AN ABSTRACT OF THE THESIS OF

Rahma Sferi for the degree of Master of Science in Apparel, Interiors, Housing, and Merchandising presented on March 7, 2000.

Title: The Effect of the Color Scheme of a Bank Interior on Subjects’ Evaluations of the Bank and its Employees.

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Abstract approved:  

Carol C. Caughey

Previous research suggested that unlike marketing goods, marketing services required manipulating the physical environment as well as price, promotion, production, and place. This indicates a role for interior design in the marketing strategy of a service business. Research also indicated that little was known about the effect of the different
environmental components, especially the color component on consumers' responses. Most color research in marketing is in advertising and packaging but most of it is proprietary and thus unpublished.

The objective of this study was to analyze the effect of color on subjects' evaluations of a bank and its employees. The choice of banks was motivated by the fact that banks have a high degree of familiarity among potential subjects.

An experiment was designed in which subjects were provided with an illustration of a bank's interior and asked to evaluate the service quality at that bank. The illustrations were computer generated and were identical except for the color scheme. The study used monochromatic color schemes, manipulating the hue (warm and cool) at two value levels (dark and light), generating four treatments (light-warm, dark-warm, light-cool, and dark-cool). A convenience sample of 486 college students, in two lower division classes, was used. Subjects were each assigned a treatment at random, and asked to rate the banks and their employees on eight criteria: reliability, responsiveness, competence, courtesy, access, communication, security, and understanding. The treatments were in the form of 5 ½ X 4 inch computer printouts attached
to the last page of a questionnaire package. The experiment was conducted at the beginning of class time and subjects were given directions by the class instructors. The experiment took subjects an average time of five minutes to complete.

The study investigated the effect of color on subjects' evaluations of the eight dependent measures in terms of three independent variables: value, hue, and subjects' gender. The data collected indicated that value had more effect on the dependent variables than did hue or subjects' gender. Banks with dark color schemes were thought to be more reliable, more competent, and safer. Banks with a light color scheme scored significantly better in terms of courtesy and communication, and scales relating to access. In terms of hue, warm color schemes had a higher mean score on courtesy, while the cool color schemes scored higher on competence. Warm hues were found to be more aesthetically pleasing and more familiar than the cool ones. Gender yielded an effect only on the responsiveness variable where mean scores of female subjects were higher than males' scores.

Although the study had some limitations the results indicated that there is potential for using specific color choices in bank interiors to foster a desired image. Specifically value can be varied throughout a
bank interior to communicate different messages to customers. Dark values could be applied in the teller area to project the impression of safety and privacy that customers need. In the loan department light values can be used to communicate consideration and accessibility. Findings from this study can be of use in other service oriented businesses with role demands similar to banks.
The Effect of the Color Scheme of a Bank Interior on Subjects’
Evaluations of the Bank and its Employees

by

Rahma Sferi

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Dean of Graduate School

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Rahma Sferi, Author
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CHAPTER I

INTRODUCTION

The Problem

Marketing is a field where behavioral studies are crucial in extending the knowledge base on consumer behavior, from decision making to customer satisfaction. However, marketing research and practice have often failed to look at consumer behavior as affected by the physical environment (Bitner, 1992).

Traditionally, marketers have used four factors to influence consumers' behavior: price, product, place, and promotion, or the four P's of the marketing mix (Bitner, 1992). These tools were originally developed to market goods. By 1984, nearly three-fourths of the United
States' work force was working in the service sector (Bateson, 1985), and services became the dominant factor in the United States' economy (Shostack, 1977b). An increasing body of literature is arguing that services are different from goods, and that as such, they need to be marketed differently (Shostack 1977a, 1977b; Berry & Clark, 1986; Zeithaml, Parasuraman, & Berry 1985; Schmenner, 1986).

Today, the perception of quality of service is declining, and it is therefore crucial to identify the elements that influence consumers' perceptions about quality (Bitner, 1990). According to researchers, the physical environment in which the service transaction takes place plays a big role in consumers' evaluation of, and satisfaction with the service provided (Kotler, 1974; Bitner, 1992; Baker, 1987).

The physical environment includes settings such as the lighting, the color scheme, the furniture, the artwork, the air quality, and so on; all of which are interior design elements. In general, most of the interior design decisions are made based on intuition rather than on empirical research (Bitner 1992). Research documenting the effects of physical settings on consumer behavior is limited, and results of existing research are inconclusive (Bitner, 1992).
There is a widespread use of manipulation of physical settings to increase the buying probability of consumers. However, marketers often failed to include them in the marketing mix. Retailers have long taken advantage of the power of the physical environment, as illustrated by the investment in exterior and interior design made by some department stores and restaurants (Ward, Bitner, & Barnes, 1992).

In order to understand the importance of the physical environment for the service sector, and the significance of the following study, it is necessary to know the definition of services, and the characteristics that differentiate services from products.

**Service Businesses**

**What is a Service?**

Generally defined, services are tasks performed for the consumer, rather than objects delivered to them (Booms & Bitner, 1982; Zeithaml, Parasuraman, & Berry, 1985). Most services today include some goods elements such as food at a restaurant, in the same way that most goods
include service elements such as delivery of purchased furniture (Shostack, 1977b). Bateson (1985) thinks of goods and services as belonging to a spectrum, with pure goods at one end, and pure services at the other.

Services are also referred to as an experience that delivers a bundle of benefits to the consumer (Bateson, 1985). The consumer, by acquiring a service, experiences a service encounter, which is defined as everything that the consumer meets while acquiring the service (Bateson, 1985). His/her evaluation and satisfaction with a service depends on his/her evaluation of the service encounter. Bateson (1985) illustrated the elements that intervene in the service encounter in a system that he labeled servuction system (See Figure 1).
Figure 1: The Servuction System (Bateson, 1985)
According to Bateson (1985), this system creates the consumer's experience that delivers the benefit to him/her. The servuction system includes the customer, other customers, the employees, and the inanimate environment. The inanimate environment corresponds to the physical environment that is the concern of the present study.

Characteristics of Services

**Intangibility:** As mentioned earlier, a service can be a combination of tangible and intangible elements (Shostack, 1977b; Bateson, 1985). The greater the dominance of the intangible elements, the less appropriate product marketing is to the service. Usually, consumers cannot actually try a service before acquiring it, the way they can with a tangible good (Zeithaml et al., 1985; Bateson, 1979; Bitner, 1992). This characteristic is the most important for services. It is what separates services from goods, and it provides the basis for all other characteristics (Bateson, 1979).

**Heterogeneity:** Services are people-based and process-based. Therefore, achieving service uniformity and quality control are serious challenges for service firms. The quality of the service performed is not
consistent from one customer to another, from one employee to another, or from one day to another (Bateson, 1977; Zeithaml et al., 1985; Berry, 1983; Booms & Bitner, 1982).

**Perishability:** Services cannot be inventoried or stored. Airplane seats that are not used today cannot be saved for tomorrow (Berry, 1983; Bell, 1981; Bateson, 1979; Zeithaml et al., 1985).

**Inseparability of Consumption and Production:** The consumer is part of the service experience. He or she is present in the "factory" as the service is "produced". The service is sold, produced, and consumed simultaneously (Zeithaml et al., 1985).

**Marketing Implications**

Services are ephemeral, so when acquiring services consumers have a different approach than when acquiring goods. Usually marketers position products primarily through "image", but they position services primarily through "evidence" (Shostack, 1977b). Since the service is intangible, consumers will look for any tangible clues they can find to evaluate it and make a decision (e.g., employees' appearance, other customers, advertisements, word-of-mouth, and so forth). The elements
of the servuction system become the "package" of the service (Baker, 1987; Booms & Bitner, 1982).

Consumers will perceive the clues offered to them differently from one consumer to another, which makes services very subjective and first impressions extremely important (Bitner & Ward, 1982). According to Shostack: "Like truth and beauty, the 'reality' of service varies according to the mind of the beholder" (Shostack, 1977b, p. 42).

The marketing implication for service firms is that the marketing mix needs to include more than the traditional four P's. According to Booms and Bitner (1982), three more P's should be considered: "Participants," "Process of service assembly," and "Physical evidence."

Physical evidence or servicescape (Bitner, 1992) corresponds to the physical environment that Bateson also referred to as the inanimate environment. If the physical environment becomes part of the marketing mix, it means that interior design decisions that were usually left to the designers will have to be taken by marketers in accordance with a specific and comprehensive marketing strategy.

Interior design as a marketing tool can be used by marketers to achieve the following goals: attract customers, establish or reinforce an image, reposition a firm in customers' perceptions, differentiate a service
firm from its competitors, segment a market, and influence customers' satisfaction (Ward, Bitner, & Barnes, 1982).

Classification of Services

Not all services are equal. Services differ just by virtue of how many tangible elements they include. Typically, researchers have classified services in different categories according to the purposes of their studies. In the present context, the physical environment will vary in importance and role according to the type of service business considered.

In 1992, Bitner introduced a classification of services that speaks to that effect. The typology is illustrated by a matrix that features who performs the action (customer vs. employee) on the vertical dimension, and the physical complexity of the environment on the horizontal dimension (See Figure 2). Services that do not require the presence of the consumer (e.g., utility companies) in the servuction system are not relevant to this study. The physical environment of these services does not influence its consumers because they do not experience it. The physical environment is relevant in self-service organizations (e.g.,
laundromat) but will not be dealt with in this study. The proposed study will focus on interpersonal services only.

