Sign.
web	Purchaser	$\overline{x} = 5.04$				

Visiting several channels, here the retail chain website in addition to the store itself, allows customers to undertake the purchasing process in a more efficient and economicly manner. We therefore expect an increase in perceived in-store quality (H1). This hypothesis is tested by comparing overall perceived quality means. In-store, these are more or less identical for the mono-channel (5.05) and multi-channel (5.06) sub-samples, i.e., the difference is not statistically significant (t=0.15, sig. = 0.875). In sum, there is no validation of the hypothesis H1 postulating a higher level of perceived quality by customers who have visited the website.

The second hypothesis postulated a lower level of perceived quality by on-line purchasers as opposed to mere website visitors (H2). Here again, we found no statistically significant difference between the means of on-line purchasers and non-purchasers (respectively 5.07 and 5.04, t=0.36, sig.=0.714). There is no validation of hypothesis H2 postulating a lower level of perceived in-store quality amongst persons who have experienced online purchasing.

Multi-channel behaviour and weightings of the different dimensions of perceived quality

What we were studying here was the link between channels' visitor profile and the dimensions' significance in the constitution of perceived quality. Our test was tantamount to answering the following question: does website usage increase the significance of those in-store quality dimensions that are specific to this particular channel (social interaction, experience, etc.) (H3)? Does this modification of dimensions' contributions to perceived quality depend on the purchasing process phase being enacted online (information gathering or actual purchasing (H4)?

To address these questions, we used nested model comparisons as part of a multiple group analysis within a structural equation modelling,. This method tests whether groups fulfil an equality assumption by examining whether different sets of path coefficients are invariant. Path coefficients (regression weights - Table 6) were compared using this approach.

Table 6. – Standardised regression coefficients for perceived in-store quality

Items	Quality dimension	Tested relationship	Standardised regression coefficients *		
			Store customers only	Store customers/ web visitors	Store customers/web purchasers
			n = 239	n = 218	n = 178
Competency	Personal interaction	Personal interaction/ Store quality			
Customisation					
Reliable information			0.693	0.605	0.534
Decoration	Atmosphere	Atmosphere/Store quality			
Restful setting					
Ambience			0.458	0.616	0.600
Transportation	Physical aspects (access)	Physical aspects (access)/ Store quality			
Proximity					
Situation			0.463	0.336	0.360
Exchange	Problem solving	Problem solving/ Store quality			
Complaints					
Reimbursement			0.276	0.364	0.537

* All coefficients are significant at p = 0.000

Nested model comparisons work by imposing a constraint or set of multiple constraints on an initial or less restricted model to obtain a more restricted final model. The adjustment of the independence models via sub-samples (without constraints) was obtained by the sum of χ^2 and the associated degrees of freedom (Byrne, 2001). Where the χ^2 difference of models with and without constraints was significant, we rejected the hypothesis postulating invariance between the sub-samples. Establishing invariance between the basic model and the first and the second models was generally considered to be the most important criterion when measuring equality amongst the groups (Bollen, 1989).

The first stage consisted of verifying that the model indices based on customary indicators were adjusted correctly, and that the χ^2 increase between the models was never higher than the increase in their degrees of freedom. Our constrained hierarchical models featured satisfactory adjustment indices (χ^2/dl < 2.03; AGFI> 0.909; CFI > 0.978; RMSEA < 0.036), thus lending themselves to invariance analyses.

The findings demonstrated the existence of significant regression coefficient differences between consumers who visited the website and those who did not (Table 7). We can conclude from this that the relative weightings of the dimensions that make a contribution to perceived quality differ between consumers who visited the website and those who did not visit it, thus validating hypothesis H3.

Table 7. - Multi- group analysis

	Model without constraints		Model with constrained regression coefficients	
	web / non-web	web visitors / web purchasers	web / non-web	web visitors / web purchasers
χ^2 *(Threshold: none)*	194.24	145.67	211.78	148.62
χ^2/dl *(< 5 as low as possible)*	2.02	1.517	2.03	1.429
AGFI *([0-1] Value as close as possible to 1)*	0.940	0.903	0.939	0.909
CFI *(> 0.9)*	0.980	0.979	0.978	0.981
RMSEA *(< 0.1 Value as close as possible to 0)*	0.036	0.037	0.036	0.034
χ^2_{diff}		17.54		2.95
dl$_{diff}$		8		8
Significance		0.025		N.S.

Inversely, there was no significant difference between consumers who visited the website for informational purposes and those who visited it for purchasing reasons (Table 7). There was no difference between the weightings of the contributions of the elements relating to the store's perceived quality when the persons visited the website to gain information, or else when they did this to make a purchase. As such, hypothesis H4 was not validated.

