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PRODUCT AND SERVICE INTANGIBILITY: A STUDY OF ITS DIMENSIONS AND CONSEQUENCES ON PRODUCT/SERVICE EVALUATION

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ABSTRACT

PRODUCT & SERVICE INTANGIBILITY: A STUDY OF ITS DIMENSIONS AND CONSEQUENCES ON PRODUCT/SERVICE EVALUATION

Christine Goutaland

As new information technologies have been developed during the last decade, so has a new generation of products that are called "information products". Since these products are highly intangible, this renews the debate about intangibility as defined in the marketing literature, which has traditionally considered it as a unidimensional construct and has associated it almost exclusively with services.

The objectives of the study were to show that intangibility is rather a subjective, multidimensional construct and that it influences product/service evaluations. A review of the literature about intangibility and its potential consequences served to build a model for the intangibility construct.

A questionnaire survey was conducted with university students and multiple regressions were used to test the proposed model. Results showed that intangibility is rather a multidimensional construct, composed of three instead of two dimensions, as expected. Moreover, some products appear to be less tangible than many services. Managerial implications are that services marketing should not be approached from the physical intangibility perspective, but rather from the mental intangibility point of view, since it is this latter dimension that causes more difficulty of evaluation. In addition, further studies should be done to confirm the existence of a new category of intangible products often called "information products".

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INTRODUCTION

1. PRODUCTS AND SERVICES: THE ISSUE OF INTANGIBILITY

As the number and categories of services offered to consumers have become more and more important in the last decades (Bitner and Zeithaml 1988; Lovelock 1991; Rust, Zahorik and Keiningham 1996; Shugan 1990), the corresponding marketing literature has made a substantial effort to specifically define what differentiates them from physical goods (or products) in order to market them as efficiently as possible. Numerous research articles and marketing books have come up with four main characteristics that differentiate services from products, intangibility being recognized as the most important one (e.g., Rathmell 1974; Berry 1980; Zeithaml, Parasuraman and Berry 1985; Rust et al. 1996). However, although this dimension has been clearly addressed as a continuous, rather than discrete distinction (a virtual scale on which products and services are situated at various levels; Shostack 1977), authors have commonly agreed upon the fact that products lie around the tangible end, while services lie more on the intangible side (Zeithaml 1981).

This classification of tangibles and intangibles is especially questionable if we take several examples of products that are in fact much less tangible than many services. For instance, software products, as well as music, show less tangibility than a meal in a restaurant (Freiden, Goldsmith, Takacs and Hofacker 1998): the former are digitized information, made of code, and untouchable in themselves (the only material support is a CD, which is not even necessary), software being visible only through a computer screen, and music only listened to. The latter (a service), on the other hand, is made of several

tangible products (food ingredients) that can be seen, smelled, touched, tasted, and evaluated for their own quality (Berry 1980). In other words, the formers are more abstract to the average consumer than the latter, although they are clearly products.

2. RATIONALE FOR THE STUDY OF INTANGIBILITY IN THE LATE 1990'S

As early as 1980, Hirschman identified the increasing societal complexity as a factor heightening the opportunity for and probability of idiosyncratic associations of intangible attributes with a product. Today, one might claim that a higher level of abstraction comes from products or services in relation to new information technologies (NITs) and to computers. Indeed, NITs have given the opportunity for many products from a new generation to develop. Their higher level of intangibility would be one of their differentiating aspects. Music, however, has existed under its recorded form since long before the introduction of NITs, being diffused through a physical support that has evolved through the decades. Moreover, its tangibility resides only in its audible characteristic (it cannot be seen, touched, smelled, etc.), and its quality is not even objectively assessable (Hirschman 1980). Therefore, digitized[1] music in the form of compressed data files is simply another support (as were CDs), less tangible because it is not physically transported other than through a computer.

So to summarize, there is on one hand a new generation of more intangible products (e.g., software, computer games), which has grown thanks to the massive computerization and growing equipment hardware of society (households as well as companies) (Castells 1996). On the other hand, some existing products have been (or are,

[1] The most common format of digitized music is called *mp3*. For more information about this music format, go to *http://www.mp3.com*

and will be) made available in less tangible formats on the Internet, where they can be seen/heard, bought and sometimes even directly consumed, without any other physical distribution of the product (e.g., newspapers, music, photos).

On a broader scale, the modern sociologists Giddens (1990) and Castells (1996) have characterized our society not only as an "informational society" (Castells 1996), but also a society where technology and abstraction mechanisms interact. Hence, a new vocabulary emerges that reflects those changes: every day we can hear or read about "virtual communities" , "digital world" , "virtual shopping" , etc., those adjectives being increasingly used to qualify every social and commercial relationship that has been abstracted thanks to NITs (especially the Internet) and that replaces traditional face-to-face communications and transactions.

3. A NEW APPROACH TO THE STUDY OF INTANGIBILITY

Hence, thanks to the growing use of abstract systems such as the Internet, intangibility appears to be increasingly present in our current society. However, until now marketing research on intangibility has remained limited to the context of services as opposed to products. Moreover, it has been investigated mostly as an objective concept (exceptions: Hirschman 1980; McDougall 1987), often defined in confusion with its consequences on consumer behavior (i.e., perceived evaluation difficulty and effort, perceived risk; Breivik, Troye and Olsson 1998), and rarely been empirically tested. Also, it has never been studied in a situational perspective, while the context (mode of purchase) could be very influential as a way of "tangibilizing" the offer, thus reducing the perceived risk for the consumer (Shostack 1977; Berry 1980; Finn 1985; Murray 1991; Reddy, et al. 1993), since it has been traditionally recognized that intangibility is associated with a higher

perceived risk in the transaction (e.g., Davis, Guiltinan and Jones 1979; Finn 1985; Mitchell and Greatorex 1993; Murray and Schlacter 1990; Murray 1991; Rust, Zahorik and Keiningham 1996).

Consequently, studying intangibility and its impact on consumer behavior in a new perspective is especially interesting, from conceptual and practical viewpoints. Indeed, a more precise conceptualization of this concept should allow to test its consequences on product evaluation. Beyond the scope of this research, intangibility could also be studied in relation to specific contexts, such as the modes of purchase, to determine whether indeed it is necessary to "tangibilize" all offers in various purchase environments.

As a starting point toward this goal, the purpose of the present study is to 1) better define the concept of intangibility related to services and products; 2) empirically test the consumer perception of its variability among products and services; 3) determine the consequences of intangibility on product and service evaluation.

4. ORGANIZATION OF THE STUDY

First, the conceptual framework will be presented. It consists of an extensive review of the literature about intangibility, including the study of its dimensions and its consequences on consumer behavior in terms of product evaluation. In addition, some individual characteristics of consumer, knowledge and involvement will be discussed, as possible moderating variables in this study. The hypotheses derived from the review will be presented at the end of each section, and then be summed up at the end of this first chapter, along with the proposed model to be tested.

In a second chapter, the research methodology used to test the model and hypotheses will be explained, especially the research design, the sampling procedure, the data collection method and the concepts measurement.

A third chapter will present the analyses and results obtained from the data collected. It will start with descriptive statistics about the demographic profile of the sample. Then the model will be tested using multiple regressions. Third, ANOVA results for products and services ratings will be presented, as well as the discriminant analysis and multiple regressions per product. Finally, some gender differences will be investigated through t-tests and multiple regressions per gender.

The fourth chapter will serve to discuss the major findings of this study and their conceptual implications. Then limitations will be presented along with future research opportunities. Finally, a last part will conclude this study and summarize its contributions to marketing research and management.

CHAPTER 1 - LITERATURE REVIEW

1. PRODUCTS AND SERVICES: THE ISSUE OF INTANGIBILITY REVISITED

In order to better understand the concept of product intangibility, it is necessary to start with general definitions of immateriality and intangibility. According to *The Oxford Dictionary of Current English* (1996), *immateriality* refers to something immaterial, that is incorporeal, whereas *intangibility* (related to the Latin word *intact*, i.e. entire, untouched) characterizes 1) something that cannot be touched, 2) something that is unable to be grasped mentally, that cannot be precisely assessed or defined.

With those more exact definitions, it is questionable whether intangibility really applies to products. Indeed, at first view, one can explain what a product is, even if it is not material. But would really immateriality apply better than intangibility? If we consider the previously cited products (music, software, pictures, newspaper), all of them seem to be immaterial in the EC[2] context, but also intangible, given that the consumer might not even be able to explain what they are made of, what constitutes them. For instance, what is music when it is computerized and digitized in mp3 files? Some computer literate people will respond that it is a kind of file made of compressed data, but only experts can define it precisely. For the average consumer, it remains intangible.

To better assess what intangibility encompasses in a marketing context, it is essential to consult the literature about services, whose intangibility has always been characterized as one of their major distinctive features.

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[2] Electronic Commerce

Hence, in this chapter I will first present the various definitions of intangibility and show that this concept measurement is not only subjective but can also be applied to pure products. Then, I will examine the various consequences of intangibility on consumer behavior in terms of product evaluation.

1.1. Tangibles/Intangibles: from a bipolar categorization to a multidimensional concept

1.1.1. Tangible Product, or Intangible Service?

Intangibility has been universally cited by authors as the fundamental factor differentiating services from products (e.g., Rathmell 1974; Shostack 1977; Bateson 1979; Davis, Guiltinan and Jones 1979; Berry 1980; Zeithaml, Parasuraman and Berry 1985; McDougall 1987; Bitner and Zeithaml 1988; Quinn and Duboff 1988; McDougall and Snetsinger 1990; Lovelock 1991; Reddy, Buskirk and Kaicker 1993; Rust, Zahorik and Keiningham 1996; Breivik, Troye and Olsson 1998), distinction from which all other differences emerge (Bateson 1979; Zeithaml, Parasuraman and Berry 1985).

In 1977, Shostack was one of the first authors to define precisely services (see also Rathmell 1974), especially in terms of intangibility. According to her, "tangible" means "palpable", and "material". As its antonym, "intangible" means "impalpable", and "*not* corporeal" (Shostack 1977, p. 73). She further described intangible elements as dynamic, subjective and ephemeral: they cannot be touched, tried on for size or measured, smelled or seen, displayed on a shelf, and are exceedingly difficult to quantify. Berry (1980) also conceptualized intangiblility as "that which cannot be touched, impalpable", and "that which cannot be easily defined, formulated, or grasped mentally"

(p. 17), while for McDougall (1987) it is simply "the lack of physical evidence" (p. 427), the inability to picture or visualize the object.

Software sold through EC, for instance, has at least some of these features described by Shostack (1977): it is not corporeal, that is it cannot be touched as there is no physical support anymore (they are sent as files); it is not displayed physically on a shelf (no packaging anymore), and it becomes difficult to quantify (is the unit the whole package, the application, or the file?). Although music is easier to quantify through EC (a file still constitutes a song), it has no physical existence anymore, and is even more intangible, as the support/package and its constituents (CD, plastic box, and booklet with images and text) are its only physically assessable cues.

In the case of financial products such as the stock exchange, EC is not even "intangibilizing" the product, as it has always been intangible (money is very intangible, as explained by Giddens 1990), being materialized only through a hypothetical piece of paper that does not reflect the virtual possession otherwise than by figures. In other words, it cannot be grasped physically. Not surprisingly, then, electronic mediums such as the Internet appear to be a very suitable way of conducting transactions of this kind. Perhaps this intangibility is also the reason why financial 'products' are so often categorized as 'services'.

Even earlier, Rathmell (1974) stated that the object of exchange is intangible in services marketing, while not so in goods marketing. Again, this affirmation could be easily contested: indeed, while it is true for many services, it does not hold in the case of a restaurant meal versus a CD of music, as already explained. This statement is partially

founded however, considering the variability of the service outcome (see 1.1.2.3. about the heterogeneity of services).

So to summarize, early literature about intangibility states that it relates mainly to an absence of physical state, and thus applies systematically to services, while not to 'goods' otherwise called products. Later on, however, intangibility has been conceptualized in a more relative manner in that it is applicable to services and products in various degrees.

1.1.2. The Tangibility/Intangibility Scale and its Two Dimensions

1.1.2.1. The Degree of Intangibility

Shostack (1977) and later on Murray and Schlacter (1990) have argued that the distinction between goods and services is continuous rather than discrete. There are very few pure goods or services, but most products can be placed within the two extremes, intangible or tangible dominance, depending on the extent to which the good or service is integrated to the product as a whole (Rust et al., 1996, p. 18).

Berry (1980), Lovelock (1991) and Rust et al. (1996, p. 14) also agreed that most market offerings are a combination of tangible and intangible elements: "It is whether the essence of what is being bought is tangible or intangible that determines its classification as a good or a service" (Berry 1980, p. 16-17).

This vision is quite clear and simple, but does not yet capture the whole complexity of services intangibility, since it does not fully qualify what intangibility means and implies.

1.1.2.2. The Type of Attribute

Hirschman (1980) offers an interesting perspective on the issue by comparing tangible and intangible attributes instead of products and services directly. Researching how consumers assign meaning to products, she claims first that meaning can vary among individuals, which could explain preferences in music and other artistic fields. Thus, she talks about "psychological meaning" as "describing a person's subjective perception and affective reactions" (Hirschman 1980, p. 8). Then, she defines tangible attributes as accessible through at least one sense and, most important, as objective characteristics of a product "because they exist independent of the mind and are derived from sensory perception" (Hirschman 1980, p. 9). By contrast, "intangible attributes exist only within the mind of the individual and are mentally rather than physically associated with the product. They are not corporeal or palpable." (Hirschman 1980, p. 9). Also, intangible attributes are subjective in nature, i.e., "they are determined by the mind as a result of experience, they arise from the subject who is observing rather than the object which is being observed" (Hirschman 1980, p. 9). Furthermore, it is the relative salience of those attributes to the consumer evaluating them that will determine the psychological meaning of the product to that consumer.

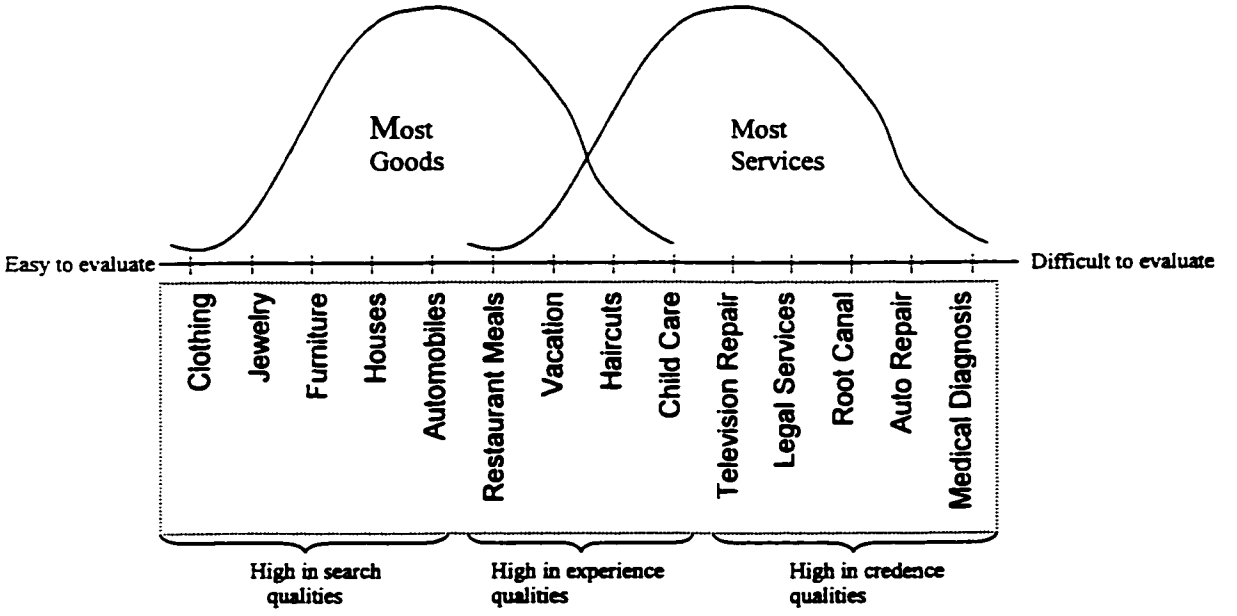
By extension, Hirschman (1980) recognizes that product categories may differ substantially, in their proportionate mix of tangible and intangible attributes, without being able to identify which products would fall in this "objectively-dominated category". From that she concludes that supposedly, in many product classes, the objective, tangible attributes are dominated by the subjective, intangible attributes associated with a product.

Thus, although it remains unclear as to what type of attribute (tangible or intangible) will prevail in the consumer's mind, it is now clear that two aspects have emerged relative to intangibility: one physical or sensory and one mental.

More pragmatically, Zeithaml (1981), proposed a framework for isolating differences in evaluation processes between goods and services (see Figure 1 below). Thus, tangible goods (e.g., a car) are evaluated mostly thanks to attributes called search qualities, that a consumer can determine before purchase. For more intangible goods or services (e.g., a restaurant meal), consumers use experience qualities, that can be evaluated only after purchase. Finally, credence qualities are attributes that the buyer cannot evaluate, even after purchase (e.g., a medical diagnosis); the consumer must believe that the attribute is present on faith based on the word of others, that is trust.

Although this helps explain how differently we evaluate tangibles and intangibles, it does not define more precisely the concept of intangibility.

FIGURE 1 - CONTINUUM OF EVALUATION FOR DIFFERENT TYPES OF PRODUCTS



Source: Zeithaml, Valarie A. (1981), "How consumer Evaluation Processes Differ between Goods and Services", in Christopher H. Lovelock (1991), *Services Marketing*, Second Edition, Prentice Hall, p.40.

1.1.3. A New Conceptualization

Dubé-Rioux, Regan and Schmitt (1990), as well as McDougall and Snetsinger (1990), tried to define more precisely the concept of intangibility. Dubé-Rioux et al. (1990) came up with two main aspects of it. One is the relative *abstractness / concreteness*, which relates to the physical *accessibility to the senses*, and "may be equally relevant for both goods and services"; the other, *specificity*, refers to subordination, "the specificity of a word being inversely related to the number of subordinate words it embraces" (Dubé-Rioux, Regan and Schmitt 1990, p. 861).

Interestingly, they used only services (abstract and concrete ones, generic and specific ones) in their study. They showed that although the two dimensions of concreteness and specificity are somewhat intercorrelated, they can still confidently be investigated as two separate variables. Moreover, they found that "abstract (as opposed to concrete) services, whether they are generic or specific, bring to mind both more abstract and more generic attributes" (Dubé-Rioux, Regan and Schmitt 1990, p. 864), whereas concrete services bring to mind more specific attributes. Thus, concrete services would be cognitively represented similarly to physical goods, unlike abstract services.

Building on their work, Breivik, Troye and Olsson (1998) recently developed also a two-dimensional vision of intangibility, decomposing it into *inaccessibility to the senses*, and *generality*, both relating to abstractness but one more physically, and the other more mentally, two potential aspects of intangibility also identified by McDougall and Snetsinger (1990).

1.1.3.1. Inaccessibility to the Senses

Inaccessibility to the senses, "the aspect most frequently referred to in services marketing" (Breivik et al. 1998, p. 3) means that product/services attributes are mentally rather than physically related to the product (Hirschman 1980). "Tangible attributes are perceived directly upon exposure to the product (e.g., color), while intangible attributes reflect a mental construction based on information communicated about the product (e.g., atmosphere)" (Breivik et al. 1998, p. 3). These authors recognized nevertheless that the difference is relative, since any sense experience requires some mental effort (e.g., classification), while any mental construction to some extent depends on sensory experiences.

Moreover, since sense-inaccessible attributes are mentally rather than physically tied to the product, they are subject dependent (consistent with Hirschman's (1980) definition of intangible attributes), while tangible attributes that can be sensed more adequately can be described as object-referent (Breivik et al. 1998). With that respect, McDougall's (1987) and McDougall and Snetsinger's (1990) definition of intangibility (i.e., "the degree to which a product can be visualized and provide a clear, concrete image prior to purchase", McDougall and Snetsinger's 1990, p. 31) should be discarded because it does not consider all the senses that can be involved in the representation of a product or a service.

1.1.3.2. Generality

Generality relates to general attributes that are the outcome of several features (e.g., safety of a car), whereas specificity refers to typical features (e.g., airbag) (Breivik et al. 1998), as suggested also by Dubé-Rioux, Regan and Schmitt (1990). Moreover, Johnson

and Fornell (1987) had previously stated that abstract attributes are more general, and more likely represented by dimensions (which are continuous), while more concrete attributes are more likely represented as features (which are dichotomous). By extension and according to Breivik et al. (1998), an object can be considered as general when it is pointed out as an entire category (e.g. "car"), or specific when it is pointed out as one specific item (e.g. "car" implicitly referring to a specific brand, model, color, year, etc., or Mr. X's car, my ideal car, etc.).

It is interesting to note that Hirschman (1980) also identified the uniqueness versus commonality characteristic attached to intangible attributes, but she stated that the intangibility of the attribute makes it unique to an individual. Thus, for her, intangibility results in a meaning different for every consumer (subject-specific), whereas Breivik et al. (1998) consider attribute generality in terms of a set of several features, as a dimension of intangibility. Although both visions seem contradictory, they can hold true together: each individual has his/her own psychological meaning of an intangible attribute, and depending on how general or specific he considers it, it will make the product or service be perceived as more or less tangible.

This recent decomposition of intangibility in two dimensions is particularly important, as it sheds more light on the possible interpretations of the concept, which can have various consequences on consumer behavior (i.e., evaluation difficulty). In 1987, following inconclusive results on the role of intangibility in the ease of product evaluation, McDougall (1987) already suggested that tangibility could be a multidimensional construct, with a physical and a mental component (relating to the lack of physical evidence and to the difficulty to be grasped mentally).

Furthermore, the "notion that the origin of intangible attributes are in the perceiver, while tangible attributes are inherent in the perceived object" (Breivik et al. 1998, p. 3) is consistent with the existing literature (e.g., Bateson 1979; Hirschman 1980; Finn 1985), and very important to keep in mind, as it gives credit to the idea that measuring intangibility is not an objective task, but rather a subjective one.

However, Breivik et al. (1998) keep a dichotomous perspective between products and services, still using very tangible products (clothing, camera, car) as opposed to services (e.g., hair cut, hotel stay, dental examination, charter tour).

Thus, throughout the literature on intangibility, researchers are almost all keeping the dichotomous clear-cut differentiation between products and services. At this point though, it remains unsure whether a meal at a restaurant or a hotel room are services with some tangibles ("serducts"), or rather packages of products with some service components ("provices"), as especially underlined by Quinn and Duboff (1988). That is why it becomes necessary to review other services characteristics. For instance, Reddy et al. (1993, p. 13) claim that "services [...] are intangible, perishable, lack consistency, and need participation of a service recipient to obtain the service". Hence, the following review will help us determine if the products previously identified as intangible display other services' features and thus should rather be called "services", or if they can still be confidently qualified as products by not showing those characteristics.

1.2. Other characteristics of Services as opposed to products

Rathmell (1974) as well as many others (e.g., Davis et al. 1979; Berry 1980; Zeithaml et al. 1985; Bitner et Zeithaml 1988; Lovelock 1991; Reddy et al. 1993; Rust et al. 1996), have addressed several other characteristics that differentiate services from products.

1.2.1. Absence of Ownership

Davis et al. (1979) have reviewed Rathmell's (1974) summary of the salient differences in services marketing, which have then been confirmed by other authors. After *intangibility*, a second major distinctive feature of services is that a service transaction includes *no transfer of ownership*, whereas in goods marketing, ownership and control are passed with transfer of possession. This idea has often been included in the notion of intangibility: for instance, Schneider (1988, p. 97) has related the concept of intangibility to the fact that "services are acts or processes that result in experiences more often than they result in the possession of some object" . In the same vein, Parasuraman, Zeithaml and Berry (1985, p. 42) consider them as "performances rather than objects" .

1.2.2. Simultaneous Production and Consumption

A third feature is that production and consumption are interrelated. Indeed, while goods are produced, sold and consumed in a sequential manner, services are sold, then *produced and consumed simultaneously*, in the same time frame (Davis et al. 1979; Berry 1980; Zeithaml et al. 1985; Bitner and Zeithaml 1988). Berry (1980) added that unlike products marketing, in which place and time of delivery are a priority, services marketing requires an extra attention to the "right way" or the "how" of delivery.

1.2.3. Heterogeneity

This brings us to a fourth characteristic: *uniqueness*. Indeed, each service is unique, and generally, uniform performance standards are difficult to attain in the production of services (Parasuraman, Zeithaml and Berry 1985), since it often depends in part on the specific human interaction between a buyer and a seller (Berry 1980; Lovelock 1991).

"The extensive involvement of people in the production of a service introduces a degree of variability in the outcome that is not present when machines dominate" (Berry 1980, p. 17). In addition, Hale (1998) identified two types of variability in the service experience: time-to-time, and person-to-person variability.

Also, buyers of services are dependent on the seller during the service consumption, that is often not possible without the participation of the service provider (Rust et al. 1996). Therefore it is said that service industries are either "people-based" or "equipment-based" (Rathmell 1974; Lovelock 1991), depending on which component is mostly involved in performing the service (Berry 1980). Further, Oldano (1988) has characterized "people-based" services as interactive, versus products transactions in which the consumer is rather passive.

Thus, this potential for high *variability* (Berry 1980; Rust et al. 1996) is often referred to as *heterogeneity* (Zeithaml et al. 1985; Zeithaml 1988; Bitner and Zeithaml 1988), or *non-standardization* (Berry 1980). It also relates to intangibility in that it results in an unfixed mental representation of what the service is, making it necessary to systematically refer to previous experiences in order to get a relatively clear representation of what it could be, and thus form some expectations (Zeithaml, Berry and Parasuraman 1993). Nevertheless, despite the general applicability of this characteristic to services as a differentiation criterion, it is important to note that some products also display variability, such as food, some clothing, and more generally everything that is not standardized in manufacturing (although it becomes rare). In turn, some services are standardized, such as public services (Rathmell, 1974).

1.2.4. PERISHABILITY

Fifth, services are *perishable* in that they cannot be saved or inventoried (Davis et al. 1979; Bitner and Zeithaml 1988, Lovelock 1991; Rust et al., 1996). For instance, if hotel rooms or airline seats are not occupied, they cannot be reclaimed (Zeithaml et al. 1985).

1.2.5. OTHER CHARACTERISTICS

Finally, some of the marketing functions have to be recast in the light of the previously cited features: in physical supply, for instance, the notion of transportation is replaced by the concept of location of the service facility, and storage is conceptualized as available capacity to perform a service (Davis et al. 1979; Rathmell 1974).

1.3. Conclusion

After a review of all those distinctive features, it appears clearly that even though some products appear to be highly intangible (very general and/or inaccessible to the senses), they cannot be classified as services, for they do not display other services features. Indeed, music as well as software or financial products, although they are very general and almost inaccessible to the senses, allow transactions that result in the ownership of something. Moreover, the production of those goods takes place before the consumption, which can happen at a variable time after the actual purchase (Berry 1980). The good is homogenous in that the production is quite standardized and the product purchased remains the same for everyone: a song will remain the same in every transaction, as well as a software package or a given financial product. Finally, those products are not only imperishable in that they can exist for years, but they are also especially easy to save and preserve, as they take practically no physical space, especially in their electronic form.

So to summarize, the two following arguments have been presented in this section: 1) The confirmation that even though products and services are sometimes intertwined in a global package, they remain differentiable, even with a high degree of variability on the intangibility dimension; 2) While services are definitely more toward the intangible end, as also shown by Freiden, Goldsmith, Takacs and Hofacker (1998), not all products are tangible, but some seem rather very intangible, which disconfirms Quinn and Duboff's (1988) as well as many other authors' a priori dichotomous categorization of products as tangibles and services as intangibles (e.g., McDougall and Snetsinger 1990).

Furthermore, the measurement of intangibility appears to be subject specific (Hirschman 1980; Breivik et al. 1998), which changes the perspective of the debate on tangibles and intangibles as to whether the evaluation of the degree of intangibility is a clear-cut objective task or rather a subjective one: in fact, tangibles remain (in part) objectively assessable, precisely because they display tangible attributes that are object-referent, whereas everything that does not or at least for which intangible attributes seem to prevail, will be viewed as more or less intangible, depending on who assesses its intangibility (and on the experience of the assessor).

Finally, product intangibility encompasses two correlated but distinct dimensions, which brings us to the first two hypotheses:

H1: *The degree of product intangibility will be a function of its perceived inaccessibility to the senses.*

H2: *The degree of product intangibility will be a function of its perceived generality.*

H3: *The generality will be higher in services than in products.*

These first two hypotheses have not been tested by Breivik et al. (1998), who rather made raters evaluate a priori the two dimensions for several products and services, and then measured consumer perceptions of product evaluation difficulty, effort, uncertainty, risk and subjective knowledge, in order to verify the correlation between the two dimensions and the expected consequences. Thus, their study should not allow methodologically to conclude that it is really these two dimensions that cause the measured consequences, since respondents to the survey may not perceive the same level of intangibility. That is why it will be necessary here to test not only the perceived intangibility in general, and the two dimensions in particular along various products and services, but also to do so by evaluating consumers own perceptions of each dimension. The operationalization and measurement of those dimensions will be further discussed in the methodology.