In 1987, Baker argued that the nature of a service would determine how long a consumer spends in the service facility, and that time is a factor in the role of the environment. Lovelock (1983) classified services according to whether a service was performed for the customer or for his/her possession. Customers spend more time at the service facility when the service is performed for them.

When a service is performed for the customer's possession, he or she usually leaves the item to be serviced, and comes back to retrieve it when the service is completed, spending little time in the service facility (Baker, 1987). A customer in a restaurant is expected to stay longer in the service facility than one dropping off a car for repair. Based on this categorization, Baker (1987) proposed that the more time a customer spends in a servicescape, the more important the role of the physical environment becomes.

Baker (1987) also viewed facility-based attributes as another important factor for a service-business. Facility-based services are services that sell the physical environment as part of the product, such as restaurants, hotels, and amusement parks (Baker, 1987). According
to Baker, high-facility based services need to pay more attention to environment setting decisions.

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| **Self-Service**  
(customer only) | **Elaborate**  
Golf land  
Surf n' Splash | **Lean**  
ATM,  
Ticketron  
Post office kiosk  
Movie theatre  
Express mall drop-off |
| **Inter-personal Services**  
(both customer and employee) | **Elaborate**  
Hotels  
Restaurants  
Health clinic  
Hospital  
Bank  
Airline  
School | **Lean**  
Dry cleaner  
Hot dog stand  
hair salon |
| **Remote Services**  
(employee only) | **Elaborate**  
Telephone company  
Insurance company  
Utility  
many professional services | **Lean**  
telephone mall-order desk  
Automated voice-messaging based services |

Figure 2: Typology of Service Organizations Based on Variation in Form and Usage of Servicescapes (Bitner, 1992).
Purpose of the Study

The present study can be classified under the general heading of interior design as a marketing tool for service organizations. It investigated the impact of the physical environment of service businesses on consumers' perceptions and evaluations of a business, and its employees.

The previous section underlined the characteristics of services and the differences that exist among them. It is impossible to study the impact of the physical environment of service businesses in general. The present study will focus on banks as a service business. On Bateson's goods and services spectrum, banks are closer to the pure-service businesses. In terms of the amount of time consumers spend in the service facility, banks rate very low. Consumers usually try to spend as little time as possible in a bank facility. Finally, banks are not facility-based services. Usually, the importance of the physical environment is evident for services that are facility-based, and where consumers spend a relatively long time. If marketing services are to incorporate the physical environment as one of its P's, the question is, will it benefit the other types of businesses, and how. The present study focused on banks as a
first step in providing an answer to the aforementioned question. The choice of a bank was also motivated by the fact that, compared to other service organizations, banks have a high degree of familiarity among consumers (Surprenant & Solomon, 1987).

Before laying down the study’s specific goals, it is important to define banks, and to outline the characteristics of their environment, and their market.

**Banks**

**Definition**

The banking industry is part of a much larger and more broadly defined financial services industry. The financial services industry includes three types of institutions:

1- depository institutions: banks, credit unions, savings and loans, and savings banks,

2- contractual intermediaries: life insurance companies, state and local retirement funds, pension funds, and so forth,
3- other types of intermediaries: finance companies, mortgage companies, mutual funds, and so forth (Bennett & Loucks, 1995).

Today, there are very few differences among the depository institutions. The adoption of marketing concepts by all institutions resulted in a tendency to use similar tools and strategies, which in turn has resulted in an increased homogeneous image of all these institutions in the mind of the consumer. Usually, consumers refer to all depository institutions as banks (Bennett & Loucks, 1995).

Over the past fifteen years banks have undergone a period of turmoil that changed the economic environment in which they operate (Verbrugge, Whidbee & Friedmann, 1995; Barth & Nataraajan, 1995; Bennett & Loucks, 1995). This period was characterized by a rapidly changing technology, increased competition, and intense external pressures from regulators and legislators. The result was significant changes in the internal composition of the banking industry.

Nature of Financial Services

The core of services a bank provides is based on storage and transfer of value, with other peripheral services, such as counseling or
financial management (Shostack, 1977a). Banks are in the business of developing and offering financial services. According to Shostack (1977a), these services are “almost metaphysical in nature.” What bankers commonly refer to as a new “product” is often a new vehicle to deliver the same service. New financial services are very hard to develop, as illustrated by Shostack’s comment (1977a), “a transfer is a transfer is a transfer.” An article in Business Week (1973) argued that: “Money is a commodity, and one bank’s product is no greener or crisper than another’s.” Therefore, the financial services industry as a whole, and the banking industry in particular, have little opportunity for differentiation (Baker, Berry & Parasuraman, 1988).

**Bank Marketing**

The first consequence of the changes that the banking industry experienced over the last twenty years has been the adoption of marketing by all banking institutions who until then did not believe they needed it (Laurent, 1979).

Marketing in the banking industry became a necessity as competition became increasingly intense. Over the years, regulations
and legislation removed barriers to the banking industry allowing for greater competition from non-banks as well as banks (Verbrugge, Whidbee & Friedmann, 1995). The result of the increased competition was the erosion of the commercial market revenues leading banks to turn to the private depositor market. Hence the increased importance of marketing in banking (Laurent, 1979).

Marketers in the banking industry are, however, faced with big challenges. They are dealing with an increased competition between firms who provide very intangible, undifferentiated services. Any innovation adopted by any bank, such as 24-hour banking, is likely to be copied by all competitors right away. The marketing solution to all banks still requires differentiation, but not of the services provided as much as of the image projected by the bank to its customers. Marketers need to use more segmentation so that a given bank focuses on a chosen type of consumer instead of catering to the entire public indiscriminately (Laurent, 1979).

The marketer's mission is further complicated by the unique constraints that banks face. First, consumers in general have a negative perception about the industry as a whole. Every bank has to fight this negative image even if they are not responsible for it. The second
constraint is imposed on the banking industry by regulators and legislators. These outside regulatory forces require that banks serve all segments of the market contrary to marketing principles (Verbrugge, Whidbee & Friedmann, 1995). Choices such as markets served, selection and pursuit of particular market niches, positioning and differentiation strategies which are usually a firm’s prerogative are, in the case of a bank, heavily affected by outside forces (Verbrugge; Whidbee & Friedmann, 1995).

This situation raises a very important question about the role that the physical environment of a bank can play in its marketing strategy. As Hammer (1982) pointed out: “The key to differentiation - to providing a reason why a customer should choose one bank over another - may very well lie in the image it presents.” In the mind of most consumers, banking institutions do not differ in terms of services, prices, or branch location. The undifferentiated image that most consumers have of bank services may cause the physical environment of a bank to become an important factor in a consumer’s bank selection (Baker; Berry & Parasuraman, 1988). Traditionally, banking executives have not always recognized the importance and the challenge of effective bank-facility design. They are, however, increasingly aware of its role. Some banks
are even hiring retail consultants to transform branches into “money stores” (Weiner, 1986).

The following section of this paper will review what is known today about the role and the importance of the physical environment of a bank. The goal is to ultimately know whether the physical environment can help marketers achieve the two types of responses mentioned above: *emphasis on image* and *increased segmentation* within the constraints and environmental conditions of banks.

**Importance of the Physical Environment for Banks**

Usually, bank facility design is a collaboration between architects as artists and engineers, and bankers as business people to achieve a balance between aesthetics and economics (Feldman, 1975). In 1970’s marketing was not as widespread as it is today, and was non-existent in the banking industry.
The Traditional role of architecture:

For over a century the architecture of banking facilities tried to convey two essential messages to its entire community. Externally, the message centered on an image of quality, character, wealth, continuity, stability, permanence, and pride (Feldman, 1975; Hammer, 1982; Piotrowski & Rogers, 1999). These qualities were usually manifested in height, with bank buildings usually the tallest in town (Feldman, 1975). Internally, banks tried to project the image of an environment in which customers can be serviced quickly, conveniently, and safely (Feldman, 1975; Piotrowski & Rogers, 1999). Today, most banks want their structure to project the same messages. These banks are usually national downtown banks. Color schemes used in these banks are usually based on a corporate color scheme or determined by the designer and the bank manager. Classic banks use wood tones and the traditional hues of the American colonial period (Piotrowski & Rogers, 1999).

Because of the new constraints that banks face today, and the role that marketing is playing in the industry, a new breed of banks is gaining ground and popularity: the local, independent, community bank
(Piotrowski & Rogers, 1999). This new type of banks targets a different type of consumer, and thus requires its structure to communicate a different message. Regardless of whether it is a small neighborhood bank, or a large national bank, the process of designing the branch facility remains the same.

The effect of architecture on banks

Image as projected by the physical environment emphasizes the idea that banks have to focus on how they want their customers to perceive them, as opposed to what they want to be (Wafford, Preddy, & Gup, 1982). City National Bank conducted a survey to assess how customers (current and potential) perceived the bank relative to its competitor. One of the banks’ goals was to be perceived (not actually be) as being larger than its main competitor, First National Bank (Wafford, Preddy, & Gup, 1982). Their survey revealed that consumers thought that First National Bank was larger because it was located in the tallest building in town (Wafford, Preddy, & Gup, 1982).

An automatic by-product of any built or renovated bank facility is the creation of an image, whether the bank manager plans for it or not.
The physical elements of a bank facility, including everything from the facade to any artwork used, symbolize what the bank stands for, and consequently shape the attitudes of all its audiences (employees, customers, shareholders, competitors). A bank's marketing strategy may require it to communicate different messages to its different audiences. This stresses the importance of planning the design of the facility so it does not convey contradicting messages to different groups, or messages that cancel each other out (Hammer, 1982).