DISCUSSION

Before interpreting our findings and the implications thereof, we should remember the limitations of our study. The first is methodological in nature since what we had here was a natural experimentation (with non-randomly allocated respondents), meaning that the relationships in question corresponded more to correlations than to causalities. Analysis of inter-sample individual characteristics did not reveal any significant differences except for persons over the age of 45, where there were fewer online purchasers. It remains that the elimination of this age bracket did not significantly modify our findings. It was not possible to study the sample's representativity in terms of the retail chain's customer base. Furthermore, the study covered just the one retail chain, meaning that its findings depended on its

characteristics, thereby limiting their external validity. Extrinsic cues, like a store's brand image, affect evaluations of quality (Dodds, Monroe and Grewal, 1991), where the brand image of this particular retail chain was considered on the whole to be very positive. According to the customer surveys conducted in this retail chain, a saturation effect would reduce the perceived quality's margin of progression. This could explain the absence of any observed impact on perceived quality.

Ours was a dual research focus, involved both an examination of store quality measurement tools and also an interpretation of observed variances. Does the development of websites and the increased frequency with which people visit them mean that quality managers should start wondering about how to interpret levels of quality, and even go as far as to question current tools for measuring quality in a supposedly independent channel, namely, in stores ?

It may be that observations of higher or lower perceived in-store quality, or unexplained differences in performance between one store and the next, cannot be directly attributed to the store's management but correspond instead to the consequences of a multi-channel strategy. A store that hosts a higher percentage of Internet users could witness an increase in perceived quality due to the cognitive benefits of customers' prior online visits, since this would have reduced pressure on sales staff. Inversely, staff could be penalised by customers' greater expectations, relating for example to how quickly they get through the checkout counter.

The present study has first and foremost demonstrated that a multi-channel visitor profile influences customer perceptions of quality. Now, multi-channel customers possess a great deal of purchasing power (Fevad, 2005) and generate the most revenue (Kumar and Venkatesan, 2005). They are also companies' most highly valued customers (Hitt and Frei, 2002). Hence the need to focus on how experiences are sequenced in perceived quality terms. We also require a more holistic measurement of customers' quality perceptions based on their specific experiences in varying channels. In other words, it is crucial that companies accept the challenge of creating or optimising a multi-channel strategy if they intend to capture and retain customers.

As we can expect from the fact that most cognitive activities occur during the prior website consultation stage, it is on web users that specific store advantages have the greatest effect. For users of a special website (more than for non-users), these advantages will derive from the

hedonistic dimension of shopping, and from the utilitarian dimension of its problem solving arrangements. Both actors, however, pay a great deal of attention to their relations with staff members, and to the store's ease-of-access.

A second interesting finding by the present study is that the level of perceived in-store quality is not influenced by channels' visitor profile. This can seem counter-intuitive given that both academic (Dabholkar, 1996) and professional literature has tended to assert that providing a complementary channel means offering a consumer an alternative. The ensuing choice should lead to a more favourable assessment - yet what we have witnessed here is that the use of a website does not improve the level of perceived in-store quality.

We may have one explanation for this, which is that these consumers differ from e-consumers because of their higher expectations. Degeratu, Rangaswamy and Wu (2000), along with Phau and Poon (2000), have found that consumers visiting a commercial website apply different and more product offer evaluation criteria than in-store consumers do. Under the aegis of our disconfirmation model (Oliver, 1977, 1980), this result finds its coherency in the combination of a simultaneous shift in two components - the consumer has a better perception of the main sales location, but his/her expectations are also higher even as perceived quality remains unchanged.

Several research paths can be envisaged. The first one is methodological in nature and involves using a different quality measurement, namely, a subtractive measurement of disconfirmation based on a specific measurement of each component. This approach may feature inferior psychometric characteristics, but it does help us to choose amongst the various hypotheses concerning the explanation of effects: a shift in the two measurements (expectations and perceptions) or the specific effects of multi-channel visiting on expectations or perceptions

The answer to this question is clearly useful at both a managerial and academic level. The second research path involves extending our study's conceptual field, in particular by incorporating the concept of satisfaction in such a way as to study the impact on consumer opinion if a complementary channel were to be provided. A recent study shows that customers envision quality as a recourse to norms that minimise defects and guarantee consistency (Dano, Llosa and Orsingher, 2003). In this case, satisfaction would be much more affected by the gap between expectations-perceptions than by perceived quality, which is

more sensitive to the gap between perceived performance and expected norms. Lastly, a third research path concerns certain crossed effects between the channels: does the level of perceived quality in a channel influence the level of perceived quality in another channel ? And what form do these relationships assume, i.e., do they provide meaning and maybe even amplify certain effects?

In conclusion, the present research has highlighted the need to revisit the concept of quality within a multi-channel environment by viewing it as a factor of corporate profitability. Today, setting up a website does not mean abandoning pre-existing forms of distribution. A website can help to reinforce traditional channels' efficiency (complementary effect) or replace existing channels (positive or negative effect). In short, quality measurements based on different channels should concretise within an integrated vision of the entire distribution system. The same applies to interpretations of observed levels, and to the undertaking of corrective actions.

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