In the second section of this chapter, we will investigate the various consequences of product intangibility on product evaluation.

2. THE CONSEQUENCES OF INTANGIBILITY

Several possible consequences of intangibility have been identified (often in the services literature), such as a greater difficulty of evaluation (Zeithaml 1981; McDougall 1987; McDougall and Snetsinger 1990), a greater perceived processing effort (McDougall 1987) and a lower certainty of evaluation (i.e., greater uncertainty) (Murray 1991; Mitchell and Greatorex 1993). Moreover, as uncertainty has been closely related when not assimilated to risk (Taylor 1974), the notion of perceived risk will be further investigated in the second part of this section.

2.1. Difficulty of Evaluation

2.1.1. Perceived Evaluation Difficulty

The distinguishing characteristics of services, among which intangibility comes first, make them more difficult to evaluate than goods (Zeithaml 1981; McDougall 1987). Particularly, communicating information about intangibles is more difficult and less efficient (Zeithaml 1981). For Breivik, Troye and Olsson (1998, p. 4), "Perceived evaluation difficulty reflects the degree to which the consumer finds it problematic to discriminate and choose between alternatives" , a difficulty also identified by Bateson (1979).

Surprisingly, Breivik et al. (1998) have found that sense inaccessibility, a dimension of intangibility (see *1.1.3.1.* above), is negatively associated with perceived evaluation difficulty, that is the more inaccessible to the senses a product/attribute is, the less difficult it is to evaluate, because the consumer can refer to mental representations of the product coming from past experiences, a process that seems more effortless than the evaluation of tangible characteristics as identified by Hirschman (1980). This is

contradictory with Bateson's (1979) and McDougall's (1987, p. 427) opinion that services are "more difficult to evaluate than products because they lack the physical evidence available for most products" , and because they are difficult to grasp mentally.

Conversely, generality (the second dimension of intangibility) is positively associated with perceived evaluation difficulty, i.e., the more general a product/attribute is, the more difficult it is to evaluate because the consumer does not have a specific representation of it in mind (Breivik et al. 1998).

Considering McDougall (1987) studies' inconclusive results and weakness in terms of the operational definition of intangibility (defined otherwise as a unidimensional construct), it appears that Breivik et al. (1998) have made progress in defining it not only as a two-dimensional construct, but also in relating it more clearly to difficulty of evaluation, even though their results are not very strong and their operationalization not perfect. This will be further discussed in the methodology.

2.1.2. Perceived Processing Effort

The perceived processing effort in product evaluation is closely related to the notion of difficulty (McDougall 1987). Indeed, "perceived processing effort is the time and energy the buyer perceives to spend in order to make a decision" (Breivik et al. 1998, p. 5). Concretely, the perceived processing effort has been evaluated by measuring 1) the time necessary to reach a decision, as well as 2) the amount of information required (McDougall 1987). Logically, Breivik et al. (1998) found the same pattern of relationship as with perceived evaluation difficulty, i.e., perceived processing effort is negatively related to inaccessibility to the senses, and positively associated with generality, although the relationship seemed weaker than that between intangibility and difficulty of

evaluation. Mitchell and Prince (1993) also argued that one would spend more effort on obtaining information on a high-value than on a low-value product. Zeithaml (1981) as well as Finn (1985) and Murray (1991) also found that for services, the type of information is different from that used in the evaluation of product alternatives, i.e., more personal sources of information are used (e.g., word-of-mouth). More generally, this is caused by a greater product complexity and by a decreasing number of objective standards on which the consumer can base his/her judgement (Zeithaml 1981). Information search is further discussed in the review of risk (see especially *Information Search and Choice Risk* in *2.2.2.3*).

2.1.3. Certainty of Evaluation

Certainty has been related to confidence or trust in product evaluation and choice, i.e., confidence in the capacity to make the appropriate decision (Wendler 1983).

However, the concept has been studied more extensively from the opposite perspective, i.e., uncertainty. Mitchell and Greatorex (1993), in studying "risk perception and reduction in the purchase of consumer services", hypothesized that the average uncertainty rating for services would be higher than that for goods due to their inherent characteristics (i.e., intangibility, heterogeneity, perishability, inseparability). They confirmed that services are riskier than products and that this riskiness is primarily due to extra uncertainty in the purchase of services (see also Bateson 1979). Moreover, uncertainty creates anxiety or at least discomfort (Taylor 1974). Thus, uncertainty is directly related to risk. It is generally recognized as one of the two dimensions of risk (e.g., Bauer 1960; Cunningham 1967). Some authors even use the term interchangeably

with risk, as when the consumer deals with uncertainty, he automatically faces risk (Taylor 1974).

Cox and Rich (1964) also suggested that uncertainty may result from factors inherent in the product, the brand, the place and the mode of purchase. Consequently, we will next investigate the concept of risk, reviewing its various components, as well as some of its various factors identified by Cox and Rich (1964), such as the type of product and the mode of purchase among others.

2.2. Perceived Risk

In 1960 Bauer, in the hope that it would "at least survive through infancy" (p. 23), proposed that consumer behavior be considered as an instance of risk taking, based on the fact that "any action of a consumer will produce consequences which he cannot anticipate with anything approximating certainty, and some of which at least are likely to be unpleasant" (p. 24), which in turn will result in consumers developing decision strategies and ways of reducing risk. Cunningham (1967) also conceptualized perceived risk in terms of uncertainty and consequences.

Moreover, Taylor (1974) noted that a strong empirical evidence seems to support the fact that once a perceived risk has been identified, it is possible to determine relatively precisely the consumer behavior as a function of this risk.

2.2.1. The Components of Perceived Risk

2.2.1.1. Uncertainty and Consequences of the Outcome

Overall, perceived risk (PR) has been seen by several authors as a result of outcome uncertainty and possible negative consequences of the outcome (e.g., Bauer 1960;

Cunningham 1967; Taylor 1974; Ross 1975; Havlena and DeSarbo 1990). Both uncertainty and consequences (or importance of loss; Taylor 1974) contribute in variance to the overall risk ratings, the effects of uncertainty being most pronounced at high levels of importance (Bettman 1973). As Ross (1975) recalls, some other authors have rather considered uncertainty and danger (danger being more important in that case), but the differences of opinion in what the conceptual definition of risk is lead to different views of its fundamental dimensional structure and make the relationship between uncertainty and consequences unclear as to whether it is multiplicative or additive.

As Dowling (1986) acknowledges, a multiplicative relationship would imply one of the following equations (where n = the number of types of loss i), where "the absence of either variable would eliminate risk" (p. 199):

- Perceived Risk = Uncertainty × Adverse Consequences
- Overall Perceived Risk = $\sum_{i=1}^{n}$ Uncertainty$_i$ × Adverse Consequences$_i$
- Overall Perceived Risk = $\sum_{i=1}^{n}$ Probability of Loss$_i$ × Importance of Loss$_i$

Moreover, as Dowling (1986) suggests, the uncertainty and adverse consequences associated with the acquisition of a product will be influenced by the individual's risk tolerance, and by his/her wealth position. Consistent with this idea of subjective evaluation and tolerance of risk, Dowling (1986) acknowledges other types of measures of risk that have been used, such as a unidimensional measure asking subjects to rate the riskiness of a product on a single scale (e.g. "How risky is _____?: "No risk" to "Extremely Risky"), subjects' ranking of the riskiness of a number of products used as stimuli in experiments with other subjects, or even indirect approaches to measuring PR.

Nevertheless, it seems clear that reducing uncertainty is more common than reducing unfavorable consequences (Ross 1975) in the overall attempt to reduce risk.

More generally, Dulude (1998) summarizes that each consequence of risk or each type of risk can be measured in four ways: a global measure, a measure of uncertainty, a measure of importance, or a combined measure of importance and uncertainty.

2.2.1.2. Five Types Of Risk

For Cox and Rich (1964), the economic cost has been the most commonly discussed element of risk, although it is not the only one, and may not even be the most important. Later on, Jacoby and Kaplan (1972) came up with five independent types of risk: financial, performance, physical, psychological, and social risk. They also found that the correlation of each type of risk with the overall perceived risk (OPR) was in the following decreasing order: performance, financial, social, psychological, physical. Other researchers have confirmed the multidimensional nature of consumer perceived risk (e.g., Havlena and DeSarbo 1990), especially Murray and Schlacter (1990), who have tested its various components on services, finding that each type of risk was increased when dealing with services as opposed to products.

Furthermore, researchers have tried to associate risk reliever strategies with the type of risk (Ross 1975). One of the risk relievers most trusted by consumers as an external information source is word-of-mouth (Ross 1975). Also, when products are high in performance risk (performance consequences being the most predictive of OPR for most kinds of products; Kaplan, Szybillo, and Jacoby 1974), consumers prefer "direct observation and experience" (Ross 1975).

2.2.1.3. Inherent Risk and Handled Risk

"Inherent risk is the latent risk a product class holds for a consumer, the innate degree of conflict the product class arouses in the consumer. Handled risk is the amount of conflict a product class engenders when the buyer chooses a brand from that product class in his usual buying situation. Thus, handled risk includes the effects of information and risk reduction processes as they have acted on inherent risk" (Bettman 1973). In our study however, it seems more appropriate to consider inherent risk, since we want to measure the overall perceived risk as a function of the degree of intangibility of a type of product or service. This measure was also used by Cunningham (1967), Jacoby and Kaplan (1972), and Murray and Schlacter (1990) among others.

2.2.2. THE VARIOUS PERSPECTIVES OF RISK

2.2.2.1. The Person or Trait Perspective

"The perception of risk is subjective, as is perception of information" (Taylor 1974, p. 59), an idea also embraced by Bauer (1960), Cunningham (1967), Ross (1975) and Havlena and DeSarbo (1990) among others, that clearly justifies why the concept is named "perceived risk". Cunningham (1967) indeed explains that "The consumer can only react to the amount of risk she actually perceives and only to her subjective interpretation of that risk" (p. 84).

Also, several authors have suggested that some people have a general tendency to perceive either high or low risk across a range of products (Cunningham 1967; Ross 1975; Dowling 1986). More generally, people are often qualified as "risk seekers" or "risk avoiders" in the literature (e.g., Cunningham 1967; Dowling 1986; Payne, Bettman

and Johnson 1993). Thus, Ross (1975) found that those high in perceived risk for a product category would be less likely to adopt at all, or to adopt quickly a new brand introduced within that category and vice-versa. More generally, Cunningham (1967, p. 100) claimed that "there is a risk hierarchy for products suggesting that perceived risk becomes more generalized for people who perceive risk on what is essentially a low risk product" . Moreover, individuals would have differing capacities to absorb monetary and nonmonetary losses, as well as a maximum and minimum threshold level of risk (Dowling 1986). Thus, "when a product's perceived risk exceeds an individual's maximum tolerable level, it will be rejected or will cause the individual to attempt to reduce the risk involved" (Dowling 1986, p. 204).

By extension, it is interesting to note that Mitchell and Prince (1993) found that buyer experience has little or no effect on risk perception for low-value products, whereas buy-frequency is an intervening variable in purchase risk assessment of high-value products and services. Moreover, purchase frequency or buyer experience is a much less useful way of reducing risk for services than for products because of the heterogeneity involved in producing and consuming services (Mitchell and Prince 1993).

Cunningham (1967) however, suggested that one causal factor in perceived risk might be sensitization to a specific problem through personal experience. Therefore, experience and involvement would play a role in the perception of risk associated with products (Price 1981).

These findings are especially important to take into account, as they relate several concepts (i.e., perceived risk, experience, and the type of products or services) that need to be considered in this study. Indeed, "Implications [...] appear to be that the number of

times a consumer has purchased an item before can significantly affect their perceptions and attitudes" (Mitchell and Prince 1993, p. 19). Thus, the role of consumer experience in product perception and evaluation will be examined in the next section of this review.

2.2.2.2. The Object Point of View: The Type of Product or Product Risk

Cunningham (1967) found that the composition of perceived risk varies by product both in terms of the relative weights of the consequences and uncertainty variables and in terms of the variance for each of these variables. Consistently, "Similar types of products possess similar risk component hierarchies" (Jacoby and Kaplan 1972, p. 392; Kaplan, Szybillo, and Jacoby 1974, p. 289). Hence, "products can be meaningfully ordered with respect to their riskiness" (Dowling 1986, p. 204). Also, "individuals perceive risk in high involvement product choice situation" (Dowling 1986, p. 203).

As mentioned before, services are more difficult to evaluate, which increases the level of uncertainty and perceived risk for the consumer (Davis, Guiltinan and Jones 1979; Bateson 1979; Zeithaml 1981; Murray and Schlacter 1990; Murray 1991; Mitchell and Greatorex 1993).

As well, risks associated with the purchase of new products are often high because of the consumers' lack of information and prior experience (Cox and Rich 1964; Havlena and DeSarbo 1990); but for a low risk innovation also possessing strong relative advantage, the diffusion is faster both in time of adoption and the mental process of adoption (Ross 1975). Hence, perceived risk depends on product involvement and experience. And in turn, perceived risk affects choices among products (Dowling 1986; Bettman 1973). Indeed, the main risk reliever mentioned in studies about risk-relieving strategies is brand loyalty (e.g., Ross 1975; Mitchell and Greatorex 1993).

2.2.2.3. Information Search and Choice Risk

Dowling (1986) makes a clear distinction between product risk (see above), and choice risk, the latter being related to the notion of opportunity losses caused by a decision. Also, as Taylor (1974, p. 54) acknowledges, "Any choice situation always involves two aspects of risk: uncertainty about the outcome and uncertainty about the consequences", and "In a choice situation, risk can be interpreted in terms of possible loss", thus creating anxiety.

Jacoby, Speller and Kohn (1974) found that increasing the information load made consumers feel better (less confused and more certain) about their choice, although they actually made poorer choices. Thus, they concluded that although more information could first reduce consumer uncertainty, ultimately, too much information might also cause uncertainty, thereby enhancing rather than reducing perceived risk. Along those lines, Alba and Hutchinson (1987) claimed that in the absence of salient disconfirming evidence, knowledge may lead to a cycle of self-delusion because of the way information is remembered.

Gemünden (1985), in his systematic meta-analysis, found no systematic evidence of the existence of a relationship between perceived risk and information search. Thus, a higher degree of perceived risk would not necessarily imply a more extensive information search by the consumer. Gemünden (1985) gives several possible reasons for such findings: 1) perceived risk remains below a critical threshold of 'tolerated risk', thus no motivation to search for information is induced; 2) perceived risk exceeds tolerated risk, but is reduced by other means than information search (e.g., reliance on the image of well-known sellers, brands or stores); 3) high perceived risk decision makers do not

search intensively for information because they perceive available information sources as not trustworthy or not competent; 4) the influences of perceived risk on information search are suppressed by numerous barriers and the costs of information behavior (time, social cost, cognitive capacity); 5) information acquisition increases perceived risk rather than decreasing it (perceived risk is not a constant variable) (consistent with Jacoby et al. 1974); 6) perceived risk represents a state of cognitive dissonance, it induces a selective search for congruent information, and an active avoiding of potentially dissonant information (consistent with Alba and Hutchinson 1987).

Other authors however, claimed such a relationship do exist. For instance, Murray (1991) affirmed that in general, the greater the perceived risk in a pre-purchase context, the greater the consumer propensity to seek information about the product. Finn (1985) stated that in the case of new product concepts, "additional information can reduce the risk by reducing the uncertainty" . Wendler (1983) also found that information comprehension had a positive effect on confidence in making the appropriate choice decision, thus reducing the risk (significant relationship only for high involvement, high risk products, though).

2.2.2.4. The Mode of Purchase (Distribution Channel)

The mode of purchase, or distribution channel is considered as potential reducers of risk. Thus, "the different channels [of information available to the consumer] are seen as more, or less, appropriate in reducing the various types of risk" (Taylor 1974, p. 58). Also, "perceived risk does affect the channels of information that consumers use" (Taylor 1974, p. 58). For example, "when shopping in person in a department store the customer has the opportunity to reduce uncertainty by personally inspecting or testing the merchandise"

(Cox and Rich 1964, p. 487-488). Thus, changing store for shopping might serve as a form of risk reduction (Cox and Rich 1964; Ross 1975). In other words, certain forms of shopping might be perceived as riskier than others, mainly those without a form of visual inspection such as telephone (Cox and Rich 1964; Ross 1975), in which the shopper is limited to essentially two means of risk reduction: reliance on past experience with the store, product or brand, or reliance on an ad. This is implicitly referring to intangibility related to the mode of purchase, which could further increase or decrease the a priori perceived risk of a product. Cox and Rich (1964) also found that the more decisions to be made in making a single purchase (brand, size, color, etc.), the more important the decisions are, and the more uncertain the consumer is about making the decisions without visual inspection, the greater the risk potential of ordering the product by phone. This implies that purchase of some tangible products by phone is perceived as risky (especially the ones where physical inspection is required).

Cox and Rich (1964) suggested that in the case of telephone, the consumer would react to the perceived risk by avoiding this mode of shopping, at least for items already high in perceived risk.

Thus, perceived risk should be reduced to an acceptable or "tolerable" level in order for the consumer to engage in purchase (Cox and Rich 1964). Two ways of doing that are: 1) to reduce the amount at stake (e.g., hopes of gain, penalties for failure, means of gain), and 2) to increase the degree of certainty that loss will not occur, i.e., to become more certain that action consequences will be favorable (Cox and Rich 1964; Ross 1975). Decreasing uncertainty has been seen as more common and feasible than reducing the possible negative consequences (Cox and Rich 1964; Ross 1975); thus, two strategies of

risk reduction have been observed: seeking information, and relying on existing information, i.e., past experience (Cox and Rich 1964). This suggests that 1) extra information search is not always the preferred mode of risk reduction, and 2) another way to decrease uncertainty could be to increase experience and subjective knowledge of the product class as well as of the medium (environment of purchase). Indeed, we suspect that the consumer perceptions and reactions toward the mode of purchase impact on the evaluation of particular products or services, especially depending on their importance and degree of intangibility. However, this moderating impact cannot be tested until we know precisely the consequences of product or service intangibility on product/service evaluation in general (without a specific context).

Therefore, as mentioned before, we will measure the global level of risk inherent to various types of products and services as a function of their relative perceived intangibility.

2.3. Conclusion

Product (or service) intangibility has several major consequences in terms of product evaluation. Overall, intangibles such as services seem more difficult to evaluate and riskier because of their variability/heterogeneity that makes them very general (inducing more uncertainty about the possible outcome; Zeithaml 1981).

However, intangibles that are so essentially because of their inaccessibility to the senses would be easier to evaluate, implying the assessment of mental/abstract attributes, an easier task than the assessment of physical aspects of the product, since it relies in part on past experiences with the product category (Breivik et al. 1998).

In addition, it is important to note that difficulty of evaluation and perceived risk will be treated as two dependent variables in our study, without trying to establish any relationship between them, since no link between these two variables has been made in the literature.

Thus:

H4: *The more inaccessible to the senses a product or service is, the easier its evaluation will be.*

Whereas:

H5: *The more general a product or service is, the more difficult its evaluation will be.*

And

H6: *The more general a product or service is, the riskier it will be perceived.*

However, given that some other variables seem to influence product evaluation (e.g., experience and involvement), it is necessary to review them in order to determine to which extent they play a significant role in the evaluation process. McDougall (1987) has especially stressed the importance of taking into consideration other variables such as experience with the object, in order to meaningfully "determine the relative importance of intangibility compared to other measures in explaining ease of evaluation" (p. 430). Murray and Schlacter (1990) also measured product familiarity in assessing the perceived risk associated with products and services.

Therefore, in the next section, we will address concepts related to the product and the individual, such as knowledge (experience, expertise and subjective knowledge in the product class) and involvement (in a product category).

3. OTHER VARIABLES INFLUENCING PRODUCT EVALUATION

The other main variables influencing product evaluation are knowledge and involvement. Both relate to the individual in his/her personal relation to the product considered.

We do not pretend here that knowledge and involvement are the only influencing variables in product evaluation. However, for reasons of feasibility, it would be impossible to consider all the individual characteristics influencing product evaluation in the present study, as McDougall (1987) also stated in his own study of intangibility and other variables explaining the perceived difficulty of product and service evaluation: "It is not possible to examine all potential determinants of ease of evaluation and so only those with the highest expected explanatory power are considered" (p. 432). Moreover, those two variables are the most commonly cited in the literature relating to product evaluation and the concepts previously studied (i.e., perceived evaluation difficulty and risk). In addition, these concepts are quite complex, and deserve a careful examination in order to determine which of their facets need be taken into consideration in this study.

3.1. Knowledge

Knowledge is recognized in research about consumer behavior as an individual characteristic influencing decision processes (Bettman and Park 1980; Gharbi 1998). In our research, knowledge of the product class is expected to influence the relationship between product intangibility and the perceived evaluation difficulty and risk (especially uncertainty).

3.1.1. DEFINITION

Research on consumer behavior mentions a practical dimension of knowledge through the concepts of **experience** and **familiarity**, which represent the history of effective interactions between the individual and the product or activity considered (Gharbi 1998). Moreover, knowledge is also conceived as a state, a trait or internal reality characterizing the individual. In that case, knowledge is associated with an aptitude, a faculty and power to act and seize on the reality. This internal dimension of knowledge is represented in consumer behavior research by the concept of **expertise**, referring to consumer ability to manipulate the product, to complete the task and treat the related information (Gharbi 1998). Thus, the study of knowledge must include those two practical and internal, actual and potential dimensions (Gharbi 1998).

3.1.2. THE DIMENSIONS OF KNOWLEDGE: EXPERIENCE AND EXPERTISE

Experience differentiates itself from expertise by the fact that it is concrete, operational, and actualized by the individual. In turn, expertise is potential, latent and virtually realizable by the individual (Gharbi 1998). Then, there is a dependence relationship between expertise and experience, as the development of experience results in an improvement of expertise (Zaichkowsky 1985b; Alba and Hutchinson 1987). Thus, experience is a prerequisite for expertise.

3.1.2.1. Experience

In a synthesis of the literature about experience, Gharbi (1998) retains that experience is referring to 1) individual actions relating to the product or to the activity; 2) actions that

can be behavioral and/or mental or cognitive operations. Thus, experience is a two-dimensional concept.

The behavioral dimension refers to choice, purchase, possession and usage operations. **Frequency** and variety of choice occasions between several brands or formats of product determine the level of consumer experience (Mitchell and Prince 1993). Similarly, repetition of product purchase and usage constitutes an indicator of the level of experience. This level can also be indicated by the continuity of the product possession (Gharbi 1998). According to Alba and Hutchinson (1987), purchase experiences are more likely than product usage or advertising exposures to induce analytic classification.

The second dimension, mental or cognitive, of experience refers to research, exposure, treatment and information usage operations relating to the product or activity. Indeed, the range and depth of information search and their treatment reveal the individual level of experience. As well, the frequency of exposure and utilization of information represents an indicator of his/her level of experience. Finally, the variety of situations for those operations is also an indicator of the experience level (Gharbi 1998).

Nantel and Robillard (1991), in a review of the literature about **familiarity** in consumer behavior, acknowledge the lack of consensus among psychology and marketing researchers on how to conceptualize and operationalize familiarity. Indeed, familiarity has been treated as synonymous with *knowledge* of or *expertise* in a product class by Johnson and Russo (1984), and as a synonymous of *experience* by Alba and Hutchinson (1987), for instance. Nantel and Robillard (1991) have identified two poles of research concerning the conceptualization of familiarity: the first one (the least structured) sees it as a function of experience, usage, expertise or knowledge, whereas the second one (more

recent and marketing oriented define product familiarity in terms of cognitive structures. Nantel and Robillard (1991) argue that experience cannot be used as a unique measure of familiarity since 1) product knowledge can be developed through information search and use without experience; 2) product experience can increase without any learning effect at the level of knowledge. However, they recognize that experience still has an important role in familiarity, as consumers tend to rely more on experience than on external information available.

As Nantel and Robillard (1991) mention, a second way to consider familiarity is to treat the construct as "internal" to the person and take an approach of "information treatment" (cognitive representation of product knowledge). Along those lines, some definitions of product familiarity (as a cognitive representation of experience and knowledge) have identified two types of experience: direct experience, associated with product usage, and indirect experience, which relates to external sources of information (e.g., advertising) (Nantel and Robillard 1991).

Several measures have been proposed to operationalize the concept of experience. For instance, Zaichovsky (1985b) (arguing that objective and subjective knowledge may have different relations to product use) proposed to measure product use with two variables: the *depth*, and the *breadth* of consumption. She also differentiates between durable goods and non-durable goods: for durables, depth is measured by the number of times a product is used in a period of time, while the breadth of consumption is measured by the quantity of possible different usages depending on the situation; for non-durables, depth of use is measured by the number of product purchases or consumptions in a period of time, while breadth is the number of brands bought or consumed in the same period.

Murray and Schlacter (1990) have measured experience on a Likert scale by five questions concerning experience of purchase, utilization and exposure to the product, familiarity with the product brands, purchase frequency and individual confidence in product purchase. This scale suggests that experience would be related not only to usage but also to familiarity, confidence and frequency of purchase (Dulude 1998). Murray and Schlacter (1990) conclude that experience diminishes some types of perceived risk; thus, exposure to the product or service would permit the consumer to acquire some "experience", as also found by Bloch and Richins (1983), and marketers should encourage product trial to reduce uncertainty and perceived risk.

Mitchell and Prince (1993) report contradictory findings concerning the relationship between experience and the quantity of information searched by consumers (see also Johnson and Russo 1984; Brucks 1985). Some have argued that consumers with greater purchase experience would use less information than inexperienced purchasers, while others have found a positive relationship, a third group having found an inverted-U shaped relationship (e.g., Johnson and Russo 1984), while the last ones found no relationship at all. The inverted-U relationship indicates a positive relationship between prior knowledge and information search at low-to-moderate levels of knowledge/experience and a negative relationship at moderate-to-high levels (Brucks 1985). It is particularly appealing because it provides an explanation for the inconsistent findings in the literature; however, it has not been proven empirically, which leads to the conclusion that findings regarding the relationship between experience and the amount of information search are inconsistent (Brucks 1985). Brucks (1985) only confirmed that knowledge facilitates the learning of new information and that knowledge allows more

efficient searching (see also Johnson and Russo 1984), but she did not find the inverted-U relationship (at least in complex usage situations). This debate also occurs in the expertise literature described below.

Finally, product familiarity has been hypothesized to increase the ability to categorize products at levels above and below the basic categorization level, as well as the likelihood of analytic processing (Alba and Hutchinson 1987). In other words, more familiar consumers would be better able to get a more precise or more general representation of a product, given a generic term (e.g., a BMW car would be seen as a car by less familiar consumers, while it would be considered as a BMW by experienced consumers), thus making it more meaningful with less effort (Park and Lessig 1981).

3.1.2.2. Expertise

Alba and Hutchinson (1987) argue that product familiarity cannot capture the complexity of consumer knowledge. That is why they took a special interest in defining the dimensions of expertise, the other facet of knowledge. They define expertise as the capacity to successfully perform product-related tasks, and consider that experience (familiarity in their terms) results in the improvement of five dimensions qualitatively distinct from expertise: cognitive process, cognitive structure, analysis, elaboration, and memory. A brief description of each of these dimensions is provided below.

Cognitive process refers to the mode of allocation of cognitive efforts to the activity or tasks related to the product. Cognitive effort is evaluated by the duration and level of attention associated with the execution. Increasing experience will lead to a decrease in cognitive effort, materialized by three indicators: rapidity, precision, and automatism. Moreover, individuals who are very familiar with a type of decision will

usually need less effort to complete their choice (Nantel and Robillard 1991). As well, increased experience may increase consumer loyalty, given that switching from a familiar product to an unfamiliar one would induce a significant cost (effort) (Alba and Hutchinson 1987).

Cognitive structure refers to the mode of organization of factual knowledge about products, brands and activities. It is considered as a dimension of expertise because it determines the consumer capacity to differentiate products and brands. As well, it influences his/her aptitude to assimilate facts and accumulate information (Alba and Hutchinson 1987). For instance, the basic level of categorization of products becomes more specific as expertise increases: an expert will have a more specific representation of a product than a novice.

Analysis refers to the consumer's degree of access to the set of relevant and important information for the considered task. The level of analysis is synonymous with the level of information searched by the consumer. As Gharbi (1998) acknowledges in his review, past studies disagree about the impact of knowledge on the level of research, some authors having found a negative relationship between the two, some others a positive one, some an inverted-U-shape one, and some no relationship at all. However, Brucks (1985) tried to distinguish between different types of information search, and claimed that knowledge of a product class is positively related to the variability of search, and negatively related to the relative volume of non-appropriate research among the total volume of research. This refers particularly to information encoding (Gharbi 1998) as one of the three components (with classification, and inference) of information search that differ between experts and novices (Alba and Hutchinson 1987).

Elaboration refers to the number of facts treated and the treatment type. Elaboration can manifest itself (in an increasing level) through the three following types of treatment: interpretation, deduction, and resolution of a problem. For instance, Alba and Hutchinson (1987) argue that novice problem-solving is more influenced by external factors such as point-of-purchase than is expert problem-solving.

Finally, *memory* refers to the capacity to recognize and/or recall (without aid) information (brand names, attributes) about the product or task. It is also noted that for simple information, ad hoc categories become more like taxonomic categories as product familiarity increases, thus reducing consumer dependence on stimulus-based information (Alba and Hutchinson 1987).