The image conveyed through a building is different from the one conveyed in a thirty-second television commercial (Hammer, 1982). This raises the important issue of consistency through time. If the building conveys a certain image to audiences that are important to the bank the day of its inauguration, what will it communicate to them a couple of years later? (Hammer, 1982). Another important difference with television commercials is that the image conveyed can be immediately confirmed or contradicted by the other elements of the service encounter. The image, even though it is appealing to individuals' perceptions, must have substance (Hammer, 1982). A discrepancy between image and substance can engender disappointment, which in turn can lead to mistrust (Hammer, 1982).
Constraints of bank-facility design:

The objective of branch-facility design is not only to promote a certain image of the bank, but also to accommodate the needs of the users: the employees and the customers. Ideally, the facility should be enjoyable to both groups but in reality this is sometimes difficult to achieve as employees' and customers' needs are often in conflict (Baker, Berry & Parasuraman, 1988). For example, employees need teller stations to provide them with privacy and shelter, which in turn can be seen by the customer as a barrier to social interactions and contact. Employees might prefer fluorescent lighting because it reduces eyestrain, and customers might not like this type of lighting because it gives the environment a feeling of coldness and impersonality. Service officers may prefer to use open desks or partitioned workstations, but this office configuration may not provide the customer with the privacy and confidentiality he/she needs. Research has indicated that these two factors, privacy and confidentiality during financial transactions, are important in customers' perceptions of service quality of a bank (Baker, Berry & Parasuraman, 1988). This situation illustrates the importance and complexity of the design of a bank facility if it is to give the bank an
edge over its competition.

Relevance of a bank’s physical environment to its users:

How important is the role of the physical environment in influencing consumers’ perceptions of banks? There have been no studies investigating this particular relationship between physical environment of banks and consumer perceptions (Baker, Berry & Parasuraman, 1988). In 1988 however, a group of researchers conducted a survey of both the employees and the customers of a southwestern branch (Baker, Berry & Parasuraman, 1988). The objective of the survey was to answer three main questions:

- How important is the physical environment to customers and employees?
- What environmental factors are most important to employees and customers?
- Are customers’ and employees’ expectations of the branch physical environment similar? (Baker; Berry & Parasuraman, 1988).

Both customers and employees rated the importance of the physical environment above the midpoint on a seven-point scale, with
employees rating it significantly higher than did customers.

Respondents were asked to rate the relative importance of five environmental categories: ambient condition (e.g., lighting, temperature, music, scent, and noise), aesthetics (e.g., color, style, materials used, artwork, etc.), privacy (e.g., enclosed offices versus open plan design), efficiency/convenience (e.g., directional signals, etc.), and social conditions (e.g., employees, customers) (Baker; Berry & Parasuraman, 1988). Both customers and employees rated the efficiency dimension relatively high. Customers rated the privacy dimension considerably higher than the employees did. On the other hand, employees rated the aesthetic dimension as much more important than did the customers. Overall, the survey revealed that customers, who were older and had lower levels of education and occupational levels, were more likely to rate the environment as important (Baker, Berry & Parasuraman, 1988).

On the aesthetic dimension both groups expressed preferences for windows to the outside, a feeling of openness inside the bank, and artwork placed on the walls. Both groups wanted a serene and relaxing atmosphere, and they both seemed to prefer cool color schemes to warm ones, but employees wanted more subdued colors than the customers wanted. As far as the color scheme is concerned, the preference of the
cool color schemes might be related to the geographical location of the sample bank (Baker, Berry & Parasuraman, 1988). Customers, much more than employees preferred traditional furniture styles over modern styles, and an informal rather than a formal atmosphere (Baker, Berry & Parasuraman, 1988). According to the customers, a bank should not look like too much money has been spent on it. It appears that customers tend to perceive that they would be paying for expensive decor (Baker, Berry & Parasuraman, 1988).

**Objective of the Study**

The present study investigated the effect of the physical environment of bank interiors on consumers’ evaluations of the bank and its employees. The physical environment includes numerous components, and it is impossible to study the effect of all of them simultaneously. Therefore, this study focused on the color component of the physical environment of bank interiors. The study investigated the effect of the color schemes of bank interiors on subjects’ evaluations of the bank and its employees. The researcher used monochromatic color
schemes and focused on differences in subjects’ responses to cool versus warm color schemes, at two different value levels.

The specific objectives of the study were the following:

1 - Determine whether different color schemes within banks communicate different messages about the bank and its employees to the subjects.

2 - Investigate if subjects evaluate more positively banks with a cool color scheme or those with a warm one.

3 - Investigate if subjects evaluate more positively banks with a dark color scheme or those with a light one.

4 - Determine if, overall, there is a difference between male and female subjects’ evaluations of the banks based on the hue and value of the interior color scheme.
CHAPTER II

LITERATURE REVIEW

Theoretical Framework

In 1974, Kotler argued that buyers respond to the total product when making a purchase decision. According to Kotler (1974), the atmospherics of the place where consumers buy the product or service is a significant factor in the total product. By atmospherics he referred to "the conscious designing of space to create certain effects in buyers". More precisely "[it] is the effort to design buying environments to produce specific emotional effects in the buyer that enhance his purchase probability" (Kotler 1974, p. 50).

Studies conducted over the last few years confirm the influence of atmospherics on consumer behavior. In a study of a supermarket environment Milliman (1982) found that, in some situations, the tempo
of background music affected the pace of in-store traffic flow, and the
daily gross sales volume purchased by customers. In another study,
Milliman (1986) found that variations in the tempo of background music
could significantly influence length of stay and purchases of restaurant
customers.

Bitner (1990) found that environment was an important factor on
which customers relied to evaluate a service encounter. The results of
her study indicated that customers have a better opinion of an organized
travel agent office than a disorganized one. Customers were also more
willing to accept a mistake from the employee at the organized office,
than from the one in the disorganized office.

Marketing research needs a theoretical base from which to conduct
more systematic studies about the influence of the physical environment
on consumers' behavior in service businesses. In 1987, Baker
introduced a framework that classified the environmental dimensions
that potentially can influence consumers' behavior. Her perspective was
entirely consumer oriented although she recognized that as long as
employees were present their needs must be considered also.

In 1992, Bitner developed a conceptual framework for
understanding the environment-user relationship in service
organizations. The framework is comprehensive. It takes into account all the environmental dimensions in the servicescape, looks at all users' behaviors, both the customers and the employees, and considers many types of internal responses the environment can stimulate: cognitive, emotional, and physiological. In terms of behavior, the framework looks at the approach-avoidance patterns of the users as well as the social interactions between and among them (See Figure 3).

Bitner (1992) used the term servicescape to refer to the physical environment. The term has the same meaning as atmosphere (i.e., result of a certain atmospherics) except that it is more general. The terms atmosphere and atmospherics are often associated with retailing.

Usually the customer perspective is different from that of the employees. In most cases, customers and employees have conflicting needs because they have different reasons for being in the environment. Although it is important to take into account both users' needs it was the objective of this study to focus only on the customer perspective.
Figure 3: Framework for Understanding Environment-User Relationships in Service Organizations (Bitner, 1992).
In her model, Bitner introduced five components: the environmental dimensions, the holistic environment, the response moderators, the internal responses, and the behavior. All five components are important to the understanding of the dynamics between the environment and the users of the space. However, the present researcher focused on the components that directly pertained to the present study: the behavior, the internal responses, and the environmental dimensions.

**Behavior**

According to Mehrabian and Russell (1974), the behaviors (responses) of people in certain environments can be one of two possibilities: approach or avoidance. Approach is defined as any positive behavior in and toward the environment and the people in it. It includes staying longer, exploring, interacting with other people in the environment, coming back. Avoidance describes any behavior opposite of approach.

These approach and avoidance behaviors are consistent with customer behaviors in a consumption setting. An approach behavior can
correspond to store patronage intentions, staying longer in the service facility, interaction with service personnel, repeat shopping frequency, more money spent in the firm (Baker, 1987). The avoidance behavior would be the total opposite of what was described above.

**Internal Responses**

As people perceive an environment, they respond to it at three different levels: physiological, emotional, and cognitive.

**Physiological Responses**

The fact that environmental dimensions have physiological effects on people is recognized by researchers in all fields. Studies have shown that continuous exposure to extreme or uncomfortable levels of ambient factors can cause unhealthful physical stress on people (Bitner, 1992). This realization was at the origin of numerous studies. Design and engineering research have addressed issues of physiological responses to equipment. Such research is now labeled ergonomics and human factors research (Bitner, 1992).
Emotional Responses

According to the Mehrabian-Russell model (Mehrabian & Russell, 1974), people are stimulated by the environmental settings, such as the lighting, the layout, the color scheme, or the noise level. These stimuli in turn trigger emotional responses in people known as PAD: Pleasure, Arousal, and Dominance. According to Mehrabian and Russell (1974), these three emotional states can account for all the emotional states that people experience because of any type of environmental stimulus. Later Russell (1975) dismissed the dominance factor as an emotional response, arguing that it is more a cognitive response.

The Mehrabian and Russell model (1974) introduced a general measure of the different types of stimulus factors, applicable to any environment setting: the information "load". The load was defined in terms of novelty and complexity. Novelty being a function of how much an environment was unfamiliar, new, unexpected, and surprising, and complexity referring to factors such as number of elements, and extent of change or motion. The load of an environment is positively related to the degree of arousal an environment induces. The higher the information load in an environment, the more stimulated and aroused a person is.
The arousal level is in turn dependent on the individual (Mehrabian, 1977). "Screeners" will be less aroused by a high load environment because they filter what affects them reducing the information load. "Non-screeners", on the other hand, are more susceptible to higher-load environments because they experience everything.

The Mehrabian and Russell model focuses only on the emotional aspects of people's responses to environment stimuli. According to Golledge (1987), Kaplan (1987), and Rapoport (1982), environments can also trigger cognitive responses (Bitner, 1992).

**Cognitive Responses**

According to Ittelson, Proshansky, Rivlin, & Winkel (1974), cognition is the most important psychological concept. It is the process we use to reduce the amount of information in the environment to a number of manageable sets. This process enables us to form mental images of the different environments we perceive in order to deal with them in a more predictable way in the future (Ittelson et al., 1974). Cognitive perception enables us to predict our reaction to a particular event. Therefore, we do not need to experience an event to know what
our behavior will be. These responses are what influences people's beliefs about a place, the people, and the products present in that place. In that sense, environment can be viewed as a form of nonverbal communication (Bitner, 1992). Cognition also involves categorization. Categorization may lead to inferences and expectations about the stimulus which in turn leads to behavioral consequences (Bitner, 1992).

The present study focused the scope of investigation to the cognitive responses while acknowledging the connection and dependence of all three types of responses on one another.

**Environmental Dimensions**

A preliminary task in any study of the influence of the environment on behavior is the choice of stimulus variables or categories (i.e., environmental descriptors) to examine.

Different sets of stimulus categories are relevant for different fields. Marketing researchers need to find an organization of environmental stimuli that serves their needs. In 1974, Kotler suggested the term atmospherics to describe four elements: visual perception (color, brightness, size, and shapes), aural perception (volume, pitch), olfactory
perceptions (scent, freshness), and tactile perceptions (temperature, softness, smoothness).

In 1987, Baker developed a framework that is applicable to the service industry. She broke down the concept of environment into three sets: social factors, ambient factors, and design factors.

Social Factors

Social factors include both the customers and the employees present at the place of business during the service encounter. People in an environment influence how it is perceived. A crowded football game is considered a desired condition, while a crowded department store would mean inconvenience (Baker, 1987).

Ambient Factors

Ambient factors affect the customer’s subconscious (Steele, 1981; Campbell, 1983). They include heating, ventilation and air conditioning, lighting, acoustics, temperature, scent and cleanliness (Baker, 1987).
Because they are at a low level of consumer awareness, these factors have a very small potential to attract and motivate consumers. Consumers usually take for granted that the temperature is comfortable, that the lighting is appropriate, or that the place of business is clean (Baker, 1987; Bitner, 1992). At extreme levels these factors become noticeable to the consumer. Unless one of these factors is part of the product offered (e.g., the scent of fresh bread in a bakery), at noticeable levels they may act as disincentives. Loud music in a store may irritate consumers and they may become dissatisfied and leave (Baker, 1987). Usually these factors affect all five senses. Sometimes however they can be imperceptible, such as in the case of chemicals, gases, or infrasound (Bitner, 1992).

In her classification of the environmental dimensions Bitner (1992), also used the category ambient factors. Bitner, however, classified color as an ambient factor.
Design Factors

Design factors exist at the forefront of the customers' awareness. They are the visual cues that most stimulate our cognitive perception. The design component has two dimensions: functional and aesthetic.

The functional dimension includes elements such as layout or space arrangement, comfort, and signage. The aesthetic dimension includes architecture, color, accessories, scale, materials, texture, pattern, shape, and style. Because these factors are visible, they may be used by managers to foster desired behaviors. The functional dimensions are important in aiding the customer to achieve his/her purpose for being in the store (Bitner, 1992). The aesthetic dimensions can increase the customer's pleasure of being in the servicescape, and can act as a differentiating tool for the service firm (Baker, 1987).

Bitner's classification parallels that of Baker. It includes an ambient factor category as mentioned earlier. However, what Baker labeled design factors, Bitner grouped in two different categories: spatial layout and functionality; and signs, symbols, and artifacts. The first category corresponds to the functional dimensions and the second to the aesthetic dimensions. Bitner did not include the social factors in the
environmental dimensions. In her model, they are linked to the users' responses and behavior.

There are two possible ways of studying the effect of the environment on behavior: consider the environment holistically (information load), or consider the possible effect of a single environmental dimension. The present study will use the latter method and focus on one component in the aesthetic dimension (design factor): color.

**Color**

Color is a fascinating and complex issue, judging by the number of ingenious minds it has challenged through time. Thinkers such as Aristotle, Descartes, Newton, and Geothe all explored and investigated different aspects of color (Hubel, 1995). The complexity of color results from the fact that it is a concept that has interdisciplinary ramifications (Riley II, 1995). Color is a multifaceted concept that can be dealt with by numerous disciplines, from the exact sciences to the fine arts (Lamb & Bourriau, 1995; Kuehni, 1997). The understanding of the nature of color calls for answers from at least two disciplines: physics and biology
(Hubel, 1995; Kuehni, 1997). To understand how we perceive, interpret, and respond to color, we need to look into another host of disciplines including, psychology, anthropology, and history (Lamb & Bourriau, 1995; Kuehni, 1997). Finally, answers to how to use color in everyday life can be found in nature, in the arts, or in the design world (Lamb & Bourriau, 1995; Kuehni, 1997).

Therefore, the simplest questions about the phenomenon of color can lead us through an interdisciplinary journey that can be long but necessary if we are to arrive at the most thorough answers.

**The Physical Nature of Color**

Color, whether emitted from a source such as the sun or a lamp, or reflected from an object, such as a red apple, is light as it is perceived by the visual system (Gosney & Dayton, 1995). Light is a form of energy consisting of electromagnetic packets called photons. Photons vibrate and travel at the constant speed of 186,281 miles per second, in straight lines and in a wave like motion (De Grandis, 1984; Hubel, 1995; Kuehni, 1997). Color is completely defined by three attributes of the
electromagnetic waves of light: length, amplitude, and purity (Gosney & Dayton, 1995).

**Wavelength**

It is the distance between two consecutive crests of a wave (Gosney & Dayton, 1995; Kuehni, 1997). Wavelength is associated with the property of color called *hue*, which corresponds to what we usually perceive as color, and refer to as red, orange, or blue (Gosney & Dayton, 1995). Wavelengths determine whether an electromagnetic radiation is visible or not, and what hue it projects (Baylor, 1995).

**Amplitude**

It is the height of an electromagnetic wave from trough to peak (Gosney & Dayton, 1995). Variation in a wave’s amplitude affects the second property of color: *value*. Value, also referred to as brightness or lightness, is described by adjectives such as dark, medium, or light, or
words such as, dim or dazzling. The greater the amplitude of a wave the brighter the hue (Gosney & Dayton, 1995).

Purity

It determines the third property of color referred to as *saturation* (Gosney & Dayton, 1995). Saturation, also called chroma or tone, can be defined as the hue content of a color relative to its value (Kuehni, 1997). A pure color contains light (both emitted or reflected) of only one wavelength (Gosney & Dayton, 1995). Saturation of a color is usually described by words such as grayish, dull, vivid, or strong (Gosney & Dayton, 1995).

**Color Relationships and Classifications**

Color perception is relative. It depends as much on the color of an object as on its background. Color perception is also subjective and varies from one person to another.

According to Albers (1975), if fifty people hear the word “red”, it is likely that they will each imagine a different type of red, make different
associations, and react differently to the color name. Albers (1975) also stated that visual memory is very poor compared with the auditory memory. Therefore, even if the word "red" is specified to refer to a specific red such as the red in the Coca-Cola label, each person will probably remember it differently. If the listeners actually have samples from which to pick the red of the Coca-Cola label, they might still choose different reds. Finally, Albers (1975) stated that if the fifty people focus on the same red sample, there is no way of knowing if they have the same perception.

According to Albers, "Color is the most relative medium in art." (Albers, 1975, p. 8). This realization makes the study of color relationships and interactions very important. Over the years, many theories of color relationships have been developed in an attempt to organize and understand color interactions. These theories were attempts at developing a systematic framework to explain the similarities and differences between colors (Zelanski & Fisher, 1994). These efforts were also aimed at improving communication about color. In our daily vocabulary there is a limited number of color names to describe an innumerable number of colors (Albers, 1975).
Thinkers, scientists, and artists such as Newton, da Vinci, Harris, Goethe, Ruge, Chevreul, Rood, and Ostwald devised their own color models. Today, the United States, Germany, Great Britain, and Japan use the Munsell color system as a basis for pigment specification. Munsell first introduced his color system in 1905, in his book Color Notation (Zelanski & Fisher, 1994). He used hue, value and saturation to describe colors. Munsell used a photometer to grade, in equal steps, each of the three characteristics of color. He used five primary hues: red, yellow, blue, green, and purple instead of three. Therefore, he obtained different combinations of complementary colors. Munsell used a 10-point value scale and labeled each step with a number. Zero corresponding to black, and nine to white. On the saturation dimension, zero corresponds to achromatic hues, and nine to the most saturated hue. Hues reach maximum saturation at different steps of values, and they vary in number of steps from neutral grey to maximum saturation (Zelanski & Fisher, 1994). Consequently, Munsell's model is an irregular three-dimensional model. The notation YR.5.3 indicates a yellow-red hue, with a value of level five, and a saturation of level three.
The Psychology of Color

Over the past hundred years, many researchers investigated the possible effects of color on humans (Valdez & Mehrabian, 1994). Valdez and Mehrabian (1994) categorized this research into six different, but interrelated topics: color preference, color preference and personality, color and physiology, color and emotions, color and behavior, and reaction to color concepts (Valdez & Mehrabian, 1994).