Alba and Hutchinson (1987) also recommend to carefully adapt measures of the dimensions of expertise to the product or task particularities. However, as Gharbi (1998) mentions, no operational measure of expertise as defined by Alba and Hutchinson (1987) has been developed. Expertise is often measured by global scales of multiple choice questions or by a specific evaluation of some of those dimensions.

Zaichkowsky (1985b), in an experiment, examined the relationship between expertise and product usage (i.e., experience). She found that there is a weak link between those constructs when expertise is defined objectively, whereas the relationship is much stronger when expertise is subjectively measured (by the subject him/herself).

Hence, it is necessary to determine if more importance should be given to the objective reality of knowledge, or to its subjective perception. In other words, is it better to evaluate the real objective level of individual knowledge, or rather the subjective evaluation of the individual's own level of knowledge (Gharbi 1998)?

3.1.3. Objective and Subjective Evaluations of Knowledge

Brucks (1985) has empirically shown that there is a conceptual and operational distinction between objective and subjective evaluations of knowledge (see also Selnes and Gronhaug 1986). The first ones are associated with what the individual really knows, whereas the second ones refer to the degree of confidence of the individual vis-à-vis his/her own level of knowledge (his/her perception of it) and his/her own decision making abilities (Brucks 1985). Zaichkowsky (1985b) insists on the difficulties associated with this type of measure (objective knowledge) since it is often difficult to identify exactly what constitutes an expert in a product class. In turn, Nantel and Robillard (1991) affirm that subjective measures can reflect more self-confidence than product or task knowledge. However, absolute product knowledge of the product category may be less important for ease of evaluation than perceived product knowledge (McDougall 1987). Therefore, perceived knowledge of the product category is expected to be positively associated with ease of evaluation (McDougall 1987).

Moreover, self-evaluation is more determined by experience and the history of the relationship between the self and the product (Nantel and Robillard 1991), whereas objective measures of knowledge require a direct access (without association with the self) to the information in memory (Park, Mothersbaugh and Feick 1994). Thus, product-related experience is a more important determinant of self-assessed than objective knowledge (Park, Mothersbaugh and Feick 1994).

Choice between the two evaluation methods depends on the research objective (Mitchell 1981): it is preferable to use objective measures when the research aims at determining the consumer's ability to code new information and choose between different

products; on the other hand, subjective measures are preferable if the research is oriented toward the impact of motivation and self-confidence on behaviors, which is the case here.

To summarize, the measures of consumer product class knowledge used in previous studies fall into three categories (Brucks 1985): measures of objective knowledge, measures of subjective knowledge, and measures of the amount of purchasing or usage experience with the product. In the present research, it is appropriate to use measures of subjective knowledge, as we want to study consumers' perceptions. The objective is therefore to determine how subjective knowledge of a product class could influence consumer perceptions of intangibility and its consequences, rather than to know exactly the level of objective knowledge of the product class. This is also consistent with Breivik et al.'s (1998) study of intangibility, where subjective knowledge was used as a variable influencing the perceived difficulty and uncertainty of evaluation.

Nevertheless, measuring experience with the product class is also necessary, in order to have a more objective representation of individuals' level of familiarity with a product class. Zaichkowsky (1985b) also advised to separate knowledge from product use.

Thus, we propose that the degree of consumer experience and subjective knowledge of a product class will moderate the relationship between product intangibility and product evaluation (perceived evaluation difficulty and perceived risk, H7). More specifically, there will be a negative relationship between product familiarity and the perceived generality of a specific product/service (e.g., a "red BMW525"), which is expected to result in an easier product evaluation. In addition, we expect experience and

subjective knowledge of a product category to influence the product evaluation by itself (direct effect, H8 and H9). Hence, we suggest that:

H7: Experience will moderate the relationship between generality and difficulty of evaluation: the more experienced in and knowledgeable about a product class a consumer perceives himself, and the more general his perception of that product/service category is,

a) the easier the product evaluation will be perceived;

b) the less risky the product/service will be perceived.

H8: The more experienced in and knowledgeable about a product class a consumer perceives himself, the easier the product evaluation.

H9: The more experienced in and knowledgeable about a product class a consumer perceives himself, the less risky the transaction.

Moreover, as already discussed in the first section of the literature review, we expect the impact of experience alone, and of the interaction experience/generality to be greater for products than for services, since the greater variability (heterogeneity) in services reduces the effect of experience, while the generality is also expected to be greater for services (H3). Therefore we suggest the following hypothesis:

H10: The impact of experience (b)with and a)without generality) on difficulty of evaluation and perceived risk will be greater for products than for services.

3.2. Involvement

Involvement is one of the fundamental concepts in the explanation of the variation of decision processes adopted by consumers (Gharbi 1998). Also, product evaluation is strongly related to the concept of involvement (Mitchell 1979; Celsi and Olson 1988; Dulude 1998), as also put in evidence by McDougall (1987), who found that importance (term he used for involvement) of the object was the main explanatory variable (followed

by difference in quality, and experience) for ease of evaluation (the more important, the more difficult the evaluation).

In addition, involvement appears to be closely related to the construct of familiarity (Nantel and Robillard 1990; Nantel and Robillard 1991), one component of knowledge. Therefore, a review of this concept is necessary in order to determine the potential role it might play in our study as related to the type of product or service considered. In particular, it is expected that product involvement will influence the perception of difficulty and risk associated with product evaluation.

3.2.1. DEFINITIONS

More than three decades of study have brought up many definitions of involvement. For instance, Lastovicka (1979) sees it as a two-component construct, comprised of *normative importance* (referring to how connected or engaged a product class is to individual's values) and *commitment* (to a particular position on an issue). In their literature review about involvement, Nantel and Robillard (1990) agree to understand involvement as importance or personal interest, and define it as *the activation of an individual's interest toward a stimulus*. However, they reject the commitment component, as this term corresponds in marketing to the consumer preference for a brand, otherwise expressed as brand loyalty, which has never been proven to relate to product involvement. Bloch (1981) as well, adopted the perspective of *interest* in the object and its centrality to an individual's values, while Batra and Ray (1983) define product involvement as "an individual's predisposition to, for example, make a brand choice (in that product category) with care and deliberation, perhaps due to high levels of perceived risk and the like" . Zaichkowsky (1985a, p. 342) insisted on the "*personal relevance* of

the object based on inherent needs, values and interests" , which relates to the notion of importance. Nevertheless, other authors such as Laurent and Kapferer (1985) argue that this concept cannot be defined a priori and unidimensionally but should rather be assessed as a function of several dimensions. All those examples show the lack of consensus among researchers about the exact definition of the involvement construct. Consequently, various approaches have developed with regards to the conceptualization of involvement. A brief review of each of them is necessary in order to situate the perspective more appropriate to this study.

3.2.2. The Various Perspectives of Involvement

There are three main approaches to involvement depending on whether it is a variable centered on the stimulus, on the subject or on the response (Finn, 1983). As well, Nantel and Robillard's (1990) review revealed three categories of involvement: continuous involvement related to the product, involvement with a situation, and reactive involvement. Gharbi (1998) presented these three approaches as the cognitive approach or continuous involvement related to the product, the approach based on the state of the individual or motivation (situational approach), and the approach based on the response.

3.2.2.1. The Cognitive Approach: Continuous Involvement With A Product

In the cognitive approach, involvement is described as the linkage of attachment or personal relevance between an individual and an object or activity. For instance, Lastovicka (1979) stated that "A low involvement product class is one in which most consumers perceive little linkage to their important values and is a product class where there is little consumer commitment to the brand".

Involvement is then conceived as a latent durable and continuous link (Gharbi 1998), thus integrating notions of experience (Nantel and Robillard 1990). Involvement reflects the relationship between 1) the values, objectives and needs of an individual, and 2) the consequences and attributes of the object or activity. Involvement represents the connection between the conception of the self and the knowledge of the object or activity. Thus, since involvement is only the reflection of a link between two categories of knowledge, it is considered as a trait of the individual's cognitive structure (Gharbi 1998). Among the authors sharing this point of view we find Lastovicka (1979), Bloch (1981), and Zaichkowsky (1985a).

3.2.2.2. The Motivational Approach

By contrast to the cognitive approach that defines involvement as an inherent trait to the cognitive structure, this approach conceives involvement as referring to a state of motivation of the individual evoked by one or more stimuli (Rothschild 1984; Gharbi 1998). Involvement is then synonymous with importance, interest, attachment, motivation, stimulation and/or activation manifested toward an object, and is conceived as a reactive state with a potential for mediation and influence on behavior (Gharbi 1998). Nantel and Robilard (1990) note that several researchers admit the difficulty to consider involvement without the situation, as it is possible that the same product be considered as low-involving in a specific situation, while high-involving in another one (e.g., gift-giving).

Gharbi (1998) mentions three groups of concurrent definitions in this approach: the first ones are centered on the stimulus (where involvement is seen as a latent trait of the situation with which individuals interact objectively and without any perceptual bias),

the second ones on involvement as a temporary state (where stimuli are subjectively perceived and interpreted by individuals), and the third ones are based on the permanent state of involvement (as a descriptor of the relationship between an individual, an object and a situation).

3.2.2.3. The Response Approach

This approach defines involvement as a characteristic of mental or behavioral responses of an individual under the effect of one or more stimuli (Gharbi 1998). The intensity of involvement is determined as a function of the response mode adopted by the individual. Contrary to the first two approaches which conceive involvement as a mediating variable influencing the response, this approach defines it as a trait characterizing the response. However, Nantel and Robillard (1990) see it as a combination of the first two approaches

Again, Gharbi (1998) distinguishes between two groups of definitions in this approach. The first one associates involvement with the temporal sequence of the response (involvement being an indicator of the order of treatment or cognitive or behavioral development of stimuli, referring to the sequence of cognitive affective and conative operations).

The second one defines it as a descriptor of the breadth of the response (intensity of the cognitive treatment and/or breadth of the behavioral process in which the individual engages as a reaction to one or more stimuli). Thus, a strong involvement is manifested when the consumer has a knowledge and/or attitude structure well developed before the decision, when s/he actively searches for information, uses complex decision rules and manifests intense affective reactions when faced with the results of product use. Among others, Batra and Ray (1983) have taken this last perspective.

Given that we want to determine in general the influence of product involvement in product evaluation, our interest is oriented toward continuous rather than situational involvement. Indeed, we are interested in measuring continuous product involvement as a general product characteristic in the consumer's mind that could influence consumer perceptions in terms of difficulty of evaluation and risk. Moreover, according to Nantel and Robillard's (1990) classification, involvement centered on the product (which will be at the same level for every individual for the same product) is to be differentiated from continuous involvement centered on the individual with respect to one product. We will consider the last perspective, since we are interested in the potential differences in consumers perceptions.

3.2.3. The Dimensions of Involvement

A major problem encountered in the operationalization of involvement as a hypothetical construct is that this variable is very difficult to measure directly, thus making easier the measurement of its determinants or consequences (Nantel and Robillard 1990), and increasing the probability of confusion between antecedents and true components of involvement. However, some authors still consider involvement as a unidimensional construct (Gharbi 1998 opting for Zaichowsky's 1985a & 1985b point of view), although it is more and more recognized as a multidimensional construct (Laurent and Kapferer 1985; Nantel and Robillard 1990). The main rationale for using a multidimensional operationalization is that the many forms of involvement (see 3.2.2. above) make it impossible to be measured by only one antecedent (Nantel and Robillard 1990).

Many authors have come up with a multidimensional operationalization of involvement (Lastovicka and Gardner 1979; Bloch 1981; Laurent and Kapferer 1985; McQuarrie and Munson 1986, 1991; Higie and Feick 1988; Jain and Srinivasan 1990), as listed by Bearden, Netemeyer and Mobley (1993).

The specific dimensions of involvement used by these authors are summarized in Table 1:

TABLE 1 - A REVIEW OF THE COMPONENTS USED IN THE MULTIDIMENSIONAL MEASUREMENT OF INVOLVEMENT

Authors	Components of Involvement used
Lastovicka and Gardner (1979)	- familiarity - commitment - normative importance
Bloch, 1981	- enjoyment - readiness to talk to others about it - interest - self-expression - attachment
Laurent and Kapferer, 1985	- importance/risk of the product class - probability of a mispurchase - symbolic/sign facet - hedonic value - interest
McQuarrie and Munson, 1986	- importance - pleasure/hedonic value - risk
McQuarrie and Munson, 1991	- importance - interest
Higie and Feick, 1988	- hedonic value - self-expression
Jain and Srinivasan, 1990	- importance/risk - probability of a mispurchase - symbolic/sign facet - hedonic value - interest/relevance

Source: Bearden, William O., Richard G. Netemeyer and Mary F. Mobley (1993), *Handbook of Marketing Scales, Multi-Item Measures for Marketing and Consumer Behavior Research*, SAGE Publications.

Although several of the proposed measurements could be used in this study, one is of special interest since it has been used by McDougall (1987) in his research on product-related differences (among which intangibility) influencing ease of evaluation.

McDougall (1987) used Laurent and Kapferer's (1985) scale to measure importance of products and services to consumers. Moreover, the dimensions used by Laurent and Kapferer (1985) have also been used more recently by Jain and Srinivasan (1990), and appear to be the most complete measurement of the involvement construct. The measurement of involvement will be further discussed in the methodology.

For now, we can propose, from this conceptual review and consistently with McDougall's (1987) findings (that besides intangibility, product involvement plays a significant role in product evaluation), that product involvement will moderate the relationship between product intangibility and its consequences (perceived difficulty of evaluation and risk, H11), and also have a direct effect on these consequences. Thus, we propose that:

H11: *The more involving a product is to a consumer and the more general it is perceived,*

a) the more difficult it will be to evaluate;

b) the riskier it will be perceived.

H12: *The more involving a product class is to a consumer, the more difficult it will be to evaluate.*

H13: *The more involving a product class is to a consumer, the riskier it will be perceived.*

In addition, we expect the impact of involvement (with and without) generality to be greater in the case of services, since services are expected to be more involving and more general. Thus we propose the following last hypothesis:

H14: *The impact of involvement (b) with and a) without generality) on difficulty of evaluation and perceived risk will be greater for services than for products.*

3.3. Conclusion

To summarize the discussion on the two individual variables examined in this section, we expect experience with and subjective knowledge of a product class to have a negative influence on difficulty of evaluation and perceived risk, whereas we expect product involvement to positively influence difficulty and risk. Those relationships imply that experience and subjective knowledge as well as involvement are independent variables. In addition, as previously mentioned in the hypotheses, we also expect those variables to play a role as moderators of the relationships between intangibility and difficulty, and intangibility and risk, through an interaction with the generality dimension.

4. CONCLUSION: SUMMARY OF HYPOTHESES AND MODEL

1. The Dimensions of Intangibility

H1: *The degree of product intangibility will be a function of its perceived inaccessibility to the senses.*

H2: *The degree of product intangibility will be a function of its perceived generality.*

H3: *The generality will be higher in services than in products.*

2. The Consequences of Intangibility

H4: *The more inaccessible to the senses a product or service is, the easier its evaluation will be.*

H5: *The more general a product or service is, the more difficult its evaluation will be.*

H6: *The more general a product or service is, the riskier the transaction will be.*

3. The Role of Experience

H7: *Experience will moderate the relationship between generality and difficulty of evaluation: the more experienced in and knowledgeable about a product class a consumer perceives himself, and the more general his perception of that product/service category is,*

a) the easier the product evaluation will be perceived;

b) the less risky the product/service will be perceived.

H8: *The more experienced in and knowledgeable about a product class a consumer perceives himself, the easier the product evaluation.*

H9: *The more experienced in and knowledgeable about a product class a consumer perceives himself, the less risky the transaction.*

H10: *The impact of experience (b) with and a)without generality) on difficulty of evaluation and perceived risk will be greater for products than for services.*

4. The Role of Involvement

H11: *The more involving a product is to a consumer and the more general it is perceived,*
a) the more difficult it will be to evaluate;
b) the riskier it will be perceived.

H12: *The more involving a product class is to a consumer, the more difficult it will be to evaluate.*

H13: *The more involving a product class is to a consumer, the riskier it will be perceived.*

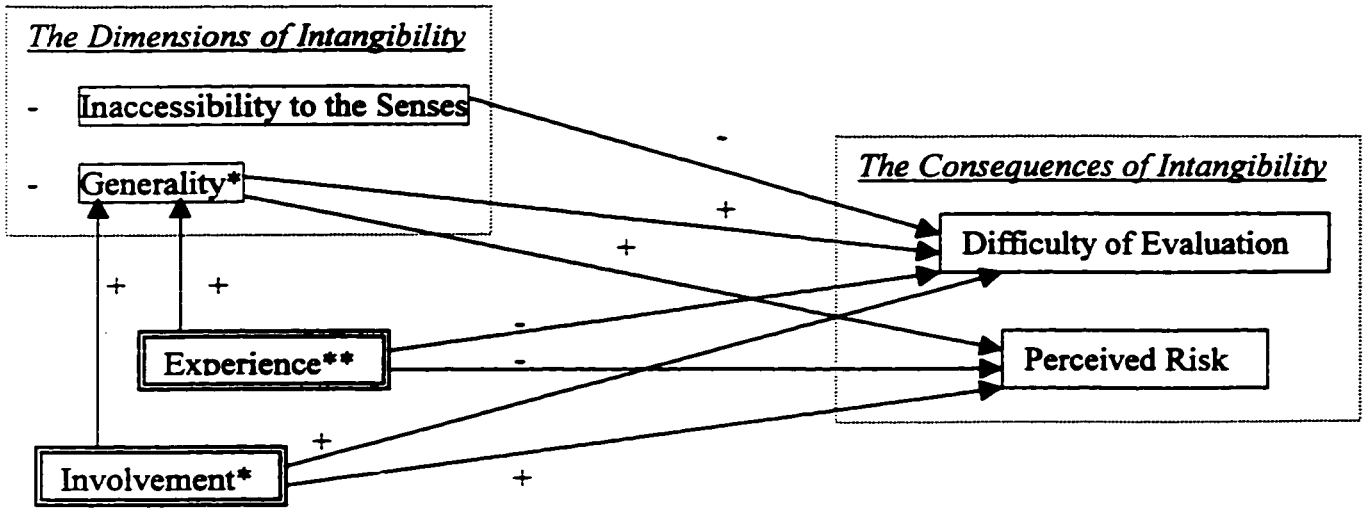
H14: *The impact of involvement (b)with and a)without generality) on difficulty of evaluation and perceived risk will be greater for services than for products.*

5. The Model

Furthermore, as a conclusion to this chapter, we propose the following model on Figure 2.

Figure 2 - A Model Of Intangibility:

Its Dimensions And Consequences On Product And Service Evaluation



* > impact for services
** > impact for products

Moderators

CHAPTER 2 - METHODOLOGY

1. RESEARCH DESIGN

This study is exploratory in several ways. First, it draws on past research (Dubé-Rioux, Regan and Schmitt 1990; Breivik, Troye and Olsson 1998) in which two dimensions were tentatively identified as forming the intangibility construct but without any satisfactory operationalization. Thus, multi-item scales were developed in order to capture the full meaning of those two dimensions and determine their relative importance in the construct of intangibility.

Second, this study tries to apply the concept of intangibility to products, which has traditionally been associated with services. Hence, four products and four services with varying degrees of expected (in)tangibility were used as stimuli or objects of the questions asked in a survey questionnaire.

Third, we will try to determine to what extent some characteristics of product or service evaluation (i.e., difficulty of evaluation and perceived risk) are caused by product/service intangibility. An attempt to address this issue was done recently (Breivik, Troye and Olsson 1998) but major flaws in the data collection method were observed, leading to unreliable results.

Thus, this study is partially descriptive (product and service characteristics of intangibility) and partially causal, through the study of the intended consequences of intangibility. It is a cross-sectional study since we look at consumer perceptions at one point in time without considering the potential evolution of those perceptions over time.

2. PRODUCTS CHOSEN

It is essential to note that we have used the term product class/product type in our conceptual discussion (especially in the third section) instead of the simple term "product" . This distinction is important in our study as we look at product categories in an attempt to differentiate them in terms of intangibility. However, consequences in terms of the perceived generality are expected to differ greatly from the ones we would obtain by using specific products (i.e., a "red BMW525" is obviously more specific than a "car"). However, having decided that no (either fictious or real) brands would be used in order to avoid judgements according to attitudes toward any specific brand, it was not possible to identify too much the products considered. Thus, the same distinction is to be made when discussing the influence of experience, subjective knowledge and involvement about a product class/type. Therefore, the single word "product" will be used extensively in the following sections, meaning product and/or service in terms of a general category.

In the process of selecting products and services for this study, one major criterion was to get enough variability in terms of intangibility. Also, those products and services had to suit well the student population from which the sample was selected, i.e., the products and services had to be known to them and be as relevant as possible in order to get enough significant levels of involvement and experience so that these two variables would be measurable. Therefore, the following list of four products and four services was retained according to the researcher's own judgement (see Table 2 below).

TABLE 2 - LIST OF PRODUCTS AND SERVICES CHOSEN TO TEST THE MODEL

Products	Services
Jeans	Haircut
Web browser	Charter flight for vacation
Home computer	Chequing account
Pop music	Pizzeria dinner

These choices were made in order to get two a priori relatively tangible (jeans and computer) and two relatively intangible (Web browser and pop music) products, as well as two relatively tangible (haircut and pizzeria dinner) and two more intangible (charter flight and chequing account) services.

3. SAMPLING PROCEDURE

Given that probability sampling was not feasible in this study due to financial and time constraints, a convenience sample was used instead.

The population considered in this study consisted of university students in the Montreal area. Since we are studying consumer perceptions, students – as a category of consumers – suit well the purpose of the study by being familiar with and/or concerned by the type of products studied, thus being able to evaluate them.

In addition, this population is easily and more rapidly accessible and offers the potential advantage of being adapted to future research in the same domain (either for research with a specific context of purchase such as electronic commerce, or for longitudinal studies).

Finally, this population is relatively homogenous despite variability in the domain of studies. Indeed, we are dealing with higher levels of education (undergraduates and graduates) and a relatively limited age range.

A total of 540 questionnaires were distributed: about 228 in 9 classes (undergraduate and graduate Commerce courses), and 312 in public areas of the University campus such as the Library and student lounges. This method allowed an immediate self-administration by the respondents and collection by the researcher.

With a response rate of almost 95 %, the sample comprised 472 usable questionnaires. A gross total of 512 questionnaires were received but 40 of them were either not properly answered or incomplete. This sample size was considered appropriate for this research to give it a respectable measure of validity and reliability.

4. SURVEY INSTRUMENT

A structured non-disguised questionnaire was designed to gather the data required for this research. The questionnaire was written in English only given that it is the language used at the university where the data were collected (it was assumed that all students were able to communicate in that language, although they were free to refuse to answer it).

Two different questionnaires were developed, each asking exactly the same types of questions but for two different sets of two products and two services (i.e., two products and two services numbered 1, 2, 3, 4 for questionnaire #1, and two products and two services numbered 5, 6, 7, and 8 for questionnaire #2). This was done to reduce the length of the questionnaire since asking the same questions eight times would inevitably have resulted in boredom or tiredness from respondents, providing thus potentially biased or even non usable questionnaires. In addition, rotations of the products and services were made for each questionnaire (i.e., Q#1a with products and services 1, 2, 3, 4; then Q#1b with 4, 3, 2, 1; Q#2a with products and services 5, 6, 7, 8; and finally Q#2b with 8, 7, 6,

5) resulting in four different versions of the questionnaire. This was done in order to reduce potential biases from variations between answers for the first and last product/service due to lassitude.

Prior to printing the questionnaire, a pretest was done with five students, and several changes were made in order to make some questions easier to understand. See a sample of the two questionnaires in **Appendices 1 & 2**. All four versions of the questionnaire contained 10 pages in total (including instructions and demographic questions). A cover letter was also included. Only one condition applied to this questionnaire: respondents had to be students.

Each questionnaire was divided into five parts: part A dealt with consumer perceptions of one particular type of product or service in terms of its relative intangibility, difficulty of evaluation, riskiness, involvement, and consumer experience in that product or service category; parts B, C and D dealt with the same concepts applied to another product or service each time (two products and two services per questionnaire). Part E consisted of questions about demographic characteristics of the respondent.

5. MEASUREMENT OF THE CONCEPTS

All the questions and statements involving scales in the questionnaire were used on nine-point rather than seven-point scales to allow more variability and subtle nuances in the answers provided by respondents. Moreover, some of the items used here were originally developed on nine-point scales by their authors, such as the one measuring global risk and five others measuring experience and subjective knowledge.

5.1. Inaccessibility to the Senses

The first of the two dimensions expected to form the intangibility construct, "inaccessibility to the senses" has never been the object of a clear and unique operationalization. Rather, this dimension has generally been confused with the whole intangibility construct (e.g., McDougall & Snetsinger 1990). Therefore, it was necessary to develop several items to be able to fully measure this dimension. Drawing upon the literature about the physical aspect of (in)tangibility, two existing items were used (from Dubé-Rioux et al. 1990, and McDougall & Snetsinger 1990), and two others were created by the researcher in accordance with the characterization of this dimension as depicted in the literature.

One of the two existing scales was semantic differential (seven-point), with 1 = very abstract and 7 = very concrete. The authors (Dubé-Rioux et al. 1990) asked subjects to rate 12 services along this scale. As no statement was provided, the following statement was developed for the present study: "I feel that this product(service) is:" , where 9 = very concrete.

The other existing scale was a seven-point Likert-type scale, used by McDougall & Snetsinger (1990) in their third field study about tangibility, where they used the following statement: "This item is very easy to see and touch" . This item was thought to suit well the present study, particularly the attempt to measure the physical aspect of intangibility.

The two other items that were developed are as follows:

- "I feel that this product (service) is:" (semantic differential scale),
  1 = very accessible to my senses; 9 = not accessible to my senses at all.
- "I can physically grasp this product (service):" (Likert scale),
  1 = strongly disagree; 9 = strongly agree.

These two additional items were considered as not very understandable, as it appeared quite clearly in the pre-tests, but respondents generally guessed what it meant after answering some other questions. Therefore, those two items were kept in the final version of the questionnaire but put in a different order (later on, in the middle of the questionnaire).

5.2. Generality

As for the first dimension of intangibility (inaccessibility to the senses), two items were used from past research (from Dubé-Rioux et al. 1990 and McDougall & Snetsinger 1990), while two more were created by the researcher in order to capture as fully as possible the mental aspect of intangibility.

Again, one of the two existing scales was semantic differential (seven-point), with 1 = very generic and 7 = very specific. The authors (Dubé-Rioux et al. 1990) asked subjects to rate 12 services along this scale. As no statement was provided, the following statement was developed for the present study: "I feel that this product(service) is:", where 9 = very specific. In the present study, however, the term "generic", which appeared to be too difficult to understand by respondents, was replaced by "general", as the meaning is extremely close, and might be even more exact in measuring the generality dimension.

The other existing scale was another seven-point Likert-type scale, used by McDougall & Snetsinger (1990) in their first field study about tangibility, where they used (among others) the following statement: "This item evokes different images". This item was thought to suit well the present study, particularly the attempt to measure the mental aspect of intangibility.

Two more items were developed as follows:

- "I need more information about this product (service) in order to make myself a clear idea of what it is:" (Likert scale),
1 = strongly disagree; 9 = strongly agree.
- "I can mentally grasp this product (service):" (Likert scale),
1 = strongly disagree; 9 = strongly agree.

This last item, however, was too difficult to apprehend by respondents, and thus was removed after the pre-test, resulting in three items measuring "generality" .

5.3. Intangibility

As a tangibility scale (seven-point, Likert-type) had been developed by McDougall & Snetsinger (1990) which had been tested on products and services, it was interesting to use it in order to verify to which extent answers to the questions about the two intangibility dimensions and answers to overall intangibility would be consistent, thus allowing us to determine whether the two dimensions indeed captured the intangibility construct, or if rather an intangibility scale such as the one created by McDougall & Snetsinger (1990) would be sufficient to capture the full meaning of intangibility. Moreover, the authors reported correct reliability scores (superior to .71 in all cases).

The scale is comprised of the following five items:

1. I have a very clear picture of this item.
2. The image comes to my mind right away.
3. This is not the sort of item that is easy to picture.
4. This item is very tangible.
5. This is a difficult item to think about.

5.4. Difficulty of Evaluation

In his study of the "Determinants of Ease of Evaluation..." , McDougall (1987) used three items to measure ease of evaluation, but his scale appeared to be unsatisfactory, as it

included two measures of the effort (time and quantity of information) necessary to make a decision, a different concept that has been measured separately by Breivik et al. (1998).