Problems with Color Research

According to Gelineau (1981), although there is a substantial body of experimental work on color, most of it is flawed. Some of the earlier laboratory studies often used small and non-representative samples, some studies confused experimental design variables and stimulus, and some extrapolated beyond the evidence provided by the data (Valdez & Mehrabian, 1994; Fehrman & Fehrman, 2000). Especially in the early studies, researchers often failed to control for the color stimuli they used (Valdez & Mehrabian, 1994; Fehrman & Fehrman, 2000).
Normally, color stimuli are defined completely by the three characteristics of color: hue, value, and saturation (Valdez & Mehrabian, 1994). Many studies gave only vague descriptions of the color stimuli. Some specified hue but did not specify value and saturation. Other studies failed to specify the lighting conditions in which they introduced the stimuli. Some studies did not show any color stimuli at all and elicited subjects’ responses to color names such as “red” and “green”. Few studies used a standardized color notation system and those that did, used color samples that confounded all three color characteristics (Gelineau, 1981; Valdez & Mehrabian, 1994) making it difficult to compare results across studies (Gelineau, 1981). Another common problem with color studies is their failure to systematically screen for possible problems in subjects’ color vision (Gelineau, 1981). Consequently, a significant number of conclusions about color and its effects on humans cannot be generalized because of a lack of rigor in defining the color stimuli used (Valdez & Mehrabian, 1994). It is none the less important to review the major findings in color research to lay the ground for the hypotheses of the current study.
Color Research

*Color preference.*

It is the most studied area within color research (Fehrman & Fehrman, 2000). Most research on color preference has suffered from the flaws mentioned above (Granger, 1955; Valdez & Mehrabian, 1994). There is a consensus in research (flawed or not) on the relationship between color and preference. In 1955, Granger stated that wavelength (hue) fundamentally defines preference and that: “In general, the hues of shorter wavelength are preferred to those of longer wavelength; the blues and greens are preferred to the yellows, oranges and reds.” (Granger, 1955, p. 14).

*Color preference and personality.*

There is a considerable interest in the area of color and personality, but major methodological weaknesses in research conducted so far have produced inconclusive results (Valdez & Mehrabian, 1994).
In 1981 Gelineau conducted a systematic research study to investigate the relationship between color preference and personality and concluded that there was no evident relationship.

*Physiological effects of color.*

Physiological investigations of color have studied the effect of different colors on indices of functioning such as the galvanic skin response (GSR), muscle tension, electroencephalograph (EEG), and heart rate (Jacobs & Suess, 1975). These studies failed to specify color brightness/value and saturation, or to investigate the effects of these characteristics on physiology (Valdez & Mehrabian, 1994). Generally, the conclusions in this area of color research are, that long-wave colors, such as red and orange, are more arousing than short-wave colors, such as blue and purple (Valdez & Mehrabian, 1994).
Reactions to color concepts.

In this category of studies, instead of using specific color stimuli, researchers elicit subjects’ reactions to color concepts, which are represented by color names (Valdez & Mehrabian, 1994). Adams and Osgood (1973) conducted the most comprehensive cross-cultural study in which they used subjects from 23 different cultures to evaluate color concepts. Findings were consistent across the 23 samples, and colors were rated as follows: Blue and green were good; red was strong and active; yellow was weak and bad; black was bad, strong, and inactive; grey was bad, weak, and inactive; white was good and weak; and color was good and active.

Research on the emotional reactions to color, and color effects on behavior is more reliable and is discussed in the following sections.

Emotional Reactions to Color

Emotional reactions to color can be described by the Pleasure-Arousal-Dominance (PAD) model (Valdez & Mehrabian, 1994). In 1994, Valdez and Mehrabian conducted a study on the effect of color on
emotions as measured by the PAD model. The purpose of the study was threefold: to investigate the influence of saturation and brightness/value on emotions; investigate the effects of hue on emotions; and investigate the emotional impact of achromatic colors. The results showed that a substantial portion of the emotional response to color is due to value and saturation.

Value and saturation

a. Pleasure: brighter (with higher value) and more saturated colors were judged more pleasant but value had more effect than saturation on pleasure-displeasure responses to color.

b. Arousal: less bright (darker) and more saturated (more vivid, strong or purer) colors were found to be more arousing with saturation having a greater effect. Generally, arousal decreased regularly as a color varies from dark to light, but there was a small reversal and arousal increased for the lightest colors.

c. Dominance: less bright (darker) and more saturated (more vivid, strong or purer) colors were found to induce greater feelings of dominance with value significantly stronger than saturation in
determining dominance reactions to color. Dominance decreased as color varied from dark to light but tapered off at the lightest colors. Men and women reacted emotionally to value and saturation in a similar way, but color saturation related more significantly to pleasure for women than for men.

**Hue**

Regarding the effects of hue on emotions, Valdez & Mehrabian’s (1994) study yielded the following results:

a. Pleasure: short-wavelength hues were the most pleasant and intermediate-wavelength hues (green-yellow, yellow, and yellow red) were the least pleasant. Furthermore, the long-wave hues (yellow-red and red) showed an increase in pleasure rating. Finally, complementary colors (red-purple and purple) showed pleasure ratings comparable to the short-wave hues.

b. Arousal: Generally, hue did not have an effect on arousal. However, the green hues (green-yellow, blue-green, and green) elicited the highest level of arousal from subjects. This result is in total contradiction with previous studies that found that hue had an effect on
arousal levels. According to Valdez and Mehrabian (1994), these studies systematically confounded hue with value, saturation, or both. Consequently, the usual high levels of arousal observed for red were not due to the hue but rather to the high saturation of the color samples used (Valdez & Mehrabian, 1994).

c. Dominance: Results relating hue to dominance were weak and non-significant except for green-yellow and yellow which were found more dominant than red-purple.

_Achromatic colors._

Pleasure increased from black to white. Black was the least pleasant, white the most pleasant and grays had intermediate values of pleasantness. Arousal levels were highest for black, diminishing steadily for grays of steadily increasing value, and moderately increasing for white. Black also elicited the highest levels of dominance, followed by grays with intermediate levels of dominance and white with the lowest levels. In other words, dark colors (regardless of hue) elicited feelings that were more or less related to aggression, hostility, or anger (Valdez & Mehrabian, 1994).
Color Effects on Behavior

Ultimately, all emotional, cognitive, and physiological states can translate into a specific behavior (Bitner, 1992; Mehrabian & Russell, 1974). Several studies on color investigated the relationship between color and behavior. In 1986, Damhorst and Reed conducted a study in which male subjects were asked to rate female models posing as job applicants. The independent variables were facial expressions and value of the clothing. Men judged models wearing the dark jackets as being more powerful and competent than the ones wearing the light jackets, regardless of their facial expressions. These results are consistent with the findings of Valdez and Mehrabian (1994) that stated that low values (darker colors) were associated with high levels of dominance. In 1988, Frank and Gilovich conducted a study that further supports the connection between value and dominance. The researchers investigated the effect of black versus non-black uniforms of professional football and hockey players on aggressive behavior. The study showed that not only did the black uniforms elicit perceptions of higher levels of aggression, they also induced higher levels of player aggressiveness (Frank & Gilovich, 1987).
Research has been conducted to investigate the possible differences in effect among hues (especially warm versus cool) on various dependent measures. In 1989, Ainsworth investigated the effect of three hues (warm, cool, and neutral) on subjects' work performance and mood shifts. Three experimental groups were each exposed to a different hue. The hue was applied to the walls of the experimental environment which was an office. Subjects spent about one hour in the office, typing, filing, and making a phone call. Their typing performance and their mood levels were measured before and after being exposed to the hue. The results of the study revealed no significant effect of hue on either of the dependent variables.

In 1983, Bellizzi, Crowley, and Hasty conducted an experiment to test color effects on subjects' approach orientation, physical attraction to five hues, and their perception of a furniture store and its merchandise, based on the same five hues. Five experimental groups were each exposed to a different hue. The hues were red, yellow, green, blue, and white. They were applied to a wall in the experimental environment, and to large, lifelike images of a furniture retail display area shown to the subjects. Subjects' approach and attraction were measured respectively, by how close they sat to the colored wall, and the direction they faced.
relative to the wall. Twenty, 7-point, bipolar adjectival questions measured their perceptions of the store and its merchandise. The study revealed that regardless of color preference, subjects were drawn more to warm hues. Subjects found the warm hues to be colorful, bright, and active, yet negative and tense. They found the cool color schemes positive, relaxed, and favorable. However, hue did not affect price-quality perceptions.

Summary

According to color preference research and emotional reactions to color, short-wavelength hues (cool hues such as blues, greens and purples) are more pleasant and hence preferred to long-wavelength hues (warm hues such as reds, oranges, and yellows) (Granger, 1955; Valdez & Mehrabian, 1994). In terms of color concepts, short-wavelength hues are associated with the adjective “very good”, and color (as opposed to absence of color) is considered good. The hue characteristic of color, which is perhaps the most obvious, appears not to affect much more than pleasantness and preference. Consequently, studies attempting to study the relation between hue and human reactions or behavior often
fail to produce significant or consistent results. Even color preference
does not seem to matter when the effects of hue are measured in a
specific context. The lack of consistent measurable results may be due
to insufficient research on the subject of hue. Another reason for
consistent results may be methodological limitations. In most studies,
the length of time subjects are exposed to the hue is extremely limited
and is within an artificial environment. Subjects’ perceptions and not
their actual behavior are usually measured. Another possible
explanation for the lack of consistency in results in hue studies is the
fact that hue is context specific. Consequently, It is difficult to find clues
in the current literature on which to base predictions and hypotheses
about subjects’ responses to hue.

In studies of emotional responses to color according to the PAD
model, hue had no effect on arousal and dominance (Valdez &
Mehrabian, 1994). These types of responses were related to value and
saturation. Value was shown to be more important than saturation in
determining pleasantness and dominance. Light values were considered
more pleasant than dark ones, and highly saturated colors (vivid) more
pleasant than dull ones. Darker colors and more vivid ones induced
greater feelings of dominance. Saturation was more important to arousal
than was value with more vivid colors and darker values being more arousing than dull colors or light values. Color concept research revealed that black (dark value) was considered as strong while grey, white and yellow, which have a lighter value, were considered weak (Adams & Osgood, 1973). When it comes to perception and behavior in a specific context, there seems to be no research involving saturation. The findings of empirical research involving value agree with research on emotional reactions: people wearing dark values were perceived as more powerful, more aggressive, and more competent than those wearing light values (Damhorst & Reed, 1986; Frank & Gilovich, 1988).
CHAPTER III

METHOD

Purpose of the Study

This was an exploratory study. It investigated the effect of color schemes of bank interiors on subjects' evaluations of the bank and its employees. The study used monochromatic color schemes and focused on differences in subjects' responses to cool versus warm color schemes at two different value levels.

Objectives

1 - Determine whether different color schemes within banks communicate different messages to subjects, about banks and their employees.
2 – Determine differences between subjects’ evaluations of a dark color scheme and a light color scheme.

3 - Determine differences between subjects’ evaluations of a warm color scheme and a cool color scheme.

4 - Determine if, overall, there is a difference between male and female subjects’ evaluations of the bank.

Hypotheses

1 – There is a difference between subjects' evaluations of the bank and its employees based on value regardless of hue:

1.a – Banks with a dark color scheme will be given more positive evaluations in terms of reliability, than the banks with a light color scheme.

1.b - Banks with a dark color scheme will be given more positive evaluations in terms of competence, than the banks with a light color scheme.

1.c - Banks with a dark color scheme will be given more positive evaluations in terms of responsiveness than the banks with a light color scheme.
1.d - Banks with a dark color scheme will be given more positive evaluations in terms of security, than the banks with a light color scheme.

1.e - Banks with a light color scheme will be given more positive evaluations in terms of access, than the banks with a dark color scheme.

1.f - Banks with a light color scheme will be given more positive evaluations in terms of courtesy than the banks with a dark color scheme.

1.g - Banks with a light color scheme will be given more positive evaluations in terms of communication, than the banks with a dark color scheme.

1.h - Banks with a light color scheme will be given more positive evaluations in terms of understanding, than the banks with a dark color scheme.

2 - There is a difference between subjects' evaluations of the bank and its employees based on hue regardless of value.

3- There is no difference between male and female subjects' evaluations of the bank and its employees.
Assumptions

1 - Subjects’ statements about their color vision acuity are accurate.
2 – Subjects’ responses to the treatment were based only on the color schemes of the banks’ interiors and not on any other visual elements present in the interior.
3 – Saturation has no effect on subjects’ evaluations of the bank interiors.

Limitations

1 - The subjects were not tested for normal color vision.
2 - The subjects were not isolated during the administration of the treatments.
3 – The stimuli were not photographs of an actual bank interior.
4 – The lighting conditions of the experiment were not controlled.
5 – The samples were not randomly chosen.
Experimental design

The following study was an experiment. In order to determine the effect of alternative interior color schemes on consumer evaluations of a bank and its employees, an experiment was designed to provide subjects with the relevant characteristics of a bank's interior. Instead of physically experiencing the interior environment, subjects were asked to make their evaluations based on a picture of the interior.

Predicted relationships between color schemes and bank evaluations led to the manipulation of the elements of hue and value in the color scheme in a completely crossed factorial design. The experiment was a 2x2 factorial design with two levels each (dark and light) of "warm" and "cool" color schemes. Four different illustrations of the same bank interior with different color schemes were produced to correspond to the 4-cell design. In choosing color illustrations, the goal was to obtain an acceptable level of involvement without the possible contamination effects and logistical complications involved in actually placing subjects in a bank environment. As in any simulated study, it was necessary to give up a degree of external validity to minimize external sources of "noise" in the data. Thus, the research strategy
stressed only the elements of the interior that were chosen as independent variables: the color schemes. Though other visual elements in the bank interior were an integral part of how a bank is perceived by consumers, they were de-emphasized in an attempt to focus the subjects’ responses on the color scheme.

Previous studies about color used slides and pictures of interiors, or actual interiors (Guerin, Park & Yang, 1994). Although these instruments were appropriate to use in these studies, it is difficult for subjects not to respond to other visual elements in the interiors such as furniture style, texture, lighting, layout, or style. These elements become nuisance or intervening variables that may carry their own strong meanings to the subjects (Guerin et al., 1995). According to Scott (1992), it is difficult for a person to isolate color from other elements in the interior.

**Independent Variables:** The hue and value in the color scheme of the bank interior.

**Dependent Variables:** Subjects’ evaluations of the bank and its employees.

**Intervening Variables:** elements other than the color scheme in the picture of the bank interior presented to the subjects.
**Constant:** the interior of the bank shown to the subjects, and the way the treatments were administered.

**Stimuli**

The researcher developed a two-point perspective rendering of a bank interior, using the software Freehand 8.0. The rendering was based on an actual photograph of a bank interior. The illustration was kept very simple and free of intervening variables, such as artwork, plants, furniture, signage, or patterns. The objective was to ensure that subjects' evaluations of the interior was based on the color scheme rather than on other elements in the picture. The rendering was then colored using the Munsell color system embedded in Freehand. The researcher produced four different color schemes of the same rendering. The color schemes were monochromatic, using red as a warm hue, and blue-purple as a cool hue. The hue characteristic was manipulated at two value levels: light, and dark. The specific color choices made for each illustration are summarized in Table 1. The dark color schemes used a wider range of values: from 9, the lightest, to 4, the darkest.
Table 1

Hues and Values Used in the Stimuli

<table>
<thead>
<tr>
<th></th>
<th>LIGHT</th>
<th>DARK</th>
</tr>
</thead>
<tbody>
<tr>
<td>WARM</td>
<td>2.5R9:1</td>
<td>2.5R9:1</td>
</tr>
<tr>
<td></td>
<td>2.5R9:2</td>
<td>2.5R9:2</td>
</tr>
<tr>
<td></td>
<td>2.5R8:1</td>
<td>2.5R8:4</td>
</tr>
<tr>
<td></td>
<td>2.5R8:2</td>
<td>2.5R6:1</td>
</tr>
<tr>
<td>WARM</td>
<td>2.5R8:4</td>
<td>2.5R6:2</td>
</tr>
<tr>
<td></td>
<td>5R9:1</td>
<td>2.5R5:1</td>
</tr>
<tr>
<td></td>
<td>5R9:2</td>
<td>2.5R5:2</td>
</tr>
<tr>
<td></td>
<td>5R8:2</td>
<td>2.5R8:1</td>
</tr>
<tr>
<td></td>
<td>5R8:4</td>
<td>2.5R8:2</td>
</tr>
<tr>
<td>COOL</td>
<td>2.5PB9:1</td>
<td>2.5PB9:1</td>
</tr>
<tr>
<td></td>
<td>2.5PB9:2</td>
<td>2.5PB8:1</td>
</tr>
<tr>
<td></td>
<td>2.5PB8:1</td>
<td>2.5PB8:6</td>
</tr>
<tr>
<td></td>
<td>2.5PB8:2</td>
<td>2.5PB6:4</td>
</tr>
<tr>
<td>COOL</td>
<td>2.5PB8:4</td>
<td>2.5PB6:6</td>
</tr>
<tr>
<td></td>
<td>2.5PB7:4</td>
<td>2.5PB5:6</td>
</tr>
<tr>
<td></td>
<td>5PB9:1</td>
<td>2.5PB4:6</td>
</tr>
<tr>
<td></td>
<td>5PB9:2</td>
<td>5PB7:4</td>
</tr>
<tr>
<td></td>
<td>5PB8:1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5PB8:4</td>
<td></td>
</tr>
</tbody>
</table>
The reason for this larger fluctuation of value is the necessity of using light values on the walls. Values darker than 8 appeared too unrealistic for a bank. The result of such value fluctuation was that the dark color schemes had more contrast than the light ones. Saturation was kept low because colors used in interiors usually have low saturation (Guerin et al., 1994). Saturation was maintained at the level of 4 for the light color schemes, but saturation levels of 6 and 8 were used for the dark color schemes (especially the cool one). The choices of saturation levels were based on common colors in bank interiors.