Breivik et al. (1998) developed their own scale on "perceived evaluation difficulty", building on Laurent and Kapferer's (1985) involvement profile for two of their items. This scale demonstrated good composite reliability (.82). Therefore, it was used in the present study. Nevertheless, it was adapted in several ways. First, the statements were reinforced in order to make the answers of the respondents clearer about their relative difficulty of evaluation. Then, concerning the services, emphasis was put on the service itself in the context of a service provider instead of measuring the difficulty of evaluating the service provider only, as was done in Breivik et al.'s (1998) study, according to the example they give of their statements. As the present study used the same service, a haircut at a hairdresser/barber, the original and adapted versions are presented below for comparison:

TABLE 3 – ORIGINAL AND MODIFIED SCALE FOR DIFFICULTY OF EVALUATION

Breivik et al. (1998)	Present study
1. It is easy for me to choose hairdresser for a haircut	1. It is very easy for me to choose a haircut at a hairdresser/barber
2. It is not difficult to find the hairdresser that is best for me	2. It is not very difficult to find the haircut at the hairdresser/barber that is best for me
3. It is difficult to discriminate between different hairdressers when cutting my hair	3. It is very difficult to discriminate between different haircuts when I need one
4. I feel a bit confused when choosing hairdresser	4. I feel very confused when choosing a haircut at a hairdresser/barber
5. Choosing hairdresser is not complicated	5. Choosing a haircut at a hairdresser barber is not very complicated

5.5. Risk

As Dowling (1986) showed in his review of the literature about perceived risk and its measurements, there are several possible measures of the concept of perceived risk. However, after having reviewed the main operationalizations of this concept in our literature review, it appeared that not all of them suited the purpose and conditions of the present study.

For instance, Cunningham (1967) used two four-point scales to measure uncertainty and danger (Mitchell and Greatorex 1993, p. 190), but this does not appear to be a very good measure of risk, as it confuses it with uncertainty, a different concept (although closely related to risk), and danger, which is an extrapolated form of perceived risk that does not apply in many cases of everyday life (excessive term).

The other main group of measures considered the various types of risk (functional/performance, social, physical, psychological, time, financial), but this would result in unnecessary complexity, since we just wanted to determine if the perceived intangibility results in some perceived risk, without seeking to determine the exact type of risk involved (what is often intuitive: e.g., a pair of jeans involved more social and psychological risks, if any, whereas a charter flight might rather involve some financial, physical and time risks). Thus, a global measure of risk appeared to be sufficient in the present study.

Therefore, a Likert scale developed by Stone and Gronhaug (1993) and used in other studies measuring risk as well (e.g., Gharbi 1998) was used in this study, consisting of the three following statements:

1. Generally, I think that I will get some damage if I buy ____ in the next 12 months.
2. Globally, I think I will make a mistake if I make this purchase.
3. After all, I really have the feeling that this purchase will cause me trouble.

Modifications were done, however, to adapt the statements to the various products and services involved in this study. In addition, the statements were also reinforced and "I am sure" was used instead of "I think" in the two first statements. In the first item, "I will get some damage" was also replaced by "I will incur some risk" in order to make the statement clearer and more adapted to the various products and services. See the whole questionnaire in **Appendices 1 & 2.** for the exact wording for each product and service.

Finally, to put emphasis on the fact that this measure of risk was global, a fourth item was used from Jacoby and Kaplan's (1972) original nine-point semantic differential scale: "On the whole, considering all sorts of factors combined, about how risky would you say it is to buy a _____?" (1 = not risky at all; 9 = extremely risky).

5.6. Experience and Subjective Knowledge

As we argued in the literature review, it is suitable here to concentrate on measuring only two aspects of knowledge, i.e., practical experience and subjective knowledge. Familiarity is therefore considered as a complementary information about subjective knowledge and as such it was included in a measure of subjective knowledge, while experience was measured by items relating to actions already performed by the subject in his/her relation to a particular product/service.

Also, as previously discussed, many authors claim to measure some form of experience but are in fact measuring related but different constructs (e.g., familiarity, subjective knowledge, expertise). Therefore, it was not very easy to find good measures of both constructs.

Park, Mothersbaugh and Feick (1994) developed an interesting scale in that they differentiated both constructs and provided three items for each of them. Their measure of subjective knowledge was especially interesting since it asked the subject to evaluate his/her own knowledge of a product/service not only in absolute terms ("In general, my knowledge of ____ is:"), but also in comparison to another group of people (friends and acquaintances, and experts).

In addition, as many so-called measures of experience, which were in fact measures of subjective knowledge or familiarity, existed it was not difficult to complete this scale with items measuring subjectively the familiarity with an object. Hence, two complementary items developed by Oliver and Bearden (1983) were used. The third of their items overlap with Park, Mothersbaugh and Feick's (1994) scale, so it was discarded.

Despite the suitability of Park, Mothersbaugh and Feick's (1994) experience scale compared to the others, adaptations still had to be made for the purpose of the study, especially in the experience scale for which the third item ("Do you currently own a ___?") had to be removed because it was not suitable to services, while the second item ("I use ____: Never/Very often") had to be worded differently according to the product or service considered (See the questionnaire in **Appendices 1 & 2**). This left only two items measuring experience. Therefore, a third item (on a Likert scale) was used from

McDougall (1987), who himself took it from Biehal (1983): "I don't have much experience making this kind of decision".

5.7. Involvement

A multidimensional measure of involvement was initially selected (Laurent and Kapferer, 1985) that took into account various elements of involvement, among which the risk (representing two of the five dimensions of involvement in Laurent and Kapferer's 1985 involvement profile). However, given that we needed to measure the concept of perceived risk separately (as a dependent variable), it appeared to be a better choice to opt for a unidimensional measure, thus eliminating all possible confusion between the various concept measurements. Moreover, Laurent and Kapferer's (1985) measure of involvement has been criticized as confusing antecedents and consequences of involvement with the construct itself (Mittal 1989).

Hence, we chose one of the most largely used scales of involvement: Zaichkowsky's (1985a) PII. However, as it originally comprised 20 items (on a seven-point semantic differential scale), a reduced version had to be developed (since none of the reduced versions previously developed suited the present study) for feasibility reasons. The reduction was done using Mittal's (1989) argument against the inclusion of a hedonic factor and an attitude-like construct. Thus, 11 items were selected from the original scale according to the researcher's own judgement and considering the types of products and services to be used in the survey.

Below are the 11 selected items, used on a nine-point semantic differential scale for the purpose of the present study.

TABLE 4 – MODIFIED SCALE FOR THE INVOLVEMENT CONSTRUCT

You perceive this product (service) as:
1. important – unimportant
2. of no concern – of concern to me
3. means a lot to me – means nothing to me
4. useless – useful
5. valuable – worthless
6. matters to me – doesn't matter
7. significant – insignificant
8. vital – superfluous
9. boring – interesting
10. essential – nonessential
11. undesirable – desirable

CHAPTER 3 - ANALYSES AND RESULTS

INTRODUCTION

In this chapter, we will first comment on the descriptive demographic statistics for the sample of 472 students surveyed (frequencies, proportions and crosstabulations). Then, we will present the reliability coefficients for each variable studied, as well as the factor analyses conducted. Third, results of the multiple linear regressions run to test the model and hypotheses will be presented.

Then, we will present results from the one-way ANOVAs conducted for each of the eight (8) products and services studied, followed by a discriminant analysis to show a more detailed picture of differences among products and services in terms of their relative (in)tangibility. More multiple regressions will be run where needed in order to see potential variations in the model depending on the products or services considered.

Finally, we will present the t-tests run for gender differences among products and services' ratings for each variable in the model, and the multiple regressions conducted for men and women separately in order to see if gender affects the model.

Note: It is important for a full understanding of the results to remember that all means are based on 9-point scale ratings (where 1 = lowest, 9 = highest, with scales recoded where necessary).

1. DEMOGRAPHIC STATISTICS

The descriptive statistics defining the sample were examined in order to:

1) determine whether some demographic variables are dependent on each other and therefore would introduce biases in the sample;

2) characterize the demographic profile of the sample for this study and verify whether it is representative of the university population;

3) be able to take into account in further analysis any significant demographic variation that could impact on the results of the study.

1.1. General Comments

Globally, there were few missing values among the demographics, and most of them concerned less important variables (see Table 5 below). Thus, they did not significantly affect the study.

TABLE 5 - MISSING VALUES IN DEMOGRAPHIC VARIABLES

Statistics

		AGE	GENDER	LEVEL	STATUS	AREA
N	Valid	471	451	468	414	468
	Missing	1	21	4	58	4

Chi-square coefficients were calculated for all combinations of the five demographic variables (age, gender, level of studies, status, and area of studies). Results led to the conclusion that several variables were dependent on each other (at .05 level of significance): 1) *gender* and *area of study*; 2) *age* and *level of study*; 3) *age* and *status*. Each of these cases will be discussed separately.

Table 6 below summarizes the sample demographic characteristics across genders, as it is believed to be the most significant way to characterize our sample.

TABLE 6 - CROSSTAB RESULTS OF DEMOGRAPHIC CHARACTERISTICS OF THE SAMPLE

Variable	Range	Male (%)	Female (%)	Missing Values (%)	Total (%)	Pearson (sig.)
Sample Size	*N* %	*183* 38.8	*268* 56.8	*21* 4.4	*472* 100	
Age	Under 21 21-25 26-30 31+	14.8 44.8 24.0 16.4	18.4 47.9 19.9 13.9	.2	16.9 46.7 21.6 14.9	.491
Level of Studies	Undergraduate Graduate	72.5 27.5	79.6 20.4	.8	76.7 23.3	.081
Status	Full time Part time	75.6 24.4	79.8 20.2	12.3	78.1 21.9	.312
Area of Study	Arts & Science Commerce & Admin. Engin. & Comp. Sc. Fine Arts Other	19.1 58.5 16.9 2.2 3.3	31.8 53.0 5.3 4.9 4.9	.8	26.6 55.3 10.1 3.8 4.3	.000

1.2. Gender

There are significantly more women (59.4 %[1]) than men (40.6 %[1]) in the sample of respondents, although 21 people did not mention their gender (4.4 %).

In terms of area of study, there is a dependence with gender, as already mentioned. This results in a greater proportion of men in Commerce and Administration[2] among the respondents, as well as in Engineering and Computer Science. In turn, there are considerably fewer men than women in Arts and Science.

[1] In valid percentages.

[2] See also the section about age for further explanation of this result.

1.3. Age

Only one person among the 472 in the sample did not mention his/her age. The most represented age ranges are the second one, between 21 and 25 years old (46.7 %), and the third one, between 26 and 30 years old (22.1 %), as summarized in Table 6. The proportions of younger and older students (extreme age ranges) are relatively balanced in our sample.

If we look at the distribution of ages between gender on Table 6, the pattern is about the same, but the proportion of younger women (less than 26) is greater (66.3 % against 59.6 % of men), while there are more men in the older ranges (40.4 % against 33.8 % of women). Globally, age and gender are independent of each other, though.

Concerning the level of studies, it is important to note again that it is dependent on age. However, the age distribution is quite logical and seems to reflect the reality: 75.2 % of the undergraduate students surveyed are 25 or younger, while only 9.3 % are over 30; in turn, there is no graduate under 21, ¾ of them being aged over 25.

TABLE 7 - CROSSTABULATION OF AGE BY LEVEL OF STUDY

Crosstab

			AGE				
			1	2	3	4	Total
LEVEL	0	Count	76	191	55	33	355
		% within LEVE	21.4%	53.8%	15.5%	9.3%	100.0%
	1	Count		28	49	35	112
		% within LEVE		25.0%	43.8%	31.3%	100.0%
Total		Count	76	219	104	68	467
		% within LEVE	16.3%	46.9%	22.3%	14.6%	100.0%

Age: 1 = less than 21 years old
2 = between 21 and 25
3 = between 26 and 30
4 = 31 years old and more

Level: 0 = undergraduate
1 = graduate

In the same vein, the proportion of respondents studying on a full-time basis is very large among younger students, and decreases as students get older, while the proportion of part-timers increases with age, which reflects the dependence found between the two variables.

TABLE 8 - CROSSTABULATION OF AGE BY STATUS

AGE * STATUS Crosstabulation

			STATUS		
			0	1	Total
AGE	1	Count	60	9	69
		% within AGE	87.0%	13.0%	100.0%
	2	Count	163	34	197
		% within AGE	82.7%	17.3%	100.0%
	3	Count	66	20	86
		% within AGE	76.7%	23.3%	100.0%
	4	Count	31	30	61
		% within AGE	50.8%	49.2%	100.0%
Total		Count	320	93	413
		% within AGE	77.5%	22.5%	100.0%

Status: 0 = Full-time 1 = Part-time

Finally, the age pattern is the same for each area of study: the most represented category is always students between 21 and 25 years old, and the proportions decrease as students get older, thus showing the independence between these two variables.

1.4. Level of Studies

Globally, the sample of respondents is comprised of 356 undergraduate students (76.1 %) and 112 graduates (23.9 %).

Quite logically, the proportion of part-time students is higher among graduate students (28 % versus 21 % for undergraduates) who, as they get older, need to work to support themselves and/or finance their studies. However, no significant dependence was found between status and level of study.

TABLE 9 – CROSSTABULATION OF LEVEL OF STUDY BY STATUS

LEVEL * STATUS Crosstabulation

			STATUS		
			0	1	Total
LEVEL	0	Count	252	67	319
		% within LEVEL	79.0%	21.0%	100.0%
	1	Count	67	26	93
		% within LEVEL	72.0%	28.0%	100.0%
Total		Count	319	93	412
		% within LEVEL	77.4%	22.6%	100.0%

Level: 0 = undergraduate
1 = graduate

Status: 0 = full-time
1 = part-time

Concerning the respondents' profile in terms of area of study, the most typical case (42.2 %) is by far an undergraduate student in Commerce and Administration. This is simply explained by the fact that all the classes where the questionnaire was distributed were in Commerce, and that most of the respondents in general were undergraduate students. The second more represented profile is undergraduates in Arts and Science (20.9 %), followed by Commerce graduates (14 %). The fourth category is made of undergraduate students in Engineering and Computer Science (7.3 %), etc. Overall, however, the level and area of study are completely independent of each other.

Finally, it is interesting to note that although there were always more undergraduate respondents in each category, the repartition of undergraduates and graduates among faculties is proportionally the same.

1.5. Student Status

The proportions of full-time (77.3 %) and part-time (22.7 %) students are almost exactly the same as the proportions of undergraduates and graduates for reasons already explained, although some part-time students are actually undergraduates.

In the same vein, the students' profiles are quite similarly represented as for the level and area of study: 45 % are full-time Commerce students, 18.9 % are full-time Arts

time Engineering or Computer Science students, and 7.3 % are part-timers in Arts and Science.

1.6. Area of Study

As already mentioned, the most represented domain of studies in the sample is Commerce and Administration (55.5 %). Then comes the Faculty of Arts and Science (26.1 %), before the Faculty of Engineering and Computer Science (9.7 %), and then the Fine Arts (3.8 %), the category "other" representing 4.0 %.

Although this distribution may over-represent the Faculty of Commerce and Administration, all faculties are nevertheless represented, and in a quite realistic order.

2. FACTOR ANALYSES AND RELIABILITY COEFFICIENTS

It is important to note that in order to be able to run all the analyses, it was first necessary to change the sample units from respondents to products (since subjects answered for several products). Thus, instead of 472 units (number of valid questionnaires), we now had between 222 and 247 responses for each product/service, for a total of 1877 to 1888 units, depending on the number of valid responses for each variable in the model.

Prior to starting the analysis, a series of factor analyses were run on some of the variables. Factor analyses are generally conducted in order to condense the information contained in the original variables into a smaller set of new composite dimensions or factors attempting to define fundamental constructs that are assumed to underlie the original variables. This analysis enables also to improve the reliability of the emerging factors. These factors are then used as indices measuring the different constructs described in the model.

The factor analyses were conducted using the principal component method to extract the factors and an oblimin rotation to enable a better interpretation of the factors. Some items were recoded when necessary. Then, Cronbach alpha coefficients were calculated to assess the reliability of the emerging factors. Table 10 below summarizes the Cronbach's Alphas for each construct, giving the corresponding items used as measures of the construct (for a full wording of the items, see the complete questionnaires in **Appendices 1 & 2**).

In the present study, these analyses revealed that most of our variables had good measures that formed a unique construct. For instance, all the items used for the *involvement* construct loaded as one factor, explaining 65 % of variance. This reduced form of Zaichkowsky's (1985a) PII scale showed a very good reliability (.94).

As well, the global measure of *risk* composed from Stone and Gronhaug's (1993) and Jacoby and Kaplan's (1972) scales loaded as a unique factor explaining again 65 % of variance in the model. The reliability of this measure was also quite high (.81). Breivik et al.'s (1998) measure of the *difficulty of evaluation* formed a unique factor too, even though the percentage of the variance explained was only 53 %, and reached an acceptable Cronbach's alpha of .77.

As for the *subjective knowledge* and *experience* measures, the factor analysis revealed that they formed the same construct (that we will simply call *experience* from now on), explaining together almost 59 % of variance in the model, with a good reliability of .89.

TABLE 10 - RELIABILITY RESULTS OF CONSTRUCTS

Construct	Items	Cronbach's Alpha (α)	Item removed	New Alpha (α)
Inaccessibility to the Senses	9, 10, 23, 22	.7290	9	.7411
Generality	11, 21, 24	.1836	24	.2212
Intangibility	25 to 29	.8253		
Difficulty of Evaluation	12 to 16	.7746		
Perceived Risk	17, 18, 19, 8	.8146		
Experience and Subjective Knowledge	6, 7, 2, 3, 4, 5, 1, 20	.8902		
Involvement	30 to 40	.9453		

From Table 10, we can see that Cronbach's Alpha for one of the two supposedly intangibility dimensions (generality) is very low. Therefore, a factor analysis was conducted to determine if both dimensions identified in the literature could be considered

as good predictors of the overall intangibility construct. Measures of *inaccessibility to the senses* and *generality* were included in the analysis, as well as the intended overall measure of *intangibility*. Results yielded three factors instead of two. Table 11 below summarizes the results for the new factors.

TABLE 11 - PATTERN MATRIX FOR THE FACTORS OF INTANGIBILITY

		Factor 1	Factor 2	Factor 3
x29	This is a difficult item to think about.	-.77691		
x21	I need more information about this product (service) in order to make myself a clear idea of what it is.	-.77369		
x27	This is not the sort of item that is easy to picture.	-.75280		
x26	The image comes to my mind right away.	.57603	.40608	
x25	I have a clear picture of this item.	.56225	.41484	
x23	I can physically grasp this product (service).		.85462	
x22	This item is very easy to see and touch.		.80287	
x28	This item is very tangible.		.76303	
x24	This item evokes different images.		*.55913*	
x11	I feel that this product is very specific			.89761
x10	---------- this product is very concrete.			.76916
x9	---------- this product is very accessible to my senses.	-.30707		*-.36466*

The emergence of a new factor generally makes sense however, when looking at the groupings of items: the first factor clearly concerns a mental aspect of intangibility, the second factor being the physical aspect, while the third factor is the generality/specificity dimension.

It is important to note that in the second factor, item x24 shows a much lower loading than the others; likewise in the third factor, the loading of item x9 is very low. Moreover, if we look at the meaning of those two items, in particular item x24, some confusion appears since it can be interpreted in both directions: this item evokes different images rated 9 could mean that too many images come to mind, making it confusing, or that several images coming into the mind lead to a clearer assessment of what the object is. In addition, item 9 raises further doubts since it appears to have been misunderstood or

not understood at all by at least several respondents who made that comment either verbally to the interviewers or by writing it on the questionnaire.

Cronbach's alphas were then computed and confirmed the idea that items x9 and x24 should be removed from the analysis, and a new factor analysis without those items should be performed. Table 12 summarizes the new reliability coefficients.

TABLE 12 - RELIABILITY RESULTS OF INTANGIBILITY MEASURES

Construct	Items	Cronbach's Alpha (α)	Item removed	New Alpha (α)
Mental Dimension	29, 21, 27, 26, 25	.8239		
Physical Dimension	23, 22, 28, 24	.7887	24	.8740
Generality	11, 10, 9	.6042	9	.6412

Finally, since the expected global measure of intangibility resulted in the emergence of a third factor, it was decided that item x28 ("This item is very tangible") could be used as the global measure and dependent variable for the multiple regression to be run in the next step of the analysis. Therefore, it was also removed for the new factor analysis (see Table 13 below).

TABLE 13 - NEW PATTERN MATRIX FOR THE FACTORS OF INTANGIBILITY

		Factor 1	Factor 2	Factor 3
x29	This is a difficult item to think about.	-.82068		
x21	I need more information about this product (service) in order to make myself a clear idea of what it is.	-.75790		
x27	This is not the sort of item that is easy to picture.	-.70920		
x26	The image comes to my mind right away.	.56965	.41035	
x25	I have a clear picture of this item.	.55536	.42208	
x23	I can physically grasp this product (service).		.90108	
x22	This item is very easy to see and touch.		.88257	
x11	I feel that this product is very specific			.92553
x10	---------- this product is very concrete.			.74424

The items seemed to load satisfactorily in this new run. Moreover, the new factor analysis allowed to explain cumulatively 70.9 % of variance in the construct, whereas the previous factor analysis explained only 61.8 %. Hence, the mean of each new factor were used as the construct measure.

After this data preparation, an index for each construct was created by averaging the items in each of the scales. In the scales, higher ends (9) mean a high score on the variable studied (e.g., 9 on an intangibility scale would mean highly intangible), whereas the lower ends (1) mean a low score.

3. MULTIPLE REGRESSIONS – THE MODEL

The multiple linear regression analysis appeared to be the most appropriate technique to test the model in this exploratory study since it is a widely recognized analytical tool used by researchers and practitioners to analyze the relationships between dependent and independent variables. Since the model contained several variables which could be correlated, a stepwise procedure, which avoids multicolinearity, was used to try to find the "best" regression model that included the fewest and most explanatory variables, thus allowing an adequate interpretation of the dependent variables (i.e., overall intangibility, difficulty of evaluation and perceived risk). The stepwise regression is a search procedure that develops a sequence of regression models, adding or deleting independent variables at each step of the model building process. It stops when no more variables are worth being added, the last model being considered as the "best fitting" model. The criterion for adding or deleting a variable can be stated in terms of the F statistic.

Three multiple linear regressions were conducted: the first one using the global measure of intangibility as the dependent variable was run in order to determine to which extent the three intangibility dimensions identified as forming the intangibility construct would actually relate to it. The second and third regressions had respectively difficulty of evaluation and perceived risk as dependent variables. For each regression, potential interactions were added to the model.

3.1. Intangibility

As already mentioned, the first regression was computed to see which variables influence the perception of intangibility. Therefore, the global measure of intangibility (item x28:

"This item is very tangible") was used as the dependent variable, while the three new dimensions of intangibility (i.e., mental, physical, and general) were the independent variables.

Indeed, the three variables entered in the model after three steps, with a F-value of 724.84 (p = .0000) and a satisfactory adjusted R-square of .54, meaning that the three variables explained about 54 % of the dependent variable variance.

The most influencing variable appeared to be the *physical* aspect of intangibility (coefficient of .68), followed by the *mental* aspect (coefficient of .14), while the *generality* dimension had a marginal (although significant) influence (coefficient of .09). Table 14 summarizes these results.

TABLE 14 - REGRESSION ON GLOBAL INTANGIBILITY

Variable	Coefficient	T-value
Physical Intangibility	.683	34.612[a]
Mental Intangibility	.144	5.425[a]
Generality	.088	3.786[a]
	F-value = 724.841[a], R^2 = .539	

a = p<.01, b = p<.05, c = p<.10

3.2. Difficulty of Evaluation

This regression was computed with the five other independent variables (3 intangibility dimensions, experience and involvement) as well as the 6 possible interactions between the three intangibility dimensions and the two potential moderators.

After six steps, six of these eleven variables entered the model, with a F-value of 131.79 (p = .0000) and an adjusted R-square of .30, the six variables thus explaining 30 % of the dependent variable variance.

Those variables are: *mental intangibility*, *experience*, *involvement*, *generality*, and the interactions of *involvement* with *mental intangibility* and *involvement* with *generality* (see Table 15 below).

TABLE 15 - REGRESSION ON DIFFICULTY OF EVALUATION

Variable	Coefficient	T-value
Mental Intangibility	.372	6.215[a]
Experience	-.311	-12.653[a]
Involvement	.292	5.828[a]
Generality	.248	4.092[a]
Involvement*Generality	-.026	-2.832[a]
Involvement*Mental Intangibility	-.016	-1.711[c]
	F-value = 131.786[a] R^2 = .295	

a = p<.01, b = p<.05, c = p<.10

3.3. Perceived Risk

As for the *risk* variable, this regression was computed with the five same independent variables (3 intangibility dimensions, experience and involvement) as well as the 6 possible interactions between the intangibility dimensions and the two potential moderators.

After seven steps, seven of the eleven variables entered the model, with a F-value of 72.19 (p = .0000) and an adjusted R-square of .21, the seven variables again explaining 21 % of the dependent variable variance.

Those variables are: *mental intangibility*, *involvement*, *experience*, and the interactions of *involvement* with *physical intangibility*, *experience* with *physical intangibility*, *experience with mental intangibility*, and *involvement* with *generality* (see Table 16 below).

TABLE 16 - REGRESSION ON PERCEIVED RISK

Variable	Coefficient	T-value
Mental Intangibility	.482	8.959[a]
Involvement	.238	5.939[a]
Experience	-.223	-4.253[a]
Involvement*Physical Intangibility	-.036	-4.961[a]
Experience*Physical Intangibility	.033	3.815[a]
Experience*Mental Intangibility	-.021	-2.090[b]
Involvement*Generality	.005	1.694[c]
	F-value = 72.191[a] R^2 = .210	

a = p<.01, b = p<.05, c = p<.10

3.4. Hypotheses

H1 AND H2

As for the intangibility construct, **H1** (under the premise that lack of physical tangibility represents "inaccessibility to the senses") **and H2 are supported,** since they both entered the model. H2 was initially hypothesized to encompass the generality dimension of intangibility. Since a third dimension appeared that we labeled mental intangibility, which had actually more weight in the model than the generality dimension (whose effect is weak although significant), we can then conclude that the degree of product intangibility will depend on its perceived generality, and mental and physical intangibility.

H4

H4 implies a negative relationship between physical intangibility and difficulty of evaluation. The multiple regression on difficulty as a dependent variable, however, does not include the physical variable in the model. Thus, **H4 must be rejected,** i.e., there is no relationship between physical intangibility and difficulty of evaluation in our study.

H5

The regression on difficulty of evaluation shows that the more general a product or service is perceived, the more difficult it will be to evaluate. In other words, the generality dimension is found to influence positively difficulty of evaluation in our model, thus **H5 is supported.**

H6

When risk is the dependent variable, however, the generality dimension does not enter the model, i.e., generality has no impact on perceived risk, and therefore **H6 must be rejected.**

H7

H7 stated that the interaction experience/generality would positively impact on a) difficulty of evaluation, and b) perceived risk. In the regression, however, this interaction does not enter the model. Thus, it has no significant effect, contrary to expectations, and **H7 must be rejected.**

H8 AND H9

The two multiple regressions on difficulty of evaluation and risk show that experience has a negative influence on these two dependent variables. Therefore, both **H8 and H9 are supported.**

H11

H11 stated that the interaction involvement/generality would positively impact on difficulty of evaluation and risk. However, this interaction has a negative effect on difficulty of evaluation, i.e., the level of involvement with and the level of generality perceived in a product make the product evaluation easier instead of more difficult, as was expected. As for risk though, the effect is positive, that is the more involving and

general the product/service is, the riskier it is perceived. Therefore, **H11 is partially supported, for its effect on perceived risk**, and partially rejected, for its effect on difficulty, which is contrary to expectations.

H12 AND H13

The two multiple regressions on difficulty of evaluation and risk show that involvement has a direct positive impact on the two dependent variables. Therefore, both **H12 and H13 are supported.**

OTHER RESULTS

It is important to note that several other interactions entered the model in both regressions on difficulty of evaluation and perceived risk.

The experience variable entered the model only as an independent variable in the regression on *difficulty of evaluation*, and thus was not a moderator in the relationship between intangibility and difficulty of evaluation. In the regression on *risk*, however, experience entered the model not only as an independent variable, but also in two interactions: experience with physical intangibility, and experience with mental intangibility. Hence, when risk is the dependent variable, experience has a moderating effect on the relationship between intangibility and risk. In addition, the regression results show a different direction for both interactions: the more experience in a product category and the more intangible physically the perception of a product, the riskier it will be perceived; in turn, the more experience in a product category and the more mentally intangible the perception of a product, the less risky it will be perceived. In other words, the interaction experience/physical intangibility results in a greater perceived risk, while the interaction experience/mental intangibility reduces the risk perceived.

The involvement variable, as experience, entered the model as an independent variable in both regressions on difficulty of evaluation and risk. In addition, the two multiple regressions resulted in two interactions. In the regression on difficulty of evaluation, the interactions involvement/mental intangibility and involvement/generality were found to influence negatively the dependent variable, i.e., the more mentally intangible and involving a product (service) is, the less difficult it is to evaluate, and the more general and involving a product (service) is, the less difficult it is to evaluate. This result will need to be interpreted cautiously though, since it is significant only at 90 % ($p = .0904$).

As for the interactions in the regression on risk, the more general and involving a product is, the riskier it will be perceived. In turn, the more physically intangible and the more involving a product is, the less risky it will be considered (see the discussion in the next chapter for interpretation of those results).

In conclusion, a modified general model is presented in Figures 3 and 4 (the model is decomposed in two parts corresponding to each dependent variable for more clarity). Since we identified several significant differences among the various products and services studied in the ratings of intangibility, difficulty of evaluation, perceived risk, and levels of experience and involvement, one-way ANOVAs per product/service and a discriminant analysis were used to investigate more precisely the intangibility profiles of those products (see ANOVA results in **Appendix 3**). A map of these profiles would then serve to group similar products/services together in further multiple regressions in order to determine potential changes compared to the general model.