The illustrations shown to the subjects were 5 ¼ X4 inch output printed on a Tectronix Phasor 780 laser color printer, mounted on an 8X11 white sheet (See appendix).

**Data Collection Instrument**

When evaluating a service firm, customers are actually evaluating the quality of the service (Grönroos, 1984; 1990). Service quality has three dimensions: technical quality, functional quality, and image (Grönroos, 1984; 1990). Technical quality refers to what the customer gets, while functional quality corresponds to how he/she gets it. Image
usually depends, among other things, on the functional and technical quality (Grönroos, 1984; 1990). The present study focuses on the functional aspect of quality. Subjects will not have any basis on which to evaluate the technical quality. The third dimension of service quality, image, is part of the independent variable.

The data collection instrument consisted of two major sections: a subject data sheet, and a subject response section. The subject data sheet collected background information about the subjects such as demographics, experience with banks, and color vision characteristics.

The subject response section recorded the subjects' evaluations of the bank and its employees. This section included two sets of items: one set to measure subjects' evaluations of the bank, and a second set to measure subjects' evaluations of the employees of the bank. Employee performance was included to operationalize the functional quality dimension because banks are personnel intensive, and because services are often confused with or perceived as the people who render them (Shostack, 1977b; Klaus, 1985).

When evaluating the quality of a service, regardless of the type, consumers usually use a set of criteria called "service quality determinants" (Parasuraman, Zeithaml, & Berry, 1985; 1988; Grönroos,
These determinants fall into ten characteristic categories: reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding/knowing the customer, and tangibles (Parasuraman et al., 1985) (see Table 2). The items in the data collection instrument used to evaluate the banks and their employees were developed based on all of these categories except tangibles, which are part of the independent variables. According to Baker, Berry, and Parasuraman (1988), privacy and confidentiality during financial transactions affect customers' perceptions of the service quality in a bank.

To evaluate the bank, subjects were asked to respond to a set of five statements chosen to reflect the service quality determinants of access, security, and competence. A pre-test was conducted to develop the statements so they are meaningful to the untrained consumer (see table 3).

The employees' evaluation section was based on eight service quality determinants: reliability, responsiveness, access, competence, understanding, courtesy, and communication (see table 3).
Determinants of Service Quality

RELIABILITY involves consistency of performance and dependability.
It means that the firm performs the service right the first time.
It also means that the firm honors its promises. Specifically, it involves:
---accuracy in billing;
---keeping records correctly;
---performing the service at the designated time.

RESPONSIVENESS concerns the willingness or readiness of employees to provide service. It involves timeliness of service:
---mailing a transaction slip immediately;
---calling the customer back quickly;
---giving prompt service (e.g., setting up appointments quickly).

COMPETENCE means possession of the required skills and knowledge to perform the service. It involves:
---knowledge and skill of the contact personnel;
---knowledge and skill of operational support personnel;
---research capability of the organization (e.g., securities brokerage firm).

ACCESS involves approachability and ease of contact. It means:
---the service is easily accessible by telephone (lines are not busy and they don’t put you on hold);
---waiting time to receive service (e.g., at a bank) is not extensive;
---convenient hours of operation;
---convenient location of service facility.

COURTESY involves politeness, respect, consideration, and friendliness of contact personnel (including receptionists, telephone operators, etc.). It includes:
---consideration for the consumer's property (e.g., no muddy shoes on the carpet);
---clean and neat appearance of public contact personnel.

COMMUNICATION means keeping customers informed in language they can understand and listening to them. It may mean that the company has to adjust its language for different consumers—increasing the level of sophistication with a well-educated customer and speaking simply and plainly with a novice. It involves:
---explaining the service itself;
---explaining how much the service will cost;
---explaining the trade-offs between service and cost;
---assuring the consumer that a problem will be handled.

CREDIBILITY involves trustworthiness, believability, honesty. It involves having the customer's best interests at heart. Contributing to credibility are:
---company name;
---company reputation;
---personal characteristics of the contact personnel;
---the degree of hard sell involved in interactions with the customer.

SECURITY is the freedom from danger, risk, or doubt. It involves:
---physical safety (Will I get mugged at the automatic teller machine?);
---financial security (Does the company know where my stock certificate is?);
---confidentiality (Are my dealings with the company private?).

UNDERSTANDING/KNOWING THE CUSTOMER involves making the effort to understand the customer's needs. It involves:
---learning the customer's specific requirements;
---providing individualized attention;
---recognizing the regular customer.

TANGIBLES include the physical evidence of the service:
---physical facilities;
---appearance of personnel;
---tools or equipment used to provide the service;
---physical representations of the service, such as a plastic credit card or a bank statement;
---other customers in the service facility.

Source: Parasuraman, Zeithaml, & Berry, 1985
### Table 3

**Statements on the Questionnaire**

<table>
<thead>
<tr>
<th>Determinants of service quality</th>
<th>The bank as an institution</th>
<th>The employees</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reliability</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E1- Employees do not make billing mistakes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E3- Employees keep records correctly</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Responsiveness</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E2- Employees call customers quickly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E6- Employees provide prompt service</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Competence</strong></td>
<td>B3- This bank invests money well</td>
<td>E11- Employees know what they are doing</td>
</tr>
<tr>
<td><strong>Access</strong></td>
<td>B4- There are no long waiting lines at this bank</td>
<td>E14- Employees do not put customers on hold</td>
</tr>
<tr>
<td>B5- This bank is opened at convenient hours</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 3, Continued

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Courtesy</td>
<td><em>E7</em> - The employees greet customers with a smile at this bank&lt;br&gt;<em>E8</em> - Employees’ appearance is clean and neat&lt;br&gt;<em>E13</em> - Employees are polite</td>
</tr>
<tr>
<td>Communication</td>
<td><em>E10</em> - Employees keep customers informed about services offered and costs involved&lt;br&gt;<em>E5</em> - Employees are reassuring when a problem occurs</td>
</tr>
<tr>
<td>Security</td>
<td><em>B6</em> - Customers’ money is safe at this bank&lt;br&gt;<em>B7</em> - Customers’ transactions are private at this bank</td>
</tr>
</tbody>
</table>
Table 3, Continued

<table>
<thead>
<tr>
<th>Understanding</th>
<th>Employee Section</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E12- Employees give individualized attention to customers</td>
</tr>
<tr>
<td></td>
<td>E9- Employees recognize the regular customers</td>
</tr>
<tr>
<td></td>
<td>E4- Employees make the effort to understand the customers' needs</td>
</tr>
</tbody>
</table>

Note. B indicates that the item belongs to the bank section of the questionnaire and E refers to the employee section.

The employee section included fourteen items. The responses to the evaluation items used a Likert-type scale with five points varying between “not at all” (1), and “completely” (5) (see Appendix).

At the beginning of the questionnaire, in the bank section, subjects were asked if the bank looked familiar and if they found it to be aesthetically pleasing. These two questions were included as a
manipulation check and to get the subjects thinking about actual banks that they know.

Both parts of the questionnaire were administered at the same time, as the subjects were viewing the picture of the bank interior.

Subjects

The experiment used a convenience sample. The subjects were Oregon State University (OSU) students in two lower division, general knowledge classes (Art 101 and HDFS 240). These classes were selected because of the large number of students enrolled in them, and because students enrolled in these classes were affiliated with all major academic colleges at the university. Subjects were of 480 students and yielded 454 usable responses, 136 in Art 101 and 318 in HDFS 240. Twenty six responses were eliminated because subjects reported that they were color blind, or because they answered less than 25% of the questionnaire items. Of the valid responses, 57 percent were from female subjects and 43 percent were from male subjects. The mean age of the subjects was 19 years with the minimum age being 18 and the maximum 48. Eighty-five point two percent of the subjects were under the age of 21 years.
Sixty-one and a half percent of all subjects were freshmen. The subjects’ reported majors associated with all academic colleges at OSU, and 14.1 percent of the students reported an undeclared major.

The vast majority of the subjects (95.8%) were U.S. citizens. Of the 454 respondents, only 4% reported having work experience in a bank (mainly as tellers) and only 1.5 percent reported having no bank account.

**Procedure**

The experiment was conducted first in Art101 and later in HDFS240. In the second class, before the experiment was administered, the instructor asked any student who has already done the experiment not to do it again.

Four experimental groups were used. Each group was exposed to a different color scheme of the same bank interior. The assignment of the treatments was random. The questionnaire and treatment were thoroughly mixed twice, by two different people. The packets were then handed out to the subjects in class by at least two people in no particular order.
Each student was handed a packet of five pages (see appendix): an instruction sheet, an Informed Consent Form, 2 sheets of the actual questionnaire, and the bank illustration. Each packet included one of the four color schemes. First, the packets were randomly mixed, then they were randomly handed out to the subjects. The pictures were attached to the back of the packet in order to reduce the likelihood that subjects would see their neighbors' pictures.

In each class the instructor informed the students of what to do: "Read the first page of the packet. It will tell you what to do". The instruction sheet included a cover story (see appendix). Subjects were told that the study was about first impressions, that there were no right or wrong answers, and to mark down the first thing that came to their mind.

**Statistical Analysis**

The data were entered by means of the statistical software package SPSS. A reliability test was run to check if the combination of the individual items in the questionnaire actually measured the corresponding determinants of service quality (reliability, responsiveness,
access, communication, courtesy, competence, understanding, and security).