FIGURES 3 & 4 - A NEW MODEL FOR THE INTANGIBILITY CONSTRUCT AND ITS EFFECTS ON PRODUCT/SERVICE EVALUATION

Figure 3 - Effects on Difficulty of Evaluation

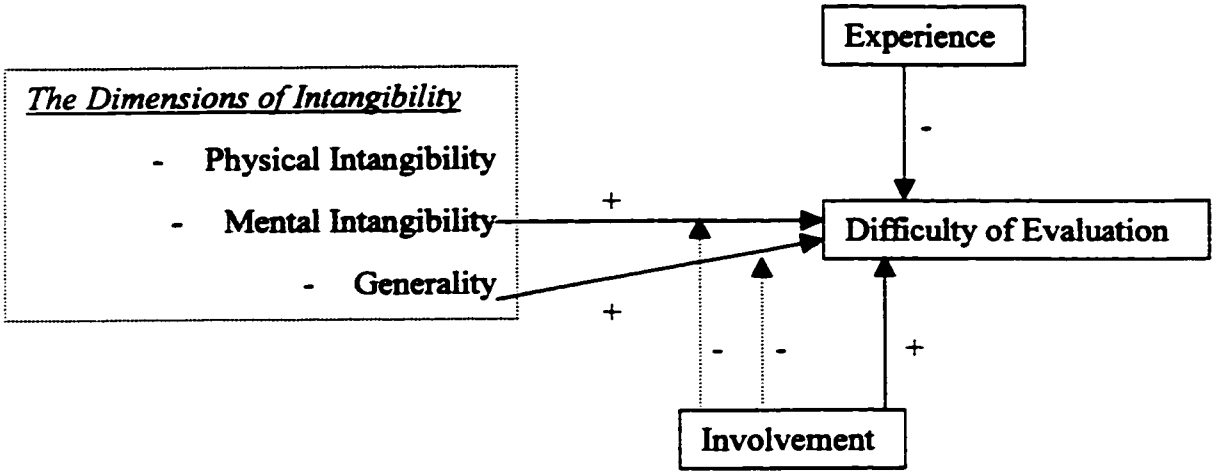
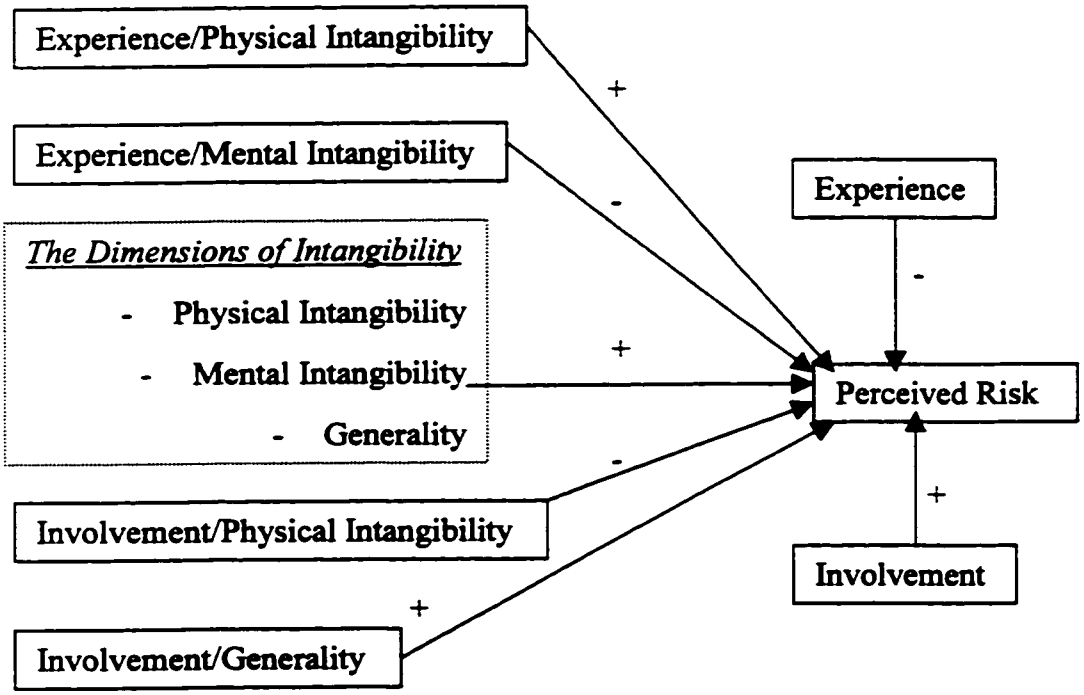


Figure 4 - Effects on Perceived Risk



4. ANOVAS FOR THE PRODUCTS AND SERVICES STUDIED

Seven (7) one-way ANOVAs were conducted in order to examine potential differences among the 8 products and services on the mean ratings of intangibility (the three new dimensions), difficulty of evaluation and perceived risk, as well as experience and involvement (see **Appendix 3** for all result tables).

4.1. Individual Examination

4.1.1. JEANS

Jeans are the most tangible of the eight products and services, ranking first (lowest mean) on the three dimensions of intangibility found (see the factor analysis results in the previous section for more information about these three dimensions). It ranks second in terms of ease of evaluation, while it is the least risky of the eight products/services. It has also the highest mean experience. Finally, it ranks fourth in terms of product involvement.

4.1.2. WEB BROWSER

The Web browser is the second most intangible product in mental as well as physical and general terms. However, it ranks third in difficulty of evaluation and perceived risk. It has the sixth mean in terms of the average experience, which means that, overall, respondents were not very familiar with such a product. Finally, it ranks fifth in terms of involvement. It is also important to note that this product has the largest standard deviation on the experience and risk ratings.

4.1.3. HOME COMPUTER

The home computer is an interesting case in terms of intangibility, as it ranked fourth along the mental dimension of intangibility (i.e., not very easy to seize mentally), while it is the second most tangible physically (i.e., easy to see and touch). It ranks third in terms of generality, i.e., it is relatively specific as an object. Computers seem to be very difficult to evaluate according to our sample, and are classified as very risky (ranked 7th in ascending order of difficulty and risk). The mean experience is relatively high (3rd), but it is also a very involving product (highest). Hence, the relationships between intangibility, involvement and difficulty of evaluation and perceived risk are expected to be significant.

4.1.4. POP MUSIC

Pop music is seen as not very tangible mentally (fifth ranking), as well as physically (fourth ranking), although the standard deviation is high for this measure, but above all it is very general (3rd highest mean). However, it appears to be quite easy to evaluate and not very risky (3rd in both cases). It ranks fourth in terms of the average experience, and it is not very involving (2nd lowest mean).

4.1.5. HAIRCUT AT A HAIRDRESSER/BARBER

A haircut is seen as very accessible mentally (2nd), but logically not easy to grasp physically (5th). Nevertheless, it is very specific, which makes it quite tangible overall. It is perceived as not very easy to evaluate and a little risky too.

Finally, respondents were very experienced with this type of service overall but considered it as very involving too.

4.1.6. CHARTER FLIGHT FOR VACATION

The results concerning this service are a little tricky to interpret. First, it is seen as extremely intangible along the three dimensions identified (see the factor analysis results in the previous section), with the highest mean in each case. For the mental representation, however, it has the highest standard deviation, which suggests a careful interpretation. Indeed, this means that there were very important variations in the responses given, which might imply a different understanding of what this service is, consistent with some remarks from subjects who reported that they do not understand what a charter flight is.

Then, it is also seen as extremely difficult to evaluate and extremely risky. Quite logically with those results, this service is the one which respondents were the least familiar with. Surprisingly, however, it was rated as not very involving, which could be interpreted in different ways. One possibility is simply that this type of service is not very involving by itself and is only considered as a transportation vehicle, but it is doubtful since a flight for vacation implies a far away holiday destination and has a rather low potential number of occurrences per year requiring significant financial investment. Another possible explanation would be that the lack of experience simply led to a low involvement, as something someone is not familiar with will probably not be perceived as very significant. A third probable explanation is unfortunately that the term "charter" was not understood by many of the respondents (some reported it verbally), which led them to see this service as very intangible, very difficult to evaluate and risky, one with which they were not familiar at all and therefore one which was not meaningful nor significant to them.

Considering those various possible interpretations, further results concerning this service will have to be interpreted carefully.

4.1.7. Bank Chequing Account

This service has the third highest mean in terms of its mental and physical intangibility but it appears to the respondents as slightly specific. It is also slightly easy to evaluate and not really risky. Respondents rated fourth their average experience with this service, meaning that they appear to know enough about it for us to consider their ratings as accurately reflecting their understanding of this service. Finally, the chequing account was the third most involving of the eight groups and the second most involving service, after haircut.

4.1.8. Pizzeria Dinner

The dinner in a pizzeria appears to be quite tangible, mentally and physically (3^{rd} mean ranking for both), but it is rather general. It seemed very easy to evaluate and not risky. However, the mean experience is also very weak compared to the whole group of products/services. In addition, it was the least involving service (8^{th}).

Figures 5, 6 and 7 also help characterize the observed trends among products and services, especially the extreme points.

Figure 5 - Intangibility Ratings Per Product/Service

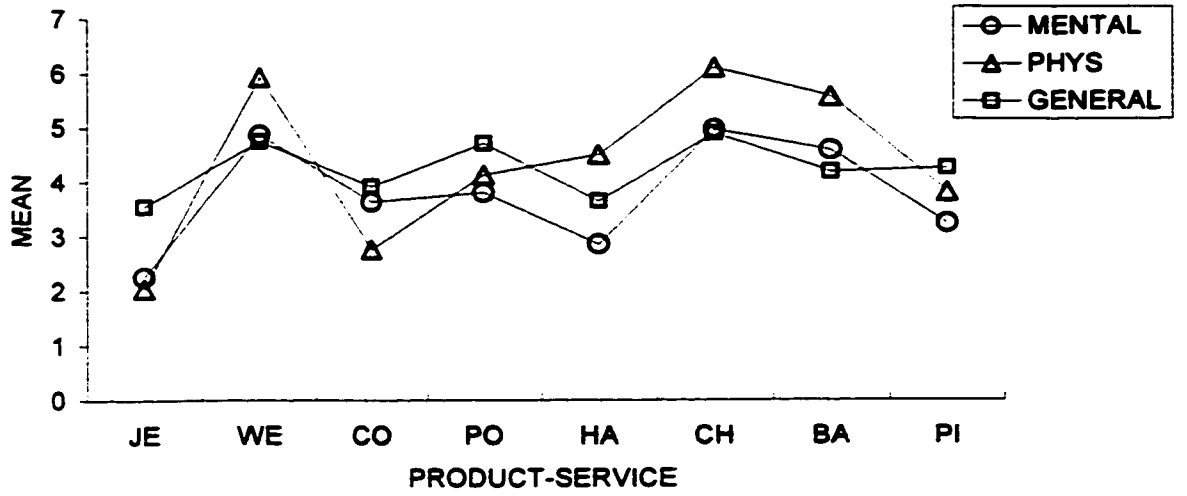


Figure 6 - Evaluation

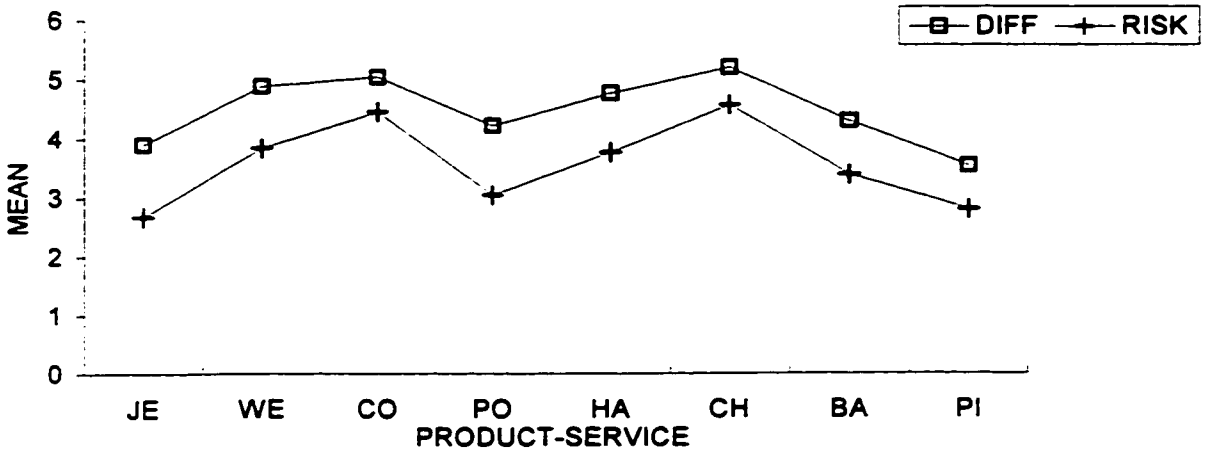
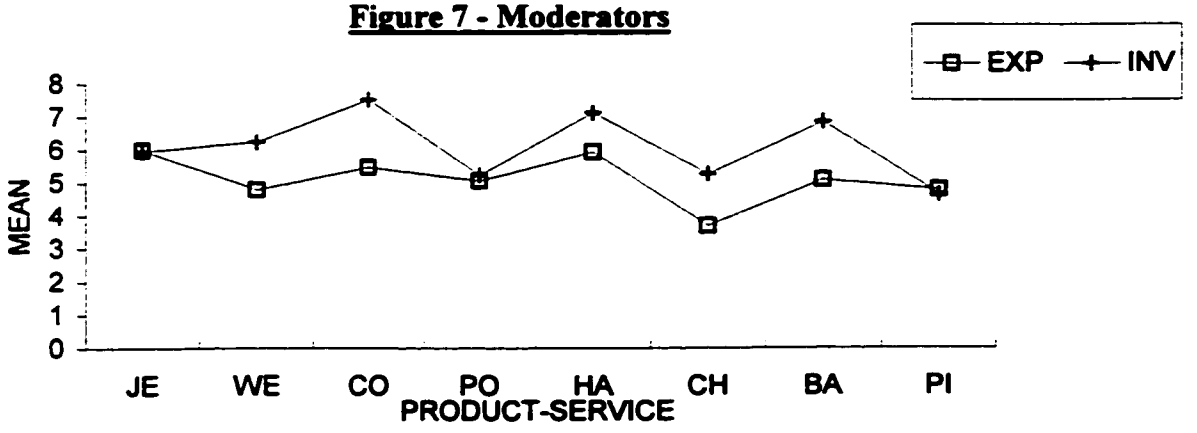


Figure 7 - Moderators



4.2. Among Products

In terms of intangibility, we can already see significant differences among the four products studied. For the mental dimension, one product is very tangible (jeans), two others are tangible enough (computer and music), while the last one (Web browser) is in the middle of the scale, showing little tangibility. In terms of physical tangibility, the order is the same, but the computer is now seen as relatively more tangible (more physically than mentally). The Web browser is in the same position among products as well as overall, but the mean score is a lot higher, making it definitely intangible along the physical dimension, which seems logical and is as expected. On the generality dimension, jeans and computer are specific, while music and Web browser appear to be in the middle of the scale, i.e., relatively more general.

The four products show the same pattern for the difficulty of evaluation and risk variables: jeans and music are easy enough to evaluate and not risky, whereas the Web browser and computer are significantly less easy to evaluate and riskier.

In terms of experience, once again jeans come first with a great deal of experience, followed by the computer, music and Web browser. The variations here are not very large.

Finally, it is interesting to see that the computer is by far the most involving product, in absolute as well as relative terms (ranks 8th with a mean score of 7.50), while music is the lowest involving of the four, followed by jeans, then the Web browser. Overall, mean scores for involvement are quite high.

4.3. Among Services

Of the four services, two were perceived as very tangible mentally (haircut and pizzeria dinner), while the two others (bank account and charter flight) are less tangible. Then, it is interesting to note that although many authors keep thinking that no service can be physically tangible, the pizzeria dinner and haircut were actually seen as having some physical tangibility too. This time though, the bank account and charter flight were clearly seen as intangible. On the generality dimension, haircut still came first as quite specific, while the bank account and pizzeria dinner were seen as somewhat specific, and the charter flight as rather general.

Just as for products, services show the same pattern for difficulty of evaluation and risk: the pizzeria dinner is easy to evaluate and not risky, the bank account and haircut being somewhat more difficult but not very risky, while the charter flight is a lot more difficult to evaluate and riskier (ranks 8^{th}).

Respondents were very used to have haircuts and they were quite familiar with bank accounts, while showing less experience in pizzerias and clearly much less experience in charter flights.

Finally, pizzeria dinner was the lowest involving service. Surprisingly, charter flight came second, being only somewhat involving, while the bank account and haircut were clearly very involving services.

4.4. Services Versus Products

Concerning the *intangibility* characteristics of the products and services compared together, significant differences exist for two of the three dimensions (see Tables in **Appendix 3** for detailed comparisons between all products and services). Indeed, services

are seen as more intangible mentally (mean of 3.906 against 3.636 for products), but even more especially in their physical representation (mean of 4.974 vs. 3.691 for products), which seems logical intuitively as well as in the light of the marketing literature about intangibility (see the discussion in the next chapter). One surprising result though, is the fact that there is no significant difference in the ratings of generality (means of 4.241 and 4.227), which goes against initial expectations. Thus, hypothesis **H3**, stating that the perceived generality will be higher for services than for products, **must be rejected.**

Concerning the *difficulty of evaluation* and *perceived risk*, differences between products and services are not significant. The involvement profiles are slightly different, but contrary to expectations, products are more involving than services overall. Therefore, **H14a must be rejected.** However, experience ratings were higher for products than for services, as expected; thus, **H10a is supported.**

5. DISCRIMINANT ANALYSIS

A discriminant analysis was performed on the three factors measuring the dimensions of intangibility and the eight products/services to determine if some of the products/services could be regrouped into a smaller number of groups with similar levels of intangibility. Three discriminant functions were obtained and they were highly significant ($p < .0000$). The first function accounted for 81.09 % of the variance, the second one for 15.03 % and the third one (the lesser important) for 3.88 %. To better interpret the discriminant results, two functions were retained and the discriminant loadings (see structure matrix below) were rotated using Varimax rotation. These two functions accounted for 96.12 % of the between-groups variability.

TABLE 17 - STRUCTURE MATRIX

	Function 1	Function 2
Physical Intangibility	.92851*	-.34958
Mental Intangibility	.72732*	.67864
Generality	.27896	.29552*

* denotes largest absolute correlation between each variable and any discriminant function

As shown in Tables 17 and 18, the physical dimension loaded highly on function 1. Thus, this function represents the physical intangibility. Mental loaded highly on function 2, followed by generality but to a lesser degree. Hence, function 2 represents the mental intangibility.

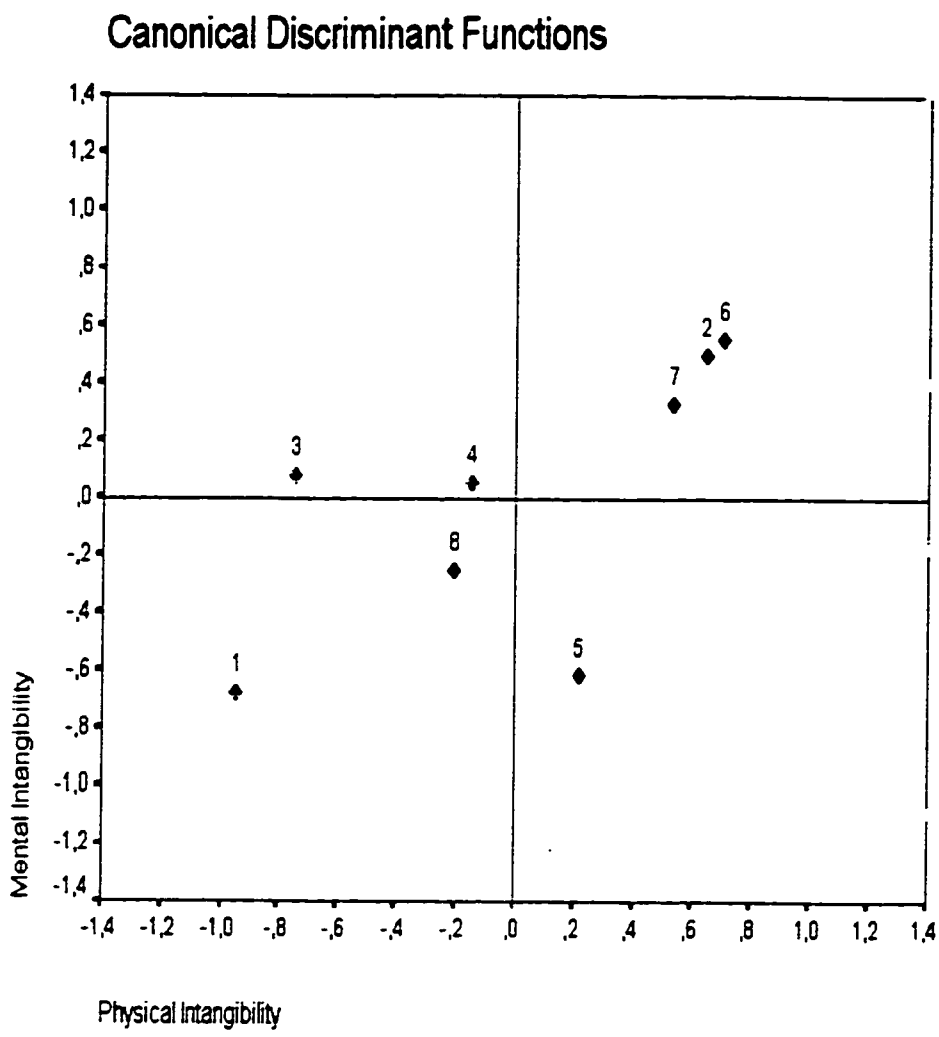
TABLE 18 - ROTATED CORRELATIONS BETWEEN DISCRIMINATING VARIABLES AND CANONICAL DISCRIMINANT FUNCTIONS

	Function 1	Function 2
Physical Intangibility	.96968*	.20991
Mental Intangibility	.24296	.96464*
Generality	.07408	.39958*

* denotes largest absolute correlation between each variable and any discriminant function

A plot of the placement of the centroïds (group means) for the eight groups appears in Figure 8 (see **Appendix 4** for the exact values).

FIGURE 8 – CANONICAL DISCRIMINANT FUNCTIONS (GROUP CENTROIDS)



Products: 1 = jeans
2 = Web browser
3 = home computer
4 = pop music

Services: 5 = haircut
6 = charter flight
7 = chequing account
8 = pizzeria dinner

From this map it can be seen that products and services are spread out into the four cells corresponding to the four combinations of intangibility (low/low, low/high, high/high, high/low): jeans and pizzeria dinner are tangible both physically and mentally; computer and pop music are physically tangible and relatively intangible mentally,

although they are situated near the center along the mental dimension; charter flight, Web browser and chequing account are intangible both physically and mentally; finally, only the haircut is physically intangible but mentally tangible.

If we break down these results by looking at one dimension at a time, we can see that three products and one service (pizzeria dinner) are perceived as physically tangible, while three services and one product (Web browser) are physically intangible. In turn, one product and two services are mentally tangible, whereas two services and three products are rather mentally intangible.

In addition, we can suggest a few other products/services groupings in terms of homogenous profiles. For instance, pop music and pizzeria dinner could be expected to group together since they both have the same level of physical intangibility, and are relatively close in terms of mental intangibility. Further, computer might also enter this group, since it has the same level of mental intangibility as pop music, while it is not so far from pizzeria dinner either.

To summarize, the discriminant analysis gave us some insight about the various products/services' intangibility profiles we have. However, this gives only general patterns, and it is not enough to reveal potential variations of the general model between products and services for instance. Therefore, we run multiple regressions on our two dependent variables for each product and service separately (see Tables in **Appendices 5 & 6**), for products together and then services, as well as for two of the groups identified previously (267 = Web browser-charter flight-chequing account, and 348 = computer-pop music-pizzeria dinner).

6. MULTIPLE REGRESSIONS PER GROUPS OF PRODUCTS

Tables 19 and 20 display results of both regressions (on difficulty and risk) with the most logical products/services groupings in terms of intangibility profile (see map of canonical discriminant functions in the previous section).

6.1. Regressions on Difficulty of Evaluation

6.1.1. JEANS

As we can see in Table 19, the most tangible product has only one variable influencing (positively) the perceived difficulty of evaluation: mental intangibility, which still does not explain much of the variance (adjusted R^2 =.09).

6.1.2. HOME COMPUTER, POP MUSIC, PIZZERIA DINNER

This is the group in which most of the variables enter the model (seven), explaining together 37 % of variability. Both mental intangibility and generality result in a greater difficulty of evaluation. Logically, experience significantly reduces difficulty of evaluation, while involvement increases it. Furthermore, three interactions enter the model: the more experienced the subject and the more physically intangible s/he perceives the product (or service), the more difficult it will be to evaluate. However, the more involving and physically intangible, or the more involving and general one of those products (or service), the less difficult it is to evaluate.

6.1.3. HAIRCUT

For this service, which appears to be physically intangible, but mentally tangible, three variables influence difficulty of evaluation: physical and mental intangibility, and the interaction of involvement with physical intangibility. Hence, its physical intangibility makes it more difficult to evaluate, in conjunction with the level of involvement, whereas its mental (in)tangibility makes it easier to evaluate.

6.1.4. WEB BROWSER, CHARTER FLIGHT, CHEQUING ACCOUNT

For this group, five variables entered the model. The more mentally intangible and the more general the product/service is perceived, the more difficult its evaluation. In turn, the higher the experience with such product/service, the less difficult the product evaluation. In addition, two interactions entered the model: the more involving and physically intangible the product/service, the more difficult its evaluation, whereas the more general and involving it is, the less difficult the evaluation.

TABLE 19 - REGRESSION ON DIFFICULTY OF EVALUATION BY GROUP OF PRODUCTS AND SERVICES

Variables	1. Jeans		3. Home Computer 4. Pop Music 8. Pizzeria Dinner		5. Haircut		2. Web browser 6. Charter flight 7. Chequing account	
	Coef.	T-value	Coef.	T-value	Coef.	T-value	Coef.	T-value
PHYS	-	-	-	-	.4412	5.522[b]	-	-
MENT	.4317	4.968[a]	.3403	9.147[a]	-.1654	-1.368[a]	.2502	7.557[a]
GEN	-	-	.2452	3.077[a]	-	-	.2406	5.177[a]
EXP	-	-	-.6188	-10.729[a]	-	-	-.3104	-9.548[a]
INV	-	-	.5115	7.223[a]	-	-	-	-
EXPPHYS	-	-	.0461	3.464[a]	-	-	-	-
EXPMENT	-	-	-	-	-	-	-	-
EXPGEN	-	-	-	-	-	-	-	-
INVPHYS	-	-	-.0489	-4.002[a]	.0332	2.190[c]	.0093	2.608[a]
INVMENT	-	-	-	-	-	-	-	-
INVGEN	-	-	-.0304	-2.396[a]	-	-	-.0206	-2.941[a]
F-value, R^2	24.68[a], R^2 = .09		64.14[a] R^2 = .37		14.02[a], R^2 = .14		109.29[a] R^2 = .44	

R^2 = adjusted, a = p<.01, b = p<.05, c = p<.10

6.2. Regressions on Risk

6.2.1. JEANS

This time, mental intangibility still has a positive influence (i.e., the more mentally intangible jeans are perceived, the riskier they seem), but an interaction also entered the model, that is the more involving and general jeans are, the less risky they seem.

6.2.2. HOME COMPUTER, POP MUSIC, PIZZERIA DINNER

Contrary to preceding results on difficulty of evaluation, fewer variables entered the model. Thus, the more physically intangible those products and service seem, the less risky they are, but the more mentally intangible, the riskier they are. Also, the interaction of experience with generality makes them less risky, while the interaction of involvement with generality makes them riskier.

6.2.3. HAIRCUT

The more mentally intangible a haircut, the riskier it is perceived. Also, the more involving it is, the riskier. However, experience has a moderating effect, since its interaction with mental intangibility results in a lower perceived risk.

6.2.4. WEB BROWSER, CHARTER FLIGHT, CHEQUING ACCOUNT

As for this group of product and services, the more intangible physically, the less risky they are, whereas the more general, the riskier they are. In addition, the more experience in those product categories, the less risky they seem, but surprisingly, the more involving they are, the less risky too. Finally, the more involving and mentally intangible those product/services are perceived together, the riskier they seem.

TABLE 20 - REGRESSION ON PERCEIVED RISK BY GROUP OF PRODUCTS AND SERVICES

Variables	1. Jeans		3. Home Computer 4. Pop Music 8. Pizzeria Dinner		5. Haircut		2. Web browser 6. Charter flight 7. Chequing account	
	Coef.	T-value	Coef.	T-value	Coef.	T-value	Coef.	T-value
PHYS	-	-	-.1557	-5.078	-	-	-.0504	-1.648[c]
MENT	.5252	7.206[a]	.4782	11.543	.6770	4.797[a]		
GEN	-	-			-	-	.0470	1.357[c]
EXP	-	-			-	-	-.1376	-3.501[a]
INV	-	-			.1912	2.397[a]	-.4176	-8.383[a]
EXPPHYS	-	-			-	-		
EXPMENT	-	-			-.0531	-2.190[b]		
EXPGEN	-	-	-.0445	-5.623	-	-		
INVPHYS	-	-			-	-		
INVMENT	-	-			-	-	.0466	7.564[a]
INVGEN	-.0146	-1.745[b]	.0466	6.763	-	-		
F-value, R^2	26.04a, R2 = .18		58.14[a] R^2 = .24		12.22[a], R^2 = .13		45.55[a]	R^2 = .24

R^2 = adjusted, a = p<.01, b = p<.05, c = p<.10

As has been seen through the discriminant analysis and the previous regressions per groups of products, products and services are not systematically opposed in our model. However, regressions were run for all products together on one hand and all services together on the other hand in order to test hypotheses H10 and H14 (see **Appendix 7** for detailed results about these regressions).

6.3. Hypotheses

H10B

H10b stated that the interaction of experience with generality would have a higher impact on difficulty of evaluation and perceived risk for products than for services. However, this interaction did not enter the equation in any regression. Therefore, we conclude that in our study, the interaction experience/generality has no effect at all on perceived difficulty of evaluation and risk, be it for products or services. Thus, **H10 is not supported.**

H14B

H14b stated that the interaction of involvement with generality would have a higher impact on difficulty of evaluation and perceived risk for services than for products. Results indicate that it does not enter the model for products, while it does in the regression on risk for services, where it has a positive impact. Therefore, **H14b is partially supported** (for risk, but not for difficulty): the interaction has a stronger effect on risk for services.

OTHER RESULTS

Besides the hypothesized results, it is interesting to note that globally, fewer variables enter the model for services, contrary to what could have been expected according to the literature on services. For instance, only one intangibility dimension entered the model in the regression on risk for services, while in the three other regressions, two intangibility dimensions influenced difficulty or risk. Another difference is that in the case of products, experience and involvement played a direct role by entering the model as independent variables, whereas for services, they had an influence only through interactions with some intangibility dimensions, i.e., as moderators (role they played also for products). Looking more in depth at the interactions, it is also striking that for products there was an interaction with physical intangibility in both regressions (one with involvement and one with experience), while for services, there was an interaction of experience with mental intangibility in both regressions.

One similarity between products and services though, is that mental intangibility always entered the model and, furthermore, generality entered the model for both regressions on difficulty.

7. GENDER DIFFERENCES

Although the issue of gender differences has not been addressed by researchers in the intangibility literature, we decided to investigate if perceived intangibility on certain products would vary depending on gender. Also, since the demographic statistics revealed a significantly larger proportion of women in the sample of respondents, it is worthwhile to examine whether or not this unbalance in the sample would impact on the general results.

7.1. T-Tests for Gender Differences Among Products/Services

To assess if there would be gender variations in products and services ratings along the seven variables studied, we computed a series of t-tests and results indeed revealed that there were gender differences in perceptions for six out of the eight products and services (see Tables in **Appendix 8**). We will now review those differences on a product/service basis first, then on a general perceptual basis.

7.1.1. PER PRODUCT/SERVICE

7.1.1.1. Jeans

The only significant difference between males and females concerning this product concerned the difficulty of evaluation: jeans appeared to be more difficult to evaluate for women.

7.1.1.2. Web Browser

This product is a typical case where results showed that women perceived it as mentally more intangible, more difficult to evaluate and riskier than men. Consistent with these results, the average mean experience was significantly higher for men.

7.1.1.3. Home Computer

For this product, there were no gender differences in terms of intangibility ratings but women found it more difficult to evaluate than men, while men were more experienced in this type of product.

7.1.1.4. Pop Music

This is the only product for which there were no significant differences at all between male and female ratings.

7.1.1.5. Haircut at a Hairdresser/Barber

This service is, among the eight groups, the most significant in terms of gender differences. Indeed, men perceive it as physically more intangible than women, while it is still more difficult to evaluate and riskier for women and also more involving than for men. Nevertheless, women showed more experience in this type of service.

7.1.1.6. Charter Flight for Vacation

This is the second category for which there are no gender differences.

7.1.1.7. Bank Chequing Account

This service was perceived as physically more intangible by men. This is the only significant gender difference concerning this type of service.

7.1.1.8. Pizzeria Dinner

Women perceived dinner at a pizzeria as physically more intangible than men who in turn seemed more experienced with this type of service.

7.1.2. General Perceptual Differences Between Genders

Table 21 below summarizes the number of products or services for which the rating was superior among men or women, this for each of the seven variables studied.

No systematic pattern difference emerges concerning males' and females' ratings of intangibility. However, we can simply remark that for some products and/or services, there were perceptual differences on the mental and physical aspects of intangibility, whereas no significant difference emerged concerning the generality aspect.

The most striking variable is difficulty of evaluation for which women had significantly higher mean scores in half the cases. In two cases, this happened for two products for which men reported to be significantly more experienced (computer and Web browser), while in a third case (haircut), women were more experienced than men.

In terms of perceived risk, women's ratings were higher for one product category (Web browser) which they also found mentally more intangible, more difficult to evaluate, and in which they were less experienced than men. They also considered one service (haircut) as riskier and more involving, although they were more experienced with it than men.

TABLE 21 - SUMMARY OF THE PRODUCTS/SERVICES HIGHER RATINGS BETWEEN MEN & WOMEN, PER VARIABLE

Variable	Males	Females
Mental Intangibility	-	- Web browser
Physical Intangibility	- Haircut - Chequing account	- Pizzeria dinner
Generality	-	-
Difficulty of Evaluation	-	- Jeans - Web browser - Computer - Haircut
Perceived Risk	-	- Web browser - Haircut
Experience	- Web browser - Computer - Pizzeria dinner	- Haircut
Involvement	-	- Haircut

In conclusion, these results show that perceptions differed quite substantially depending on the product or service considered and its relevance to men and women in terms of involvement and experience. That is why it was considered useful to compute multiple regressions per gender in order to determine if gender would impact on the general model.

7.2. Multiple Regressions Per Gender

7.2.1. REGRESSIONS ON DIFFICULTY OF EVALUATION

TABLES 22 & 23 – REGRESSIONS ON DIFFICULTY OF EVALUATION PER GENDER

Table 22 - For Males

Variable	Coefficient	T-value
Mental Intangibility	.343	10.001[a]
Generality	.105	3.616[a]
Experience	-.184	-5.368[a]
	F-value = 106.98[a], R^2 = .30	

a = p<.01, b = p<.05, c = p<.10

Table 23 - For Females

Variable	Coefficient	T-value
Mental Intangibility	.223	7.661[a]
Generality	.340	4.331[a]
Experience	-.383	-11.304[a]
Involvement	.336	5.576[a]
Involvement*Generality	-.041	-3.511[a]
	F-value = 86.74[a], R^2 = .28	

a = p<.01, b = p<.05, c = p<.10

The first striking point is that more variables entered the model for women. Then, it is interesting to note that the three influencing variables for men also have an effect for women. Thus, for both men and women, mental intangibility and generality result in more difficulty to evaluate products, experience making them less difficult to evaluate. Then, the two more variables influencing the model among women are involvement, which increases difficulty of evaluation, and the interaction involvement/generality, which actually reduces it, i.e., the more involving and general a product is, the easier it is to evaluate for women. In addition, generality and experience coefficients are higher for women, meaning that these two variables have a greater impact than for men.

7.2.2. Regression For Products on Perceived Risk

Tables 24 & 25 – Regressions on Perceived Risk Per Gender

Table 24 - For Males

Variable	Coefficient	T-value
Mental Intangibility	.454	13.264[a]
Involvement	.061	1.684[b]
Experience*Physical Intangibility	-.010	-2.478[b]
	F-value = 59.85[a], R^2 = .20	

a = p<.01, b = p<.05, c = p<.10

Table 25 - For Females

Variable	Coefficient	T-value
Mental Intangibility	.598	7.379[a]
Generality	.043	1.507[c]
Physical Intangibility	-.253	-3.100[a]
Involvement	.237	4.217[a]
Experience	-.324	-4.691[a]
Experience*Mental Intangibility	-.055	-3.612[a]
Involvement*Physical Intangibility	-.027	-2.428[b]
Experience*Physical Intangibility	.070	5.112[a]
	F-value = 38.28[a], R^2 = .22	

a = p<.01, b = p<.05, c = p<.10

Here, gender differences are even more striking: only three variables help explain perceived risk for men, whereas eight variables do so for women, although they do not explain much more variability in the model (adjusted R^2 are respectively .195 and .219).

An interesting difference is that among the three dimensions, only mental intangibility influences perceived risk for men, whereas all three variables influence risk for women. Another important difference is that experience reduces risk for women, while it plays no role for men.

Two interactions also influence the model for women only: experience/mental intangibility, and involvement/physical intangibility, both reducing perceived risk.

Nevertheless, as for difficulty all variables entering the model for men also enter it for women. Thus, for both genders mental intangibility significantly increases risk, as well as involvement, while the interaction experience/physical intangibility reduces it.

CHAPTER 4 - DISCUSSION

In this chapter, we will interpret the results we presented in the previous chapter and discuss them according to the literature on the related concepts. We will first discuss the findings about the intangibility construct. Then, we will discuss expected and unexpected results about the general model. In a third section, we will go more into detail about products and services differences in terms of intangibility and its implications. Finally, in spite of the lack of literature about the subject and since we found some interesting results involving gender differences, we will discuss the related findings in a later section.

1. THE INTANGIBILITY CONSTRUCT: A THREE-DIMENSIONAL CONSTRUCT

Results of the factor analyses showed that intangibility is not a two-dimensional construct, as expected from the literature, but rather composed of three dimensions. However, the two dimensions identified by Dubé-Rioux et al. (1990) and Breivik et al. (1998), i.e., *inaccessibility to the senses* and *generality*, have been found significant in our study too, thus supporting the first two hypotheses (H1 and H2), although the *generality* dimension had a rather small influence on overall intangibility.

Also, consistent with the services literature that emphasizes the inaccessibility to the senses aspect, we found the physical dimension to be the most important one in the regression on overall intangibility. For reasons of clarity and consistency, we have labeled this dimension *physical intangibility*.

The third dimension, *mental intangibility*, has clearly emerged from our study as one important dimension of overall intangibility. According to our study, it reflects the fact that a product or a service is not clearly represented in the consumer's mind when simply named.

Interestingly, this last dimension had been somewhat identified by McDougall and Snetsinger (1990) who, while testing the construct unidimensionally, argued that it has a physical and a mental component. Their argument was indeed reflected in their five-item intangibility scale which, having been used in the present research as an overall intangibility measure, resulted in several of the items loading on the mental dimension, while the others loaded on the physical one. Other authors talked about double intangibility for services including physical and mental intangibility (Dubé-Rioux et al. 1990), or intangible attributes (mental ones) as opposed to tangible, physical ones (Hirschman 1980; Breivik et al. 1998). However, the *mental* dimension has never been the object of any operationalization nor testing per se, and even some very recent articles considering intangibility still defined it as "the extent to which it can be seen, felt, heard, smelled, etc." (Freiden et al. 1998, p. 114), thus omitting its mental component. With that respect, our study brings substantial progress towards a more thorough conceptualization of the construct.

Moreover, these results, although surprising at first, seem logical, since having a clear mental representation of an item does not mean it will be physically more tangible nor more specific (e.g., if a consumer is aware of the numerous models that exist among cars and thus has a clear idea of what a "car" is, s/he will not necessarily perceive "car" as specific, since that word does not clearly identify which car in particular is being

considered). Conversely, physical tangibility does not ensure a clear, mentally tangible representation of an object, especially if the evaluator lacks the experience with that object (see Finn 1985). Therefore, mental intangibility is clearly separate from physical intangibility and generality, the three aspects forming the overall intangibility construct.

2. THE GENERAL MODEL

The general model will be discussed in two parts, the first section being devoted to variables influencing (or not) difficulty of evaluation and the second one to variables influencing (or not) perceived risk.

2.1. Difficulty of Evaluation

2.1.1. Effects of Intangibility Dimensions

As far as the general model is concerned, the generality dimension had the expected positive impact on difficulty of evaluation (thus supporting H5), whereas physical intangibility had no influence at all (thus not supporting H4). Mental intangibility however, also had a significant positive impact on difficulty. Thus, according to our study, mental intangibility and generality make products and services more difficult to evaluate, while physical intangibility has no influence on difficulty of evaluation.

Concerning the generality and mental dimensions, results are easy enough to explain. The more general a product is perceived, the less specific attributes the consumer has to evaluate, therefore making the evaluation a more difficult and possibly more effortful task (see also Breivik et al. 1998). Also, the more mentally intangible a product is, the fuzzier its mental representation and the less clear the evaluation criteria on which to base the evaluation (Finn, 1985).

As for the physical dimension, the lack of impact is not very surprising, since it is consistent with McDougall's (1987) findings that overall intangibility (operationalized as physical intangibility) has no impact on ease of evaluation. Overall however, opinions on the effects of intangibility are contradictory. Indeed, the literature on intangibility is divided into two schools of thoughts: authors in the services literature, who considered this concept as unidimensional and encompassing only the physical dimension, claimed either that it has no effect (McDougall 1987) or that it results in a greater difficulty to evaluate services because of the lack of sensory experience. In turn, authors who tried to decompose it into two dimensions found that physical intangibility reduced difficulty of evaluation because attributes that are not physically accessible to the senses possess more personal meaning to the consumer and therefore may be more relevant as well as more directly accessible for evaluation (Breivik et al. 1998).

In the present study, one probable reason for the lack of impact of physical intangibility is simply that it is not as important as the mental representation consumers can have in mind to be able to evaluate a product or a service. For instance, if someone does not know what a car engine is made of, that is if the mental representation s/he has is very fuzzy or absent, the fact that it is a physical object will not be enough to ease the evaluation process. The person will rather need to understand how it works and form a mental picture of the object based on several attributes in order to be able to evaluate it. This point of view opens up interesting perspectives on the development of electronic commerce by allowing more transactions without the necessity of physically displaying products on store shelves.

Whatever the rationale may be, further studies will have to be done in order to verify which of those arguments holds true.

2.1.2. Effects of Experience

The direct negative impact of experience on difficulty of evaluation stands for itself: the more experience ones has in a product category, the easier the product evaluation will be (H8). This relationship has also been found significant in McDougall's (1987) study of the determinants of ease of evaluation. Moreover, Finn (1985) who studied the evaluation process for new product concepts argued that for new products (with which the consumer has no experience), the consumer has to develop a set of choice criteria to evaluate the product, the evaluation of such products thus requiring extensive problem solving.

The expected interaction of experience with generality does not exist however, that is experience has only a direct effect and no moderating influence on difficulty of evaluation (H7a). This is surprising, given that it was expected that the level of experience would influence the perceived generality in products/services, thus impacting on difficulty of evaluation. One probable explanation is that when a product/service is considered as too general, any reference to specific past experiences does not apply or is irrelevant, thus preventing experience in the domain to serve as a reducer of evaluation difficulty.

2.1.3. Effects of Involvement

Consistent with the literature involving ease/difficulty of evaluation as a dependent variable (McDougall 1987), involvement had a positive direct impact on difficulty of evaluation in our study (H12). Underlying the concept of involvement are the ideas of

importance of the product to someone (Lastovicka 1979; Nantel and Robillard 1990), personal relevance (Zaichkowsky 1985) of that product. In that sense, the rationale for the direct positive relationship between involvement and difficulty of evaluation is simple: when the consumer is interested in a particular product, or that this product is important to him/her for some reason, then s/he will consider as many criteria as possible in order to make sure s/he does not make the wrong choice. Therefore, the evaluation process will be more complex.

As for the expected interaction of involvement with generality (H11a), it is significant but surprisingly, the effect on difficulty is negative, hence contrary to expectations. Indeed, it was thought that a highly involving product/service that is also general would be very difficult to evaluate. Although results show a rather counterintuitive directionality, the following reason could explain it: if a product is more general, then it will be more involving since more attention is necessary in order to be able to evaluate it, and that will result in a lower difficulty of evaluation because more attention has been paid to it. Thus, evaluation is simplified by involvement provoked by generality.

2.1.4. Other Unexpected Results

Another interaction of involvement with mental intangibility was found to reduce difficulty of evaluation. Obviously, this kind of relationship had not been expected, since mental intangibility had not been identified as one separate intangibility dimension in the initial model. However, this result is to be interpreted very carefully, since it is significant only at $p < .10$, with a very small coefficient (-.01).

2.2. Perceived Risk

2.2.1. Effects of Intangibility Dimensions

Unlike for difficulty of evaluation, only mental intangibility influences risk (positively). If mental intangibility had been identified in the initial model, the relationship would have been expected to be in this direction. Indeed, mental intangibility is related to fuzziness and uncertainty in the mental representation of the object, which therefore induces a greater risk (Bauer 1960; Cunningham 1967; Mitchell and Greatorex 1993) since the consumer does not have a clear idea of what s/he will really get (Taylor 1974). Also, the early risk literature already suggested that risk may result from factors inherent in the product (see Cox and Rich 1964), and thus that products can be ordered with respect to their riskiness (see Cunningham 1967; Jacoby and Kaplan 1972; Kaplan, Szybillo, and Jacoby 1974; Dowling 1986).

Physical intangibility had been expected to have no direct relationship with risk, since an object can be physically intangible, but very specific and mentally tangible, thus making it appear as not risky to the consumer (e.g., a word processor for someone who uses it regularly). Results confirm this idea, although the traditional literature on intangibility, considering services in particular, stated that physical intangibility implies more perceived risk (see Davis, Guiltinan and Jones 1979; Bateson 1979; Zeithaml 1981; Murray and Schlacter 1990; Murray 1991; Mitchell and Greatorex 1993). Nevertheless, as we know that these authors considered intangibility as a unidimensional construct (with the physical dimension only), there is reason to think that the present results are more reliable, although replication will be necessary to be able to generalize them.

Generality has no direct impact on risk (H6 is not supported). This might be explained by the fact that in the initial model proposed, generality was somewhat considered as a form of mental intangibility (which has a direct positive impact, as was expected for generality). This confusion would not have happened if the mental dimension had been identified as a separate variable. Indeed, more generality implies a more complex evaluation, but not necessarily more risk, as well as more specificity does not necessarily make the product less risky. Rather, it appears logical that the mental dimension be the one that determines the degree of perceived risk in the product, since an unclear mental representation will imply uncertainty, therefore anxiety (Taylor 1974).

2.2.2. Effects of Experience

Experience has a direct negative impact on perceived risk (H9), as expected from the literature about risk. For instance, it has been argued that risks associated with the purchase of new products are often high because of the consumers' lack of information and prior experience (Cox and Rich 1964; Havlena and DeSarbo 1990). Indeed, human beings always perceive potential risks in the unknown. As the number of encounters with the object increases though (be it usage, purchase, choice or simple evaluation), the object becomes more familiar (see Nantel and Robillard 1990; Gharbi 1998) and since the uncertainty as to the outcome of the purchase or usage of the product is reduced (and can tend toward zero), so is the risk perceived in that object (Cox and Rich 1964).

Concerning the hypothesized interaction of experience with generality (H7b), it was not present in our study. This is not very surprising since generality itself does not influence perceived risk contrary to expectations.

Nevertheless, experience had other unexpected moderating effects on the relationship between intangibility and risk that will be discussed later on in this section.

2.2.3. Effects of Involvement

Involvement had a direct positive impact on perceived risk (H13), as expected. Indeed, it is widely recognized in the literature that involvement is closely related to the perception of risk, which is usually recognized as either one of its antecedents, or one of its consequences (see Nantel and Robillard's 1990), having even been incorporated by some authors as a component of a multidimensional measure of involvement (Laurent and Kapferer 1985; McQuarie and Munson 1986; Jain and Srinivasan 1990). In the present study, risk is a consequence of involvement, consistent with Nantel and Robillard's (1990) perspective.

As expected also, involvement interacted with generality to increase perceived risk (H11b), although generality itself had no direct effect on risk in our study. The rationale behind this interaction is that when involvement is high and the product is perceived as very general, the risk perceived is greater than when it is either less involving or more specific, or even both at the same time. Moreover, as the product is general, there might be less confidence in the quality or accuracy of its evaluation (since the criteria on which the evaluation is based are themselves general), which results in uncertainty and therefore in a higher perceived risk. However, this interaction was significant only at $p<.10$, and moreover had a very small coefficient (.005), thus, not much can be concluded from this result.

2.2.4. OTHER UNEXPECTED RESULTS

Several unexpected interactions occurred in our study, two with experience, and one with involvement.

First, it is striking that two of these interactions were with physical intangibility. Experience with physical intangibility increased risk, while involvement with physical intangibility decreased it. Although these results are counterintuitive, possible explanations are that when someone is experienced in a product category, physical evidence might not correspond to the consumer's expectations about what the product should be, therefore increasing the risk perceived, while in the case of a highly involving product, physical tangibility might be reassuring to the consumer, thus reducing the risk perceived.

The other unexpected interaction is that of experience with mental intangibility, which reduces risk. The explanation of such a relationship would be that experience has a moderating impact on mental intangibility by allowing the consumer to refer to past encounters with the product (evaluation, purchase or usage), which in turn allow for a clearer mental representation of it (Zeithaml, Berry and Parasuraman 1993), thus reducing the risk perceived.

To summarize, several unexpected results emerged from the model testing, that resulted in a new model for intangibility and its consequences on difficulty of evaluation and risk (see Figures 3 & 4 in the previous chapter). What is important to retain is that although not all the expected relationships between intangibility and the two dependent variables were verified, mental intangibility, a newly identified dimension for the

intangibility construct, was always the most influencing variable (for difficulty of evaluation as well as risk).

Therefore, we can conclude that the authors claiming that intangibility results in higher difficulty of evaluation and perceived risk, particularly in the services literature (e.g., Davis, Guiltinan and Jones 1979; Zeithaml 1981; McDougall and Snetsinger 1990; Murray and Schlacter 1990; Murray 1991; Mitchell and Greatorex 1993) appear to be right according to our study, since we found such a relationship, but also wrong in that the element responsible for that relationship is not the physical component (or rather its absence), as they claimed extensively, but rather the mental dimension of intangibility.

Thus, our study suggests that physical intangibility does not really matter (at least in difficulty of evaluation), mental intangibility being the most important aspect in both difficulty of evaluation and risk. When interacting with involvement (on difficulty) or experience (on risk), however, mental intangibility always had a negative impact, thus easing the evaluation or making the product/service less risky. Therefore, this confirms the overall moderating impact of experience and involvement on the relationship between intangibility and difficulty/risk, although the dimension involved is not the one we initially expected (i.e., generality), which confirms also the confusion that reigned between generality and mental intangibility before the model testing.

3. PRODUCTS/SERVICES DIFFERENCES AND SIMILARITIES

3.1. Services Versus Products

3.1.1. In Terms of Intangibility

The first major difference that was expected between products and services was that the generality perceived in services would be higher (H3). As results showed, there is in fact no significant difference on this dimension, whereas services are significantly more intangible mentally and especially physically. The physical difference is not surprising, and was considered as obvious in most cases, along the lines of the services literature (Rathmell 1974; Shostack 1977; Berry 1980; Zeithaml 1981) and although we showed that not all products are physically more tangible.

About the mental aspect, we found that it replaced generality (with which it had originally been confused) in most of the hypothesized relationships. In fact, the absence of ownership (Parasuraman, Zeithaml and Berry 1985) and variability/heterogeneity (Berry 1980; Zeithaml et al. 1985; Zeithaml 1988; Bitner and Zeithaml 1988; Rust et al. 1996) identified as two of the differentiating characteristics of services make them mentally more intangible than products in most cases, although we also found one product (Web browser) to be mentally more intangible than most of the services studied.

3.1.2. In Terms of Difficulty of Evaluation and Risk

The services literature claimed that services, because of their specific characteristics, would be more difficult to evaluate and riskier than products (see in particular Zeithaml 1981; McDougall 1987; Mitchell and Greatorex 1993 for a specific discussion about risk/uncertainty and difficulty related to services). For example, Murray and Schlacter

(1990), who have tested the various risk components on services found that each type of risk was increased when dealing with services as opposed to products. Contrary to these claims however, we found no significant difference for either of the two dependent variables. This can probably be explained by the role experience and involvement played in product evaluation (see comments below).

3.1.3. In Terms of Experience and Involvement

Respondents were generally less experienced in the proposed services (H10a supported), consistent with the services literature stating that the variability in services does not allow as much learning through experience as for products (Berry 1980; Zeithaml et al. 1985; Zeithaml 1988; Bitner and Zeithaml 1988; Rust et al. 1996) but the products considered were also significantly more involving to them (H14a rejected). Thus, both moderators had contradictory effects together that cancelled one another in terms of consequences (difficulty and risk). A potential limitation to these results is the possibility that some services may have been less meaningful to respondents, and/or may have not arisen much interest or concern, and therefore were not very involving.

As for the interactions of experience (H10b) and involvement (H14b) with generality, H10b was not supported either, since experience did not interact with generality in either regression, whereas H14b was partially supported since involvement and generality together increased risk significantly more for services than for products (where it had no effect). This result is difficult to explain, since generality alone did not enter the risk regressions for products and services. We simply suppose that the association of high generality and involvement levels was more important for services

than for products because of the other inherent characteristics of services (e.g., heterogeneity).

In summary, there were certain recurrent differences between services and products in terms of physical and mental intangibility, experience and involvement, but the patterns are not systematic, since even when a difference is significant, some products or services ratings contradict the overall pattern. Therefore, an analysis by intangibility profile is more interesting to comment.

3.2. Products and Services Profiles

As shown in the discriminant analysis characterizing products and services along two axes (X = physical intangibility; Y = mental intangibility), the products and services considered were spread out into the four different cells. This highlighted an interesting and expected result: some services were rated as significantly more tangible than some products (e.g., pizzeria dinner in the low/low intangibility profile versus Web browser in the high/high cell), as also shown by McDougall and Snetsinger (1990), definitely confirming that not all products are tangible and all services are intangible, contrary to the argument often presented by services marketing authors (e.g., Rathmell 1974; Berry 1980), and consistent with Freiden et al.'s (1998) article demonstrating the extreme intangibility of some particular products.

Other more subtle results show that a product can be physically tangible and mentally intangible (e.g., computer). Conversely, a service can be physically intangible and mentally very tangible (e.g., haircut). Those two cases are exceptions with respect to physical intangibility's influence on difficulty of evaluation: for computers, it eases the evaluation (only case where H4 is verified), whereas for haircut, it makes it more difficult

while the mental aspect makes it easier. Overall however, computers are seen as more difficult to evaluate than a haircut (and more than any other category except charter flight), and we suggest that contrary to general results which show that mental intangibility is the most influencing variable (computer is an exception where mental intangibility has no influence), the reason might rather be the differential between a moderate experience and a very high involvement (whereas for a haircut, experience is a little higher with a lower involvement). Thus, the moderating variables may be directly responsible for high levels of difficulty and risks in the case of computers.

Other contrasts involved jeans, the most tangible product among the eight categories, to the chequing account, Web browser and charter flight altogether, which appeared as the most intangible product and services (physically and mentally). These results seem logical, since everybody knows what a pair of jeans is, it can be touched and defined as a basic piece of clothing, whereas it is more difficult to technically explain what a chequing account, a Web browser or a charter flight are, and it is also impossible to touch them. When considering the regressions for these two groups, it appears that only the mental dimension helps explain difficulty of evaluation and risk (which are not very important) for jeans, whereas mental and generality make the other three product/services more difficult to evaluate, their physical intangibility surprisingly making them less risky. Perhaps this comes from the fact that the term risk was perceived more in terms of physical or functional risk, such a risk being absent in a Web browser as well as in a chequing account. This kind of interpretation would normally not hold for a charter flight, whose physical risk can be perceived as significant, especially by people who are scared of taking the plane, but since we have reasons to doubt that this service

has been properly understood, we still think that risk may have been interpreted more or less in physical terms.

Finally, an unexpected but not very surprising result either is the intangibility profile given to pop music. Indeed, it was expected to be rated as physically very intangible (since it can only be listened to), whereas it is in fact considered as rather tangible (almost neutral point). The explanation for that is clear: music can be considered either as audible sounds and melodies only, or as a package with a CD, a plastic box and booklet. In the first case, it will be considered as physically very intangible, whereas in the second case, it will be highly tangible. It is suggested here that both types of perception occurred, thus resulting in an almost neutral rating on the physical dimension. In terms of generality though, ratings were as expected: it was considered as one of the most general categories of products/services.

Overall, regressions per product also showed that mental intangibility has a direct positive influence in almost every case (except for computer), thus confirming general results and the fact that mental intangibility is the main determinant of difficulty of evaluation and risk in the overall intangibility construct, whatever the product class.

4. GENDER DIFFERENCES

Although no marketing literature was found about gender differences in perceptions of intangibility, we were not surprised to encounter differences in the general model as well as for certain categories of products and services in particular. Thus, we will briefly review the products and services for which such differences were significant, and then the overall regression results.

4.1. Female-Related Types of Products

4.1.1. JEANS

The only significant difference concerning jeans was that it was more difficult to evaluate for women. This can be explained by the fact that clothes carry more social and psychological meaning for women than for men, therefore putting more emphasis on the importance of choosing the right item, and thus making them consider more attributes than men would do when choosing a pair of jeans.

4.1.2. HAIRCUT

Interestingly, although both men and women have haircuts, they seem to have a very different perception of that service. The rationale behind this fact might be the same as for jeans: a haircut is part of the identity, and demonstrates a personal style, thus placing emphasis on the importance of choosing the right haircut for women, whereas for men, the work to be done is approximately always the same: make the hair shorter. Therefore, it is not surprising that women rated haircut as more involving than men, and thus also as more difficult to evaluate and riskier, although they gave higher experience ratings. One surprising result though, is the fact that it was also physically more intangible for men. Perhaps one reason is that men are more result-oriented and do not care about how the haircut is done technically speaking, thus not paying attention to what kind of instruments are used in a salon.

4.1.3. BANK ACCOUNT

The only significant difference concerning this type of service is the physical intangibility ratings, which were higher for men. It is difficult to explain this difference otherwise than

by the fact that men and women simply have different modes of representation of physical objects, perhaps women pay more attention to physical surroundings in a bank than men. Further studies on gender differences in the perception of intangibility should be done before any conclusion can be generalized.

4.2. Male-Related Types of Products

4.2.1. Web Browser and Computer

Not surprisingly, the Web browser was considered as mentally more intangible by women, who are less experienced than men in such products. Therefore, they found such a product more difficult to evaluate and riskier than men did. As for computers, there were no differences in the intangibility perceptions, but again, women were significantly less experienced than men in this product class, and therefore found computers more difficult to evaluate than men. This is consistent with the known pattern of gender interests, men demonstrating more interest and expertise towards new information technologies until now.

4.2.2. Pizzeria Dinner

Surprisingly, this service was considered as physically more intangible by women, while men appeared to be also more experienced in this type of service. These differences did not impact on difficulty of evaluation and perceived risk though, since pizzeria dinner appeared as not very difficult to evaluate nor risky overall, as well as not very involving.

4.3. General Regression Results

The striking point is that regressions on the two dependent variables involved more variables for women than for men: only three variables entered the model for men (on difficulty and risk as well), whereas respectively five and eight variables entered the model for women. Thus, it appears that women have a more complex decision making process, which is consistent with Darley and Smith's (1995) conclusions that women consider both subjective and objective product attributes (i.e., intangible attributes and tangible attributes respectively) and respond to subtle cues.

As for the specific variables concerned, the ones influencing difficulty and risk for men were also found influencing women. Variables that entered the model in difficulty of evaluation for women were involvement and the interaction involvement/generality, which had the same effects as in the overall model. Thus, involvement plays a significant role in women's product evaluation, which therefore appear to be more committed to their decisions. In terms of risk, experience seems to play also an important role for women (whereas not for men), as a landmark to reduce the risk perceived, either through a direct effect or interaction with some dimensions of intangibility (the mental and physical ones). Therefore, the greater role of moderators in female evaluations confirms their probable tendency to have a more complex product evaluation process (see Darley and Smith 1995).

CHAPTER 5 - LIMITATIONS AND FUTURE RESEARCH OPPORTUNITIES

There are several limitations to this study, which was exploratory in essence. The first one is the fact that several items aiming at measuring the dimensions of intangibility were created for the purpose of this study. Therefore, they will have to be further tested in future studies in order to verify their external validity.

Moreover, as mentioned in the methodology and results sections, certain questions may have not been fully understood by the respondents, or may have been interpreted in another way than what was intended to ask them (e.g., "I feel that this product (service) is very accessible to my senses", or "I feel that this product (service) is very abstract", or "I can physically grasp this product"). This might have impacted on the results on intangibility, preventing us from deriving stronger conclusions. Although it appears difficult to change the terms used for certain subtle meanings, there are several ways to remedy this flaw. First, a larger pretest should be undertaken before another data collection takes place in order to verify if there really is misunderstanding. Then, some definitions could help respondents better understand certain words (such as "accessible to the senses", "abstract", "general", etc.) allowing them to give more thoughtful responses. Finally, interviews might prove an interesting way to further test consumer perceptions as far as intangibility is concerned, since they would allow the interviewer to define the terms used before asking questions to the interviewee, while allowing more detailed and subtle answers (e.g., for music, determine if the consumer thinks purely about music, or also about the CD, box, booklet, etc, which might give very different results in terms of intangibility profile).

Then, proportionally more females participated in our study compared to males. This certainly influenced the results, as already discussed in the previous chapters. Hence, it could be useful to replicate the study with an homogenous sample in terms of gender in order to verify if gender really influences the perception of intangibility. If this is the case, further studies about gender differences in terms of the perception of (in)tangibility should be undertaken. Such studies should also incorporate the psychological and perceptual differences that exist between genders.

A more realistic environment could involve households instead of students, since they buy more for themselves, have more experience in more product/service categories, and may also have a more precise and definite representation of those products/services.

Another possibility is to replicate the study in various student environments in order to confirm these exploratory findings, and perhaps study cultural differences in the perception of intangibility. In the Montreal area, such opportunity is offered by studying the perceptions of anglophones and francophones in various universities or even among households by sampling respondents in different parts of the city.

More generally, it could be interesting to investigate further intangibility profiles for various products and services in order to get a more global picture of the various intangibility combinations (such as the map presented in this study). When relying on the researcher's own judgement to choose the products and services to study, results cannot be generalized: more studies on the products and services tested in this study will have to be done before we can be sure of their intangibility profile, or prove that intangibility is a totally subjective concept. To extend the perspective, more and more physically intangible products exist in our society, often called "information products" (see Freiden,

Goldsmith, Takacs and Hofacker 1998), that are almost totally intangible physically. It could be particularly interesting to study their relative mental (in)tangibility and generality for (experienced and inexperienced) consumers, as well as the consequences this can have on product evaluation, compared to more "traditional" products.

Studying intangibility at various levels could also prove useful, as suggested by McDougall and Snetsinger (1990). Indeed, we studied it at the product class level, which may have limited the role of the generality dimension since all designations of products remained somewhat general (this dimension showed less variability between products than the physical and mental dimensions). Hence, this kind of study could be replicated at the brand level or at a more specifically defined product level (involving the brand, model, etc.) in order to allow companies to compare their offerings to the competition on the basis of that criterion. This may prove useful for marketers to identify potential (in)tangibility problems (if the product and its advantages are not clearly perceived by consumers), and determine the necessary steps towards "tangibilizing" or "intangibilizing" their offers.

In addition, it might also be useful to investigate more thoroughly the consequences of intangibility, especially on the various types of risks depending on the type of product or service involved. Indeed, this study involved various products and services which certainly involve different types of risk: for instance, a pair of jeans and a haircut present more psychological and social risks, compared to a charter flight which involves more time risk, and a chequing account which involves rather financial risks. By measuring these particular forms of risks in parallel to the products/services intangibility profiles, one might thus examine potential relationships between the degree and type of

intangibility prevailing in one product/service (mental, physical or generality), and the types of risks involved.

Finally, it may be very interesting to study the concept of intangibility in relation to various contexts of purchase, such as traditional channels of distribution on one side, and new channels such as the Internet on the other side, in order to determine if certain channels are more adequate to sell certain products/services depending on their intangibility profile. This could help explain why certain products and services sell well through electronic commerce, while some others are rarely bought via such a medium.

CONCLUSION

THEORETICAL AND MANAGERIAL IMPLICATIONS

This exploratory study made a theoretical contribution to the intangibility literature on one hand and a practical contribution to the services marketing literature on the other hand.

It shed more light on the intangibility construct by confirming its multidimensionality and suggesting that it encompasses not only two but rather three dimensions, in the following order of importance: a physical component, a mental aspect, and generality/specificity dimension. Although it appears to be an important aspect in the overall intangibility construct, the mental dimension had never been formally identified until now (it was suggested by McDougall and Snetsinger (1990) along with the physical component, nevertheless they considered intangibility as a unidimensional construct).

Then, we elaborated a model with potential consequences of intangibility in order to determine the role of intangibility in product evaluation, suggesting also two moderating variables (experience and involvement). Our results confirmed the impact of intangibility on difficulty of evaluation and risk, thus confirming the argument that more intangibility results in a greater difficulty of evaluation and more perceived risk (Davis, Guiltinan and Jones 1979; Finn 1985; Mitchell and Greatorex 1990; Murray and Schlacter 1990; Murray 1991; Rust, Zahorik and Keiningham 1996). Moreover, we found that mental intangibility is not only the most influencing intangibility dimension in product evaluation difficulty and perceived risk, but also more influencing than experience with the product category and product involvement. These expected

moderators indeed had both a direct and a moderating influence on the relationship between intangibility and its consequences (except experience which had no moderating impact on difficulty of evaluation).

Another contribution of this study was to suggest that the concept of intangibility may indeed be very subjective, since its mental component (implying individual perceptions) plays a significant role in the overall level of intangibility perceived. Another argument toward this subjectivity is that we found significant gender differences in intangibility ratings for the various products and services, most of them concerning the physical component, although it was expected to be the one which would show less variability between subjects.

In addition, gender differences suggest that women may have a more complex process of evaluation, taking more factors into account in their product/service evaluation, or putting generally more emphasis than men on their decisions.

Bringing new insights also to the services literature, this study suggested that in fact, services are not systematically less tangible than products, as well as not necessarily more difficult to evaluate, nor riskier. Moreover, the determinant of their supposedly greater difficulty to be evaluated or riskiness lies more probably in the mental aspect of intangibility rather than in its physical component.

This should be reassuring for service providers since it puts services back at the same level of a priori difficulty of evaluation and riskiness as products. It also suggests that the mental representation consumers have of their service is extremely important, as it will influence the overall service evaluation. Therefore, service providers should still try to "tangibilize" their offers (Levitt 1981; Berry and Clark 1986), but not exactly for

the same reasons as the ones initially suggested in the services literature, i.e., to make the service appear as physically more tangible (e.g., Shostack 1977; Berry 1980; Murray 1991), through physical surroundings, for instance, as suggested by Bitner (1992), or through personalization, as proposed by Surprenant and Solomon (1987). Such methods could nevertheless prove useful to make the service be understood more clearly by consumers who, having a clear representation of it in their mind, would know what to expect, and thus find it less difficult to evaluate and even more importantly, less risky.

Finally, another important implication we can derive from our results is that the proposed theory that more and more products are (or will be) physically intangible is plausible, since we clearly found that an information product such as the Web browser is intangible (consistent with Freiden et al's (1998) discussion about information products). Moreover, its intangibility is not only physical, but also mental. Thus, the challenge for marketers of the next century might not be so much to physically tangibilize service offers as has been advised for the past two decades, but rather to mentally tangibilize this new generation of information products to which consumers are not used yet.

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APPENDICES

APPENDIX 1 – QUESTIONNAIRE #1

Instructions

To answer the questions, please **circle** the most appropriate number on the scales provided, or **check** the appropriate answer where necessary. Please circle or check ONLY ONE answer per question, and **please answer every question**, since incomplete questionnaires will not be taken into account for the data analysis. Thus, even if you are not sure about what a statement means, please answer to the best of your understanding. Finally, remember that there is no right or wrong answer: this survey intends to study only consumer perceptions.

▯- ---------- ▯

I. In the first part of this questionnaire, we are going to consider a specific type of product: A pair of jeans.

I wear jeans: Never 1 2 3 4 5 6 7 8 9 Very often

In general, my knowledge of jeans is:

Very weak 1 2 3 4 5 6 7 8 9 Very strong

Compared to my friends and acquaintances, my knowledge of jeans is:

Weaker 1 2 3 4 5 6 7 8 9 Stronger

Compared to experts in that area, my knowledge of jeans is:

Weaker 1 2 3 4 5 6 7 8 9 Stronger

The information search I have performed on jeans is:

Very weak 1 2 3 4 5 6 7 8 9 Very thorough

In general, would you consider yourself familiar or unfamiliar with jeans?

Very Familiar 1 2 3 4 5 6 7 8 9 Very Unfamiliar

Would you consider yourself informed or uninformed about jeans?

Not at all informed 1 2 3 4 5 6 7 8 9 Highly informed

On the whole, considering all sorts of factors combined, about how risky would you say it is to buy a pair of jeans?

Not risky at all 1 2 3 4 5 6 7 8 9 Extremely risky

I feel that this product is:

Very accessible to my senses 1 2 3 4 5 6 7 8 9 Not accessible to my senses at all

Very abstract	1	2	3	4	5	6	7	8	9	Very concrete
Very general	1	2	3	4	5	6	7	8	9	Very specific

	Strongly disagree								**Strongly agree**
It is very easy for me to choose a pair of jeans.	1	2	3	4	5	6	7	8	9
It is not very difficult to find the pair of jeans that is best for me.	1	2	3	4	5	6	7	8	9
It is very difficult to discriminate between different pairs of jeans when I need one.	1	2	3	4	5	6	7	8	9
I feel very confused when choosing a pair of jeans.	1	2	3	4	5	6	7	8	9
Choosing a pair of jeans is not very complicated.	1	2	3	4	5	6	7	8	9
Generally, I am sure that I will incur some risk if I buy a pair of jeans in the 12 next months.	1	2	3	4	5	6	7	8	9
Globally, I am sure I will make a mistake if I make this purchase.	1	2	3	4	5	6	7	8	9
After all, I have the feeling that this purchase will really cause me lots of trouble.	1	2	3	4	5	6	7	8	9
I don't have much experience making this kind of decision.	1	2	3	4	5	6	7	8	9
I need more information about this product in order to make myself a clear idea of what it is.	1	2	3	4	5	6	7	8	9
This item is very easy to see and touch.	1	2	3	4	5	6	7	8	9
I can physically grasp this product.	1	2	3	4	5	6	7	8	9
This item evokes different images.	1	2	3	4	5	6	7	8	9
I have a very clear picture of this item.	1	2	3	4	5	6	7	8	9
The image comes to my mind right away.	1	2	3	4	5	6	7	8	9
This is not the sort of item that is easy to picture.	1	2	3	4	5	6	7	8	9

This item is very tangible.	1	2	3	4	5	6	7	8	9
This is a difficult item to think about.	1	2	3	4	5	6	7	8	9

You perceive this product (jeans) as:

important	1	2	3	4	5	6	7	8	9	unimportant
of no concern	1	2	3	4	5	6	7	8	9	of concern to me
means a lot to me	1	2	3	4	5	6	7	8	9	means nothing to me
useless	1	2	3	4	5	6	7	8	9	useful
valuable	1	2	3	4	5	6	7	8	9	worthless
matters to me	1	2	3	4	5	6	7	8	9	doesn't matter
significant	1	2	3	4	5	6	7	8	9	insignificant
vital	1	2	3	4	5	6	7	8	9	superfluous
boring	1	2	3	4	5	6	7	8	9	interesting
essential	1	2	3	4	5	6	7	8	9	nonessential
undesirable	1	2	3	4	5	6	7	8	9	desirable

II. In the second part of this questionnaire, we are going to consider another type of product: A Web browser.

I use a Web browser:

Never	1	2	3	4	5	6	7	8	9	Very often

In general, my knowledge of Web browsers is:

Very weak	1	2	3	4	5	6	7	8	9	Very strong

Compared to my friends and acquaintances, my knowledge of Web browsers is:

Weaker	1	2	3	4	5	6	7	8	9	Stronger

Compared to experts in that area, my knowledge of Web browsers is:

Weaker	1	2	3	4	5	6	7	8	9	Stronger

The information search I have performed on Web browsers is:

Very weak	1	2	3	4	5	6	7	8	9	Very thorough

In general, would you consider yourself familiar or unfamiliar with Web browsers?

Very Familiar	1	2	3	4	5	6	7	8	9	Very Unfamiliar

Would you consider yourself informed or uninformed about Web browsers?

Not at all informed	1	2	3	4	5	6	7	8	9	Highly informed

On the whole, considering all sorts of factors combined, about how risky would you say it is to choose a Web browser?

Not risky at all	1	2	3	4	5	6	7	8	9	Extremely risky

I feel that this product is:

Very accessible to my senses	1	2	3	4	5	6	7	8	9	Not accessible to my senses at all
Very abstract	1	2	3	4	5	6	7	8	9	Very concrete
Very general	1	2	3	4	5	6	7	8	9	Very specific

	Strongly disagree								**Strongly agree**
It is very easy for me to choose a Web browser.	1	2	3	4	5	6	7	8	9
It is not very difficult to find the Web browser that is best for me.	1	2	3	4	5	6	7	8	9
It is very difficult to discriminate between different Web browsers when I need one.	1	2	3	4	5	6	7	8	9
I feel very confused when choosing a Web browser.	1	2	3	4	5	6	7	8	9
Choosing a Web browser is not very complicated.	1	2	3	4	5	6	7	8	9
Generally, I am sure that I will incur some risk if I buy a Web browser in the 12 next months.	1	2	3	4	5	6	7	8	9
Globally, I am sure I will make a mistake if I make this purchase.	1	2	3	4	5	6	7	8	9
After all, I have the feeling that this purchase will really cause me lots of trouble.	1	2	3	4	5	6	7	8	9
I don't have much experience making this kind of decision.	1	2	3	4	5	6	7	8	9
I need more information about this product in order to make myself a clear idea of what it is.	1	2	3	4	5	6	7	8	9

	Strongly disagree								Strongly agree
This item is very easy to see and touch.	1	2	3	4	5	6	7	8	9
I can physically grasp this product.	1	2	3	4	5	6	7	8	9
This item evokes different images.	1	2	3	4	5	6	7	8	9
I have a very clear picture of this item.	1	2	3	4	5	6	7	8	9
The image comes to my mind right away.	1	2	3	4	5	6	7	8	9
This is not the sort of item that is easy to picture.	1	2	3	4	5	6	7	8	9
This item is very tangible.	1	2	3	4	5	6	7	8	9
This is a difficult item to think about.	1	2	3	4	5	6	7	8	9

You perceive this product (Web browser) as:

important	1	2	3	4	5	6	7	8	9	unimportant
of no concern	1	2	3	4	5	6	7	8	9	of concern to me
means a lot to me	1	2	3	4	5	6	7	8	9	means nothing to me
useless	1	2	3	4	5	6	7	8	9	useful
valuable	1	2	3	4	5	6	7	8	9	worthless
matters to me	1	2	3	4	5	6	7	8	9	doesn't matter
significant	1	2	3	4	5	6	7	8	9	insignificant
vital	1	2	3	4	5	6	7	8	9	superfluous
boring	1	2	3	4	5	6	7	8	9	interesting
essential	1	2	3	4	5	6	7	8	9	nonessential
undesirable	1	2	3	4	5	6	7	8	9	desirable

III. Now we are going to deal with a service: A haircut at a hairdresser/barber.

I have a haircut: Never 1 2 3 4 5 6 7 8 9 Very often

In general, my knowledge of this service is:

Very weak 1 2 3 4 5 6 7 8 9 Very strong

Compared to my friends and acquaintances, my knowledge of this service is:

Weaker 1 2 3 4 5 6 7 8 9 Stronger

Compared to experts in that area, my knowledge of this service is:

Weaker	1	2	3	4	5	6	7	8	9	**Stronger**

The information search I have performed on this service is:

Very weak	1	2	3	4	5	6	7	8	9	Very thorough

In general, would you consider yourself familiar or unfamiliar with this service?

Very Familiar	1	2	3	4	5	6	7	8	9	Very Unfamiliar

Would you consider yourself informed or uninformed about this service?

Not at all informed	1	2	3	4	5	6	7	8	9	Highly informed

On the whole, considering all sorts of factors combined, about how risky would you say it is to choose a haircut at a hairdresser/barber?

Not risky at all	1	2	3	4	5	6	7	8	9	Extremely risky

I feel that this service is:

Very accessible to my senses	1	2	3	4	5	6	7	8	9	Not accessible to my senses at all
Very abstract	1	2	3	4	5	6	7	8	9	Very concrete
Very general	1	2	3	4	5	6	7	8	9	Very specific

	Strongly disagree								**Strongly agree**
It is very easy for me to choose a haircut at a hairdresser/barber.	1	2	3	4	5	6	7	8	9
It is not very difficult to find the haircut at the hairdresser/barber that is best for me.	1	2	3	4	5	6	7	8	9
It is very difficult to discriminate between different haircuts when I need one.	1	2	3	4	5	6	7	8	9
I feel very confused when choosing a haircut at a hairdresser/barber.	1	2	3	4	5	6	7	8	9
Choosing a haircut at a hairdresser/barber is not very complicated.	1	2	3	4	5	6	7	8	9
Generally, I am sure that I will incur some risk if I have a haircut in the 12 next months.	1	2	3	4	5	6	7	8	9

	Strongly disagree								Strongly agree
Globally, I am sure I will make a mistake if I have a haircut.	1	2	3	4	5	6	7	8	9
After all, I really have the feeling that this decision will cause me trouble.	1	2	3	4	5	6	7	8	9
I don't have much experience making this kind of decision.	1	2	3	4	5	6	7	8	9
I need more information about this service in order to make myself a clear idea of what it is.	1	2	3	4	5	6	7	8	9
This service is very easy to see and touch.	1	2	3	4	5	6	7	8	9
I can physically grasp this service.	1	2	3	4	5	6	7	8	9
This service evokes different images.	1	2	3	4	5	6	7	8	9
I have a very clear picture of this service.	1	2	3	4	5	6	7	8	9
The image comes to my mind right away.	1	2	3	4	5	6	7	8	9
This is not the sort of service that is easy to picture.	1	2	3	4	5	6	7	8	9
This service is very tangible.	1	2	3	4	5	6	7	8	9
This is a difficult service to think about.	1	2	3	4	5	6	7	8	9

You perceive this service (haircut) as:

important	1	2	3	4	5	6	7	8	9	unimportant
of no concern	1	2	3	4	5	6	7	8	9	of concern to me
means a lot to me	1	2	3	4	5	6	7	8	9	means nothing to me
useless	1	2	3	4	5	6	7	8	9	useful
valuable	1	2	3	4	5	6	7	8	9	worthless
matters to me	1	2	3	4	5	6	7	8	9	doesn't matter
significant	1	2	3	4	5	6	7	8	9	insignificant
vital	1	2	3	4	5	6	7	8	9	superfluous
boring	1	2	3	4	5	6	7	8	9	interesting
essential	1	2	3	4	5	6	7	8	9	nonessential
undesirable	1	2	3	4	5	6	7	8	9	desirable

IV. And last, we are considering the following service: A charter flight for vacation.

I fly on a charter for vacation:

Never	1	2	3	4	5	6	7	8	9	Very often

In general, my knowledge of this service is:

Very weak	1	2	3	4	5	6	7	8	9	Very strong

Compared to my friends and acquaintances, my knowledge of this service is:

Weaker	1	2	3	4	5	6	7	8	9	Stronger

Compared to experts in that area, my knowledge of this service is:

Weaker	1	2	3	4	5	6	7	8	9	Stronger

The information search I have performed on this service is:

Very weak	1	2	3	4	5	6	7	8	9	Very thorough

In general, would you consider yourself familiar or unfamiliar with this service?

Very Familiar	1	2	3	4	5	6	7	8	9	Very Unfamiliar

Would you consider yourself informed or uninformed about this service?

Not at all informed	1	2	3	4	5	6	7	8	9	Highly informed

On the whole, considering all sorts of factors combined, about how risky would you say it is to choose a charter flight for vacation?

Not risky at all	1	2	3	4	5	6	7	8	9	Extremely risky

I feel that this service is:

Very accessible to my senses	1	2	3	4	5	6	7	8	9	Not accessible to my senses at all
Very abstract	1	2	3	4	5	6	7	8	9	Very concrete
Very general	1	2	3	4	5	6	7	8	9	Very specific

This is a difficult service to think about. 1 2 3 4 5 6 7 8 9

You perceive this service (charter flight for vacation) as:

important	1	2	3	4	5	6	7	8	9	unimportant
of no concern	1	2	3	4	5	6	7	8	9	of concern to me
means a lot to me	1	2	3	4	5	6	7	8	9	means nothing to me
useless	1	2	3	4	5	6	7	8	9	useful
valuable	1	2	3	4	5	6	7	8	9	worthless
matters to me	1	2	3	4	5	6	7	8	9	doesn't matter
significant	1	2	3	4	5	6	7	8	9	insignificant
vital	1	2	3	4	5	6	7	8	9	superfluous
boring	1	2	3	4	5	6	7	8	9	interesting
essential	1	2	3	4	5	6	7	8	9	nonessential
undesirable	1	2	3	4	5	6	7	8	9	desirable

V. Finally, could you please complete this last section (again, all information remains confidential):

Your Age:
- ☐ 15-20 years
- ☐ 21-25 years
- ☐ 26-30 years
- ☐ 31 +years

Your Gender:
- ☐ male
- ☐ female

Level of Studies:
- ☐ undergraduate
- ☐ graduate

Status:
- ☐ Full-time
- ☐ Part-time

Area of study:
- ☐ Arts & Science
- ☐ Commerce & Administration
- ☐ Engineering & Computer Science
- ☐ Fine Arts
- ☐ Other (please specify): _____

Department: _____

Thank You!

	Strongly disagree								Strongly agree
It is very easy for me to select a charter flight for vacation.	1	2	3	4	5	6	7	8	9
It is not very difficult to find the charter flight that is best for me.	1	2	3	4	5	6	7	8	9
It is very difficult to discriminate between different charter flights when I want to go for vacation.	1	2	3	4	5	6	7	8	9
I feel very confused when selecting a charter flight for vacation.	1	2	3	4	5	6	7	8	9
Selecting a charter flight for vacation is not very complicated.	1	2	3	4	5	6	7	8	9
Generally, I am sure that I will incur some risk if I flight on a charter for vacation in the 12 next months.	1	2	3	4	5	6	7	8	9
Globally, I am sure I will make a mistake if I flight on a charter for vacation.	1	2	3	4	5	6	7	8	9
After all, I have the feeling that a charter flight for vacation will really cause me lots of trouble.	1	2	3	4	5	6	7	8	9
I don't have much experience making this kind of decision.	1	2	3	4	5	6	7	8	9
I need more information about this service in order to make myself a clear idea of what it is.	1	2	3	4	5	6	7	8	9
This service is very easy to see and touch.	1	2	3	4	5	6	7	8	9
I can physically grasp this service.	1	2	3	4	5	6	7	8	9
This service evokes different images.	1	2	3	4	5	6	7	8	9
I have a very clear picture of this service.	1	2	3	4	5	6	7	8	9
The image comes to my mind right away.	1	2	3	4	5	6	7	8	9
This is not the sort of service that is easy to picture.	1	2	3	4	5	6	7	8	9
This service is very tangible.	1	2	3	4	5	6	7	8	9

APPENDIX 2 – QUESTIONNAIRE #2

Instructions

To answer the questions, please **circle** the most appropriate number on the scales provided, or **check** the appropriate answer where necessary. Please circle or check ONLY ONE answer per question, and **please answer every question**, since incomplete questionnaires will not be taken into account for the data analysis. Thus, even if you are not sure about what a statement means, please answer to the best of your understanding. Finally, remember that there is no right or wrong answer: this survey intends to study only consumer perceptions.

▯- ▯

I. In the first part of this questionnaire, we are going to consider a specific type of product: A pair of jeans.

I wear jeans: Never 1 2 3 4 5 6 7 8 9 Very often

In general, my knowledge of jeans is:

Very weak 1 2 3 4 5 6 7 8 9 Very strong

Compared to my friends and acquaintances, my knowledge of jeans is:

Weaker 1 2 3 4 5 6 7 8 9 Stronger

Compared to experts in that area, my knowledge of jeans is:

Weaker 1 2 3 4 5 6 7 8 9 Stronger

The information search I have performed on jeans is:

Very weak 1 2 3 4 5 6 7 8 9 Very thorough

In general, would you consider yourself familiar or unfamiliar with jeans?

Very Familiar 1 2 3 4 5 6 7 8 9 Very Unfamiliar

Would you consider yourself informed or uninformed about jeans?

Not at all informed 1 2 3 4 5 6 7 8 9 Highly informed

On the whole, considering all sorts of factors combined, about how risky would you say it is to buy a pair of jeans?

Not risky at all 1 2 3 4 5 6 7 8 9 Extremely risky

I feel that this product is:

Very accessible to my senses 1 2 3 4 5 6 7 8 9 Not accessible to my senses at all

Very abstract 1 2 3 4 5 6 7 8 9 Very concrete

Very general 1	2	3	4	5	6	7	8	9	Very specific
	Strongly disagree								**Strongly agree**
It is very easy for me to choose a pair of jeans.	1	2	3	4	5	6	7	8	9
It is not very difficult to find the pair of jeans that is best for me.	1	2	3	4	5	6	7	8	9
It is very difficult to discriminate between different pairs of jeans when I need one.	1	2	3	4	5	6	7	8	9
I feel very confused when choosing a pair of jeans.	1	2	3	4	5	6	7	8	9
Choosing a pair of jeans is not very complicated.	1	2	3	4	5	6	7	8	9
Generally, I am sure that I will incur some risk if I buy a pair of jeans in the 12 next months.	1	2	3	4	5	6	7	8	9
Globally, I am sure I will make a mistake if I make this purchase.	1	2	3	4	5	6	7	8	9
After all, I have the feeling that this purchase will really cause me lots of trouble.	1	2	3	4	5	6	7	8	9
I don't have much experience making this kind of decision.	1	2	3	4	5	6	7	8	9
I need more information about this product in order to make myself a clear idea of what it is.	1	2	3	4	5	6	7	8	9
This item is very easy to see and touch.	1	2	3	4	5	6	7	8	9
I can physically grasp this product.	1	2	3	4	5	6	7	8	9
This item evokes different images.	1	2	3	4	5	6	7	8	9
I have a very clear picture of this item.	1	2	3	4	5	6	7	8	9
The image comes to my mind right away.	1	2	3	4	5	6	7	8	9
This is not the sort of item that is easy to picture.	1	2	3	4	5	6	7	8	9
This item is very tangible.	1	2	3	4	5	6	7	8	9

This is a difficult item to think about. 1 2 3 4 5 6 7 8 9

You perceive this product (jeans) as:

important	1	2	3	4	5	6	7	8	9	unimportant
of no concern	1	2	3	4	5	6	7	8	9	of concern to me
means a lot to me	1	2	3	4	5	6	7	8	9	means nothing to me
useless	1	2	3	4	5	6	7	8	9	useful
valuable	1	2	3	4	5	6	7	8	9	worthless
matters to me	1	2	3	4	5	6	7	8	9	doesn't matter
significant	1	2	3	4	5	6	7	8	9	insignificant
vital	1	2	3	4	5	6	7	8	9	superfluous
boring	1	2	3	4	5	6	7	8	9	interesting
essential	1	2	3	4	5	6	7	8	9	nonessential
undesirable	1	2	3	4	5	6	7	8	9	desirable

II. In the second part of this questionnaire, we are going to consider another type of product: A Web browser.

I use a Web browser:

Never 1 2 3 4 5 6 7 8 9 Very often

In general, my knowledge of Web browsers is:

Very weak 1 2 3 4 5 6 7 8 9 Very strong

Compared to my friends and acquaintances, my knowledge of Web browsers is:

Weaker 1 2 3 4 5 6 7 8 9 Stronger

Compared to experts in that area, my knowledge of Web browsers is:

Weaker 1 2 3 4 5 6 7 8 9 Stronger

The information search I have performed on Web browsers is:

Very weak 1 2 3 4 5 6 7 8 9 Very thorough

In general, would you consider yourself familiar or unfamiliar with Web browsers?

Very Familiar 1 2 3 4 5 6 7 8 9 Very Unfamiliar

Would you consider yourself informed or uninformed about Web browsers?

Not at all informed	1	2	3	4	5	6	7	8	9	Highly informed

On the whole, considering all sorts of factors combined, about how risky would you say it is to choose a Web browser?

Not risky at all	1	2	3	4	5	6	7	8	9	Extremely risky

I feel that this product is:

Very accessible to my senses	1	2	3	4	5	6	7	8	9	Not accessible to my senses at all
Very abstract	1	2	3	4	5	6	7	8	9	Very concrete
Very general	1	2	3	4	5	6	7	8	9	Very specific

	Strongly disagree								**Strongly agree**
It is very easy for me to choose a Web browser.	1	2	3	4	5	6	7	8	9
It is not very difficult to find the Web browser that is best for me.	1	2	3	4	5	6	7	8	9
It is very difficult to discriminate between different Web browsers when I need one.	1	2	3	4	5	6	7	8	9
I feel very confused when choosing a Web browser.	1	2	3	4	5	6	7	8	9
Choosing a Web browser is not very complicated.	1	2	3	4	5	6	7	8	9
Generally, I am sure that I will incur some risk if I buy a Web browser in the 12 next months.	1	2	3	4	5	6	7	8	9
Globally, I am sure I will make a mistake if I make this purchase.	1	2	3	4	5	6	7	8	9
After all, I have the feeling that this purchase will really cause me lots of trouble.	1	2	3	4	5	6	7	8	9
I don't have much experience making this kind of decision.	1	2	3	4	5	6	7	8	9
I need more information about this product in order to make myself a clear idea of what it is.	1	2	3	4	5	6	7	8	9

	Strongly disagree								**Strongly agree**
This item is very easy to see and touch.	1	2	3	4	5	6	7	8	9
I can physically grasp this product.	1	2	3	4	5	6	7	8	9
This item evokes different images.	1	2	3	4	5	6	7	8	9
I have a very clear picture of this item.	1	2	3	4	5	6	7	8	9
The image comes to my mind right away.	1	2	3	4	5	6	7	8	9
This is not the sort of item that is easy to picture.	1	2	3	4	5	6	7	8	9
This item is very tangible.	1	2	3	4	5	6	7	8	9
This is a difficult item to think about.	1	2	3	4	5	6	7	8	9

You perceive this product (Web browser) as:

important	1	2	3	4	5	6	7	8	9	unimportant
of no concern	1	2	3	4	5	6	7	8	9	of concern to me
means a lot to me	1	2	3	4	5	6	7	8	9	means nothing to me
useless	1	2	3	4	5	6	7	8	9	useful
valuable	1	2	3	4	5	6	7	8	9	worthless
matters to me	1	2	3	4	5	6	7	8	9	doesn't matter
significant	1	2	3	4	5	6	7	8	9	insignificant
vital	1	2	3	4	5	6	7	8	9	superfluous
boring	1	2	3	4	5	6	7	8	9	interesting
essential	1	2	3	4	5	6	7	8	9	nonessential
undesirable	1	2	3	4	5	6	7	8	9	desirable

III. Now we are going to deal with a service: A haircut at a hairdresser/barber.

I have a haircut: Never 1 2 3 4 5 6 7 8 9 Very often

In general, my knowledge of this service is:

Very weak 1 2 3 4 5 6 7 8 9 Very strong

Compared to my friends and acquaintances, my knowledge of this service is:

Weaker 1 2 3 4 5 6 7 8 9 Stronger

Compared to experts in that area, my knowledge of this service is:

Weaker	1	2	3	4	5	6	7	8	9	Stronger

The information search I have performed on this service is:

Very weak	1	2	3	4	5	6	7	8	9	Very thorough

In general, would you consider yourself familiar or unfamiliar with this service?

Very Familiar	1	2	3	4	5	6	7	8	9	Very Unfamiliar

Would you consider yourself informed or uninformed about this service?

Not at all informed	1	2	3	4	5	6	7	8	9	Highly informed

On the whole, considering all sorts of factors combined, about how risky would you say it is to choose a haircut at a hairdresser/barber?

Not risky at all	1	2	3	4	5	6	7	8	9	Extremely risky

I feel that this service is:

Very accessible to my senses	1	2	3	4	5	6	7	8	9	Not accessible to my senses at all
Very abstract	1	2	3	4	5	6	7	8	9	Very concrete
Very general	1	2	3	4	5	6	7	8	9	Very specific

	Strongly disagree								**Strongly agree**
It is very easy for me to choose a haircut at a hairdresser/barber.	1	2	3	4	5	6	7	8	9
It is not very difficult to find the haircut at the hairdresser/barber that is best for me.	1	2	3	4	5	6	7	8	9
It is very difficult to discriminate between different haircuts when I need one.	1	2	3	4	5	6	7	8	9
I feel very confused when choosing a haircut at a hairdresser/barber.	1	2	3	4	5	6	7	8	9
Choosing a haircut at a hairdresser/barber is not very complicated.	1	2	3	4	5	6	7	8	9
Generally, I am sure that I will incur some risk if I have a haircut in the 12 next months.	1	2	3	4	5	6	7	8	9

	Strongly disagree								**Strongly agree**
Globally, I am sure I will make a mistake if I have a haircut.	1	2	3	4	5	6	7	8	9
After all, I really have the feeling that this decision will cause me trouble.	1	2	3	4	5	6	7	8	9
I don't have much experience making this kind of decision.	1	2	3	4	5	6	7	8	9
I need more information about this service in order to make myself a clear idea of what it is.	1	2	3	4	5	6	7	8	9
This service is very easy to see and touch.	1	2	3	4	5	6	7	8	9
I can physically grasp this service.	1	2	3	4	5	6	7	8	9
This service evokes different images.	1	2	3	4	5	6	7	8	9
I have a very clear picture of this service.	1	2	3	4	5	6	7	8	9
The image comes to my mind right away.	1	2	3	4	5	6	7	8	9
This is not the sort of service that is easy to picture.	1	2	3	4	5	6	7	8	9
This service is very tangible.	1	2	3	4	5	6	7	8	9
This is a difficult service to think about.	1	2	3	4	5	6	7	8	9

You perceive this service (haircut) as:

important	1	2	3	4	5	6	7	8	9	unimportant
of no concern	1	2	3	4	5	6	7	8	9	of concern to me
means a lot to me	1	2	3	4	5	6	7	8	9	means nothing to me
useless	1	2	3	4	5	6	7	8	9	useful
valuable	1	2	3	4	5	6	7	8	9	worthless
matters to me	1	2	3	4	5	6	7	8	9	doesn't matter
significant	1	2	3	4	5	6	7	8	9	insignificant
vital	1	2	3	4	5	6	7	8	9	superfluous
boring	1	2	3	4	5	6	7	8	9	interesting
essential	1	2	3	4	5	6	7	8	9	nonessential
undesirable	1	2	3	4	5	6	7	8	9	desirable

IV. And last, we are considering the following service: A charter flight for vacation.

I flight on a charter for vacation:

Never 1 2 3 4 5 6 7 8 9 Very often

In general, my knowledge of this service is:

Very weak 1 2 3 4 5 6 7 8 9 Very strong

Compared to my friends and acquaintances, my knowledge of this service is:

Weaker 1 2 3 4 5 6 7 8 9 Stronger

Compared to experts in that area, my knowledge of this service is:

Weaker 1 2 3 4 5 6 7 8 9 Stronger

The information search I have performed on this service is:

Very weak 1 2 3 4 5 6 7 8 9 Very thorough

In general, would you consider yourself familiar or unfamiliar with this service?

Very Familiar 1 2 3 4 5 6 7 8 9 Very Unfamiliar

Would you consider yourself informed or uninformed about this service?

Not at all informed 1 2 3 4 5 6 7 8 9 Highly informed

On the whole, considering all sorts of factors combined, about how risky would you say it is to choose a charter flight for vacation?

Not risky at all 1 2 3 4 5 6 7 8 9 Extremely risky

I feel that this service is:

Very accessible to my senses 1 2 3 4 5 6 7 8 9 Not accessible to my senses at all

Very abstract 1 2 3 4 5 6 7 8 9 Very concrete

Very general 1 2 3 4 5 6 7 8 9 Very specific

	Strongly disagree								**Strongly agree**
It is very easy for me to select a charter flight for vacation.	1	2	3	4	5	6	7	8	9
It is not very difficult to find the charter flight that is best for me.	1	2	3	4	5	6	7	8	9
It is very difficult to discriminate between different charter flights when I want to go for vacation.	1	2	3	4	5	6	7	8	9
I feel very confused when selecting a charter flight for vacation.	1	2	3	4	5	6	7	8	9
Selecting a charter flight for vacation is not very complicated.	1	2	3	4	5	6	7	8	9
Generally, I am sure that I will incur some risk if I flight on a charter for vacation in the 12 next months.	1	2	3	4	5	6	7	8	9
Globally, I am sure I will make a mistake if I flight on a charter for vacation.	1	2	3	4	5	6	7	8	9
After all, I have the feeling that a charter flight for vacation will really cause me lots of trouble.	1	2	3	4	5	6	7	8	9
I don't have much experience making this kind of decision.	1	2	3	4	5	6	7	8	9
I need more information about this service in order to make myself a clear idea of what it is.	1	2	3	4	5	6	7	8	9
This service is very easy to see and touch.	1	2	3	4	5	6	7	8	9
I can physically grasp this service.	1	2	3	4	5	6	7	8	9
This service evokes different images.	1	2	3	4	5	6	7	8	9
I have a very clear picture of this service.	1	2	3	4	5	6	7	8	9
The image comes to my mind right away.	1	2	3	4	5	6	7	8	9
This is not the sort of service that is easy to picture.	1	2	3	4	5	6	7	8	9
This service is very tangible.	1	2	3	4	5	6	7	8	9

This is a difficult service to think about. 1 2 3 4 5 6 7 8 9

You perceive this service (charter flight for vacation) as:

important	1	2	3	4	5	6	7	8	9	unimportant
of no concern	1	2	3	4	5	6	7	8	9	of concern to me
means a lot to me	1	2	3	4	5	6	7	8	9	means nothing to me
useless	1	2	3	4	5	6	7	8	9	useful
valuable	1	2	3	4	5	6	7	8	9	worthless
matters to me	1	2	3	4	5	6	7	8	9	doesn't matter
significant	1	2	3	4	5	6	7	8	9	insignificant
vital	1	2	3	4	5	6	7	8	9	superfluous
boring	1	2	3	4	5	6	7	8	9	interesting
essential	1	2	3	4	5	6	7	8	9	nonessential
undesirable	1	2	3	4	5	6	7	8	9	desirable

V. Finally, could you please complete this last section (again, all information remains confidential):

Your Age:
- ☐ 15-20 years
- ☐ 21-25 years
- ☐ 26-30 years
- ☐ 31 +years

Your Gender:
- ☐ male
- ☐ female

Level of Studies:
- ☐ undergraduate
- ☐ graduate

Status:
- ☐ Full-time
- ☐ Part-time

Area of study:
- ☐ Arts & Science
- ☐ Commerce & Administration
- ☐ Engineering & Computer Science
- ☐ Fine Arts
- ☐ Other (please specify): _____

Department: _____

Thank You!

APPENDIX 3 – ONE-WAY ANOVA RESULTS OF PRODUCTS/SERVICES RATINGS ALONG 7 VARIABLES

Mental Dimension of Intangibility

Group	Product/Service Name	Mean	Standard Deviation
1	**Jeans**	**2.2562**	**1.3224**
5	Haircut	2.8507	1.5790
8	Pizzeria Dinner	3.2393	1.7505
3	Computer	3.6253	1.5805
4	Pop Music	3.7947	1.8044
7	Bank Account	4.5811	1.7327
2	Web Browser	4.8700	1.9440
6	**Charter Flight**	**4.9551**	**2.0157**
	Total	3.7728	1.9459

Physical Dimension of Intangibility

Group	Product/Service Name	Mean	Standard Deviation
1	**Jeans**	**2.0378**	**1.6118**
3	Computer	2.7510	1.7851
8	Pizzeria Dinner	3.8138	2.2765
4	Music	4.1184	2.5459
5	Haircut	4.4911	2.4229
7	Bank Account	5.5648	2.3543
2	Web Browser	5.9241	2.1706
6	**Charter Flight**	**6.0893**	**2.1295**
	Total	4.3339	2.5747

Generality

Group	Product/Service Name	Mean	Standard Deviation
1	**Jeans**	**3.5471**	**1.9187**
5	Haircut	3.6406	1.7312
3	Computer	3.9045	1.8736
7	Bank Account	4.1862	2.1251
8	Pizzeria Dinner	4.2561	1.9398
4	Music	4.6992	1.9977
2	Web Browser	4.7477	1.8947
6	**Charter Flight**	**4.8879**	**1.9713**
	Total	4.2344	1.9902

Difficulty of Evaluation

Group	Product/Service Name	Mean	Standard Deviation
8	**Pizzeria Dinner**	**3.5184**	**1.5932**
1	Jeans	3.9004	1.8069
4	Music	4.2099	1.8009
7	Bank Account	4.2804	1.5945
5	Haircut	4.7560	1.8825
2	Web Browser	4.8801	1.8497
3	Computer	5.0271	1.6943
6	**Charter Flight**	**5.1798**	**1.7012**
	Total	4.4590	1.8216

Risk

Group	Product/Service Name	Mean	Standard Deviation
1	**Jeans**	**2.6756**	**1.5679**
8	Pizzeria Dinner	2.7898	1.6165
4	Music	3.0361	1.8313
7	Bank Account	3.3745	1.7088
5	Haircut	3.7578	1.8193
2	Web Browser	3.8333	1.8491
3	Computer	4.4484	1.8255
6	**Charter Flight**	**4.5530**	**1.7672**
	Total	3.5516	1.8709

Experience

Group	Product/Service Name	Mean	Standard Deviation
1	**Jeans**	**5.9942**	**1.2981**
5	Haircut	5.9232	1.5016
3	Computer	5.4681	1.6715
7	Bank Account	5.0810	1.6787
4	Music	5.0476	1.9417
2	Web Browser	4.7830	2.0076
8	Pizzeria Dinner	4.7717	1.5969
6	**Charter Flight**	**3.6869**	**1.8906**
	Total	5.0943	1.8397

Involvement

Group	Product/Service Name	Mean	Standard Deviation
8	**Pizzeria Dinner**	**4.6285**	**1.6057**
4	Music	5.2228	1.8370
6	Charter Flight	5.2529	1.7784
1	Jeans	5.9558	1.4973
2	Web Browser	6.2255	1.6600
7	Bank Account	6.8242	1.4356
5	Haircut	7.1064	1.5231
3	**Computer**	**7.5068**	**1.3694**
	Total	6.0883	1.8591

APPENDIX 4 – CANONICAL DISCRIMINANT FUNCTIONS EVALUATED AT GROUP MEANS (GROUP CENTROÏDS)

Group	Function 1	Function 2
1	-.94595	-.67376
2	.64500	.50279
3	-.74440	.08075
4	-.14698	.05461
5	.21915	-.61545
6	.70458	.55484
7	.53471	.33047
8	-.20606	-.25022

APPENDIX 5 - MULTIPLE REGRESSIONS ON DIFFICULTY OF EVALUATION PER PRODUCT/SERVICE

Variables	1. Jeans		2. Web browser		3. Home Computer		4. Pop Music		5. Haircut		6. Charter Flight		7. Chequing Account		8. Pizzeria Dinner	
	Coef.	T-value	Coef.	T-value	Coef.	T-value	Coef.	T-value	Coef.	T-value	Coef.	T-value	Coef.	T-value	Coef.	T-value
PHYS	-	-	-	-	-.1100	-1.965[b]	-	-	-.1654	-1.368[a]	-	-	-	-	-	-
MENT	.4317	4.968[a]	.3030	5.393[a]	-	-	.4402	5.390[a]	.4412	5.522[b]	.2044	3.473[a]	.6462	10.549[a]	-	-
GEN	-	-	.2787	2.670[a]	-	-	-	-	-	-	.1647	2.580[a]	-	-	.4312	6.071[a]
EXP	-	-	-.2582	-2.397[a]	-.7647	-13.234[a]	-.3710	-6.150[a]	-	-	-.4200	-5.021[a]	-	-	-.2271	-3.868[a]
INV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EXPPHYS	-	-	-	-	-	-	-	-	-	-	.0254	2.603[a]	-	-	-	-
EXPMENT	-	-	-	-	.0364	3.132[a]	-	-	-	-	-	-	-.0753	-6.853[a]	-	-
EXPGEN	-	-	-.0301	-1.601[c]	.0176	2.148[b]	-	-	-	-	-	-	.0267	3.171[a]	-	-
INVPHYS	-	-	.0118	2.337[b]	-	-	-	-	.0332	2.190[c]	-	-	-	-	.0302	3.543[a]
INVMENT	-	-	-	-	-	-	-.0287	-2.132[b]	-	-	-	-	-	-	.0586	5.251[a]
INVGEN	-	-	-	-	-	-	-	-	-	-	-.0163	-1.686[b]	-	-	-.0817	-5.707[a]
F-value, R^2	24.68[a], R^2 = .10		61.30[a], R^2 = .58		47.58[a], R^2 = .43		68.95[a], R^2 = .46		14.03[a], R^2 = .15		29.47[a], R^2 = .39		37.97[a], R^2 = .31		29.16[a], R^2 = .36	

R^2 = adjusted, a = p<.01, b = p<.05, c = p<.10

APPENDIX 6 - MULTIPLE REGRESSIONS ON PERCEIVED RISK PER PRODUCT/SERVICE

Variables	1. Jeans		2. Web browser		3. Home Computer		4. Pop Music		5. Haircut		6. Charter Flight		7. Chequing Account		8. Pizzeria Dinner	
	Coef.	T-value	Coef.	T-value	Coef.	T-value	Coef.	T-value	Coef.	T-value	Coef.	T-value	Coef.	T-value	Coef.	T-value
PHYS	-	-	-	-	-	-	-.3165	-2.943[a]	-	-	-	-	-	-	-	-
MENT	.5252	7.206[a]	.4352	7.629[a]	-	-	.4826	7.143[a]	.6770	4.797[a]	.2808	4.564[a]	.4120	5.560[a]	.3158	5.344[a]
GEN	-	-	-	-	.1478	2.537[a]	-	-	-	-	-	-	-	-	-	-
EXP	-	-	-	-	-.2861	-4.296[a]	-	-	-	-	-	-	-	-	-.1512	-2.319[b]
INV	-	-	-	-	-	-	-.3304	-3.231[a]	.1912	2.397[a]	-.1983	-2.516[a]	-.2632	-3.652[a]	-	-
EXPPHYS	-	-	-.0138	-1.809[b]	-	-	-	-	-	-	-	-	-	-	-	-
EXPMENT	-	-	-	-	-	-	-	-	-.0531	-2.190[b]	-	-	-.0208	-1.754[c]	-	-
EXPGEN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INVPHYS	-	-	-	-	-.0164	-1.696[b]	.0337	1.718[c]	-	-	-	-	-	-	-	-
INVMENT	-	-	-	-	.0425	4.073[a]	-	-	-	-	-	-	-	-	-	-
INVGEN	-.0146	-1.745[b]	-	-	-	-	-	-	-	-	.0156	1.402[c]	-	-	-	-
F-value, R^2	26.05[a], R^2 = .18		34.93[a], R^2 = .23		16.22[a], R^2 = .20		23.26[a], R^2 = .27		12.22[a], R^2 = .13		16.94[a], R^2 = .18		23.76[a], R^2 = .22		27.23[a], R^2 = .18	

R^2 = adjusted, a = p<.01, b = p<.05, c = p<.10

APPENDIX 7 – REGRESSIONS FOR PRODUCTS AND SERVICES

For Products Together

Regression For Products on Difficulty of Evaluation

Variable	Coefficient	T-value
Mental Intangibility	.315	9.025[a]
Experience	-.432	-12.606[a]
Involvement	.148	4.551[a]
Generality	.079	2.948[a]
Involvement*Physical Intangibility	-.010	-2.946[a]
	F-value = 109.86[a]	R^2 = .37

a = p<.01, b = p<.05, c = p<.10

Regression For Products on Perceived Risk

Variable	Coefficient	T-value
Mental Intangibility	.537	13.939[a]
Physical Intangibility	-.294	-4.594[a]
Involvement	.129	3.806[a]
Experience	-.267	-4.682[a]
Experience*Physical Intangibility	.024	2.198[b]
	F-value = 66.14[a]	R^2 = .26

a = p<.01, b = p<.05, c = p<.10

For Services Together

Regression For Services on Difficulty of Evaluation

Variable	Coefficient	T-value
Mental Intangibility	.454	13.366[a]
Generality	.087	3.112[a]
Experience*Mental Intangibility	-.042	-6.199[a]
Involvement*Physical Intangibility	.014	4.929[a]
	F-value = 81.30[a]	R^2 = .25

a = p<.01, b = p<.05, c = p<.10

Regression For Services on Perceived Risk

Variable	Coefficient	T-value
Mental Intangibility	.421	11.798[a]
Experience*Mental Intangibility	-.030	-4.271[a]
Involvement*Generality	.086	2.037[b]
	F-value = 71.73[a]	R^2 = .18

a = p<.01, b = p<.05, c = p<.10

APPENDIX 8 – T-TESTS FOR GENDER DIFFERENCES IN PRODUCTS/SERVICES RATINGS ALONG 7 VARIABLES

Mental Dimension of Intangibility

		Male	Female	
Group	**Product/Service Name**	**Mean (st. dev.)**	**Mean (st. dev.)**	**Significance (T)**
1	**Jeans**	**2.2731 (1.368)**	**2.2598 (1.312)**	**.943**
2	**Web browser**	**4.2690 (1.754)**	**5.2556 (2.007)**	**.000**
3	Computer	3.5848 (1.567)	3.6429 (1.584)	.784
4	Music	3.6174 (1.682)	3.8777 (1.853)	.278
5	Haircut	2.8330 (1.482)	2.7795 (1.588)	.801
6	Charter flight	4.8121 (2.003)	4.9984 (2.045)	.504
7	Bank account	4.6145 (1.565)	4.5816 (1.816)	.887
8	**Pizzeria dinner**	**3.3060 (1.680)**	**3.2223 (1.774)**	**.720**

Physical Dimension of Intangibility

		Male	Female	
Group	**Product/Service Name**	**Mean (st. dev.)**	**Mean (st. dev.)**	**Significance (T)**
1	**Jeans**	**1.9835 (1.460)**	**2.0079 (1.607)**	**.909**
2	Web browser	6.0055 (1.998)	5.8452 (2.304)	.594
3	Computer	2.6250 (1.589)	2.7979 (1.896)	.470
4	Music	4.2500 (2.572)	3.9712 (2.511)	.414
5	**Haircut**	**4.9286 (2.388)**	**4.2126 (2.387)**	**.030**
6	Charter flight	6.1722 (2.017)	5.9764 (2.224)	.507
7	**Bank account**	**5.9511 (2.329)**	**5.3121 (2.395)**	**.045**
8	Pizzeria dinner	3.4728 (2.290)	4.0922 (2.302)	.045

Generality

Group	Product/Service Name	Male Mean (st. dev.)	Female Mean (st. dev.)	Significance (T)
1	**Jeans**	**3.5500 (1.828)**	**3.5079 (1.940)**	**.872**
2	Web browser	4.6389 (1.872)	4.7840 (1.925)	.582
3	Computer	3.8098 (1.887)	3.9393 (1.892)	.610
4	Music	4.8804 (2.006)	4.6143 (2.005)	.324
5	Haircut	3.8077 (1.735)	3.5079 (1.715)	.207
6	Charter flight	4.6833 (1.910)	4.9762 (1.968)	.279
7	Bank account	4.3424 (2.137)	4.0461 (2.096)	.296
8	**Pizzeria dinner**	**4.1264 (1.940)**	**4.3582 (1.890)**	**.368**

Difficulty of Evaluation

Group	Product/Service Name	Male Mean (st. dev.)	Female Mean (st. dev.)	Significance (T)
1	Jeans	3.4615 (1.568)	4.2331 (1.894)	.002
2	**Web browser**	**4.3896 (1.680)**	**5.2040 (1.909)**	**.001**
3	**Computer**	**4.7560 (1.729)**	**5.1826 (1.693)**	**.064**
4	Music	4.1592 (1.827)	4.1929 (1.820)	.891
5	**Haircut**	**4.0956 (1.526)**	**5.1339 (1.995)**	**.000**
6	Charter flight	5.2418 (1.609)	5.1059 (1.788)	.565
7	Bank account	4.0687 (1.430)	4.3358 (1.680)	.210
8	**Pizzeria dinner**	**3.5793 (1.589)**	**3.4950 (1.616)**	**.696**

Risk

Group	Product/Service Name	Male Mean (st. dev.)	Female Mean (st. dev.)	Significance (T)
1	**Jeans**	**2.6538 (1.449)**	**2.6732 (1.657)**	**.929**
2	**Web browser**	**3.4286 (1.725)**	**4.0132 (1.857)**	**.019**
3	Computer	4.5190 (1.748)	4.3723 (1.881)	.550
4	Music	3.1069 (1.709)	2.9846 (1.922)	.621
5	**Haircut**	**3.2335 (1.690)**	**4.0531 (1.826)**	**.001**
6	Charter flight	4.5760 (1.509)	4.4803 (1.919)	.693
7	Bank account	3.4022 (1.846)	3.2376 (1.571)	.467
8	**Pizzeria dinner**	**2.8841 (1.690)**	**2.7163 (1.586)**	**.443**

Experience

Group	Product/Service Name	Male Mean (st. dev.)	Female Mean (st. dev.)	Significance (T)
1	**Jeans**	**5.9892 (1.237)**	**5.9768 (1.295)**	**.943**
2	**Web browser**	**5.4586 (1.805)**	**4.3697 (2.014)**	**.000**
3	**Computer**	**5.9963 (1.587)**	**5.1363 (1.686)**	**.000**
4	Music	4.9918 (2.000)	5.1454 (1.908)	.556
5	**Haircut**	**5.7129 (1.439)**	**6.0922 (1.542)**	**.067**
6	Charter flight	3.5651 (1.829)	3.7726 (1.930)	.425
7	Bank account	5.3084 (1.646)	5.0390 (1.668)	.227
8	**Pizzeria dinner**	**5.0179 (1.665)**	**4.6042 (1.552)**	**.055**

Involvement

		Male	Female	
Group	**Product/Service Name**	**Mean (st. dev.)**	**Mean (st. dev.)**	**Significance (T)**
1	**Jeans**	**5.8920 (1.456)**	**5.9655 (1.518)**	**.720**
2	Web browser	6.2648 (1.326)	6.2551 (1.793)	.965
3	Computer	7.4680 (1.324)	7.5593 (1.406)	.621
4	Music	5.1048 (1.707)	5.3420 (1.922)	.338
5	**Haircut**	**6.7896 (1.442)**	**7.3780 (1.469)**	**.004**
6	Charter flight	5.1763 (1.657)	5.3664 (1.817)	.430
7	Bank account	6.7443 (1.357)	6.9216 (1.437)	.349
8	**Pizzeria dinner**	**4.7596 (1.618)**	**4.5247 (1.612)**	**.279**