Three one-way Analysis of Variance (ANOVA) tests were run to test the hypotheses. One ANOVA was to determine if there was a significant difference between subjects' evaluations of the bank based on value regardless of hue. Another one was run to test for significant difference based on hue regardless of value. The last ANOVA was run to determine the presence of any significant differences between subjects' evaluations of the bank based on gender. A 95 percent significance level was used.
CHAPTER IV

RESULTS

The Familiarity Variable

The first item of the questionnaire was designed to rate the familiarity of the bank interior as a manipulation check. Subjects were asked to rate how much the bank illustration provided to them looked like a bank they knew. The objective of the manipulation check was to ensure that the subjects identified the illustration as that of a bank interior and not as any other business.

A t-test, with the test value of three, was performed to check if the overall mean of the familiarity variable was greater than the mid-point (3) on the five-point scale. The test revealed (t = 8.104, p < .001) that the overall mean was significantly greater than three (see Table 4) meaning
that the subjects agreed that the illustration looked like a bank they knew.

Three one-way, between group, analyses of variance (ANOVA) were conducted with three independent variables: color scheme, value, and hue. The mean scores and the $F$ statistics are summarized in Table 5. The mean scores for the different color schemes were above the mid-point (3) of the scale. Subjects thought that the banks looked significantly different ($p = .001$). Therefore, a follow up test was conducted to determine which color schemes were found to be significantly different and which ones were not. Within the warm color schemes, the dark one was found to be significantly more familiar than the light one (see Table 5).

Table 4

<table>
<thead>
<tr>
<th>T-test and overall Mean of Familiarity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent Variable</td>
</tr>
<tr>
<td>--------------------------------------</td>
</tr>
<tr>
<td>Familiarity</td>
</tr>
</tbody>
</table>

Note. The test value is 3.

* $p < .001$
Table 5

Analysis of Variance and Group Means by Familiarity

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>M</th>
<th>SD</th>
<th>Df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color Scheme</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light-Warm</td>
<td>3.53a</td>
<td>1.22</td>
<td>3</td>
<td>6.564</td>
<td>4.900*</td>
</tr>
<tr>
<td>Light-Cool</td>
<td>3.29b</td>
<td>1.18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dark-Warm</td>
<td>3.76c</td>
<td>0.98</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dark-Cool</td>
<td>3.23b</td>
<td>1.22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warm</td>
<td>3.64</td>
<td>1.11</td>
<td>1</td>
<td>16.416</td>
<td>12.268**</td>
</tr>
<tr>
<td>Cool</td>
<td>3.26</td>
<td>1.20</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p < .05

** p < .01

Note. According to LSD, means with different superscript letters are significantly different from each other. The significance level is .05.

Sample sizes were as follows: light-warm 116, light-cool 114, dark-warm 108, and dark-cool 115. For the warm and cool hues, sample sizes were 224 and 229, respectively.
Reliability

The present study involved the development of a new measure of service quality. Consequently, an investigation of reliability was made because of the importance of the measurement error issue (Nunnally, 1967).

Subjects were asked to evaluate the bank on eight different criteria: reliability, responsiveness, competence, access, courtesy, communication, security, and understanding. These criteria were each measured by two or three different scale items in the questionnaire (see Table 3) which posed concerns about the internal consistency of the measure (i.e. average correlation among items in a measure). A series of Cronback alpha tests were run to ensure that, for each multi-item scale chosen to measure a specific criterion, the items were actually measuring the same thing. The alpha values of all the criteria chosen had reasonably high values (at least .7) according to Nunnally’s recommendations (1967) except for access and courtesy (see Table 6). Another series of reliability tests yielded an alpha value of .728 for courtesy after eliminating E8. The same could not be done for the access
criterion. All combinations of only two of its underlying scale items yielded alpha values lower than the original one. Consequently, access was not included in the rest of the data analysis.

Table 6

Cronbach Alphas for the Different Criteria of Service Quality

<table>
<thead>
<tr>
<th>Dependent Measures</th>
<th>Questionnaire itemsa</th>
<th>N</th>
<th>á</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td>E1, E3</td>
<td>453</td>
<td>.7254</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>E2, E6</td>
<td>454</td>
<td>.7557</td>
</tr>
<tr>
<td>Competence</td>
<td>B3, E11</td>
<td>453</td>
<td>.8436</td>
</tr>
<tr>
<td>Courtesy</td>
<td>E7, E13</td>
<td>436</td>
<td>.7280</td>
</tr>
<tr>
<td>Communication</td>
<td>E10, E5</td>
<td>454</td>
<td>.7215</td>
</tr>
<tr>
<td>Security</td>
<td>B6, B7</td>
<td>454</td>
<td>.7368</td>
</tr>
<tr>
<td>Understanding</td>
<td>E4, E9, E12</td>
<td>454</td>
<td>.7395</td>
</tr>
</tbody>
</table>

a B corresponds to items from the Bank section, and E corresponds to items from the Employees' section of the questionnaire.
Hypotheses testing

Hypothesis one - $H_1 (H_{a,b})$

$H_1$: There is a difference between subjects’ evaluations of the bank and its employees based on value regardless of hue:

$H_a$ – Banks with a dark color scheme will be given more positive evaluations in terms of reliability, than the banks with a light color scheme. Subjects gave banks with a dark color scheme ($m = 7.20$) a significantly ($F = 10.893$, $p < .01$) higher score than banks with a light color scheme ($m = 6.68$) (see Table 7). $H_a$ was accepted.

$H_b$ - Banks with a dark color scheme will be given more positive evaluations in terms of competence, than the banks with a light color scheme. Subjects gave banks with a dark color scheme ($m = 7.04$) a significantly ($F = 69.270$, $p < .01$) higher score than banks with a light color scheme ($m = 6.55$) (see Table 7). $H_b$ was accepted.

$H_c$ - Banks with a dark color scheme will be given more positive evaluations in terms of responsiveness than the banks with a light color
scheme. There was no significant difference in mean scores between light and dark color schemes (see Table 7). \(H_c\) was rejected.

\[H_d - \text{Banks with a dark color scheme will be given more positive evaluations in terms of security, than the banks with a light color scheme.}\]

Banks with a dark color scheme \((m = 7.41)\) were given a significantly \((F = 43.807, p < .01)\) higher mean score than the banks with a light color scheme \((m = 6.30)\) (see Table 7). \(H_d\) was accepted.

\[H_e - \text{Banks with a light color scheme will be given more positive evaluations in terms of access, than the banks with a dark color scheme.}\]

Access has been dropped from the analysis because of reliability issues. The individual questionnaire items used to measure access are analyzed in a later section.

\[H_f - \text{Banks with a light color scheme will be given more positive evaluations in terms of courtesy than the banks with a dark color scheme.}\]

Banks with a light color scheme \((m = 6.95)\) were assigned a significantly \((F = 14.5, p < .01)\) higher mean scores than banks with a dark color scheme \((m = 6.28)\) (see Table 7). \(H_f\) was accepted.

\[H_g - \text{Banks with a light color scheme will be given more positive evaluations in terms of communication than the banks with a dark color scheme.}\]

Subjects gave banks with a light color scheme \((m = 6.27)\)
significantly ($F = 5.840$, $p < .05$) higher scores than banks with a dark color scheme ($m = 5.87$) (see Table 7). $H_g$ was accepted.

$H_h$ - *Banks with a light color scheme will be given more positive evaluations in terms of understanding, than the banks with a dark color scheme.* There was no significant difference between dark and light color schemes in terms of understanding (see Table 7). $H_h$ was rejected.

**Hypothesis Two - $H_2$**

$H_2$: *There is a difference between subjects' evaluations of the bank and its employees based on hue regardless of value.*

Hue was expected to have a significant effect on subjects’ evaluations of the banks regardless of value. Contrary to the hypothesis, hue exerted no significant effect on the dependent measures, except for competence and courtesy (see Table 8). Illustrations with a cool color scheme had significantly ($F = 31.50$, $p < .01$) higher scores ($m = 7.72$) in terms of competence than did the warm color schemes ($m = 6.74$). On the other hand, illustrations with warm color schemes had significantly ($F = 8.665$, $p < .005$) higher scores ($m = 6.90$) for communication than did the cool ones ($m = 6.37$). Hue affected subjects’ evaluations of the
bank illustrations in terms of competence and courtesy. However it is not enough to accept the second hypothesis.

Table 7

Analysis of Variance and Means of Dependent Measures by Value

<table>
<thead>
<tr>
<th>Dependent Measures</th>
<th>Value</th>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Light</td>
<td>Dark</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Reliability</td>
<td>6.68</td>
<td>1.74</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>6.27</td>
<td>1.93</td>
</tr>
<tr>
<td>Competence</td>
<td>6.55</td>
<td>1.95</td>
</tr>
<tr>
<td>Communication</td>
<td>6.27</td>
<td>1.88</td>
</tr>
<tr>
<td>Security</td>
<td>6.30</td>
<td>1.91</td>
</tr>
<tr>
<td>Understanding</td>
<td>9.51</td>
<td>2.69</td>
</tr>
<tr>
<td>Courtesy</td>
<td>6.97</td>
<td>1.81</td>
</tr>
</tbody>
</table>

Note. The sample sizes were 230 for the light color schemes and 224 for the dark ones for each dependent measure.

*  p < .01
** p < .05
Table 8

Analysis of Variance and Means of Competence and Courtesy by Hue.

<table>
<thead>
<tr>
<th>Dependent Measures</th>
<th>Hue</th>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Warm</td>
<td>Cool</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Competence</td>
<td>6.74</td>
<td>1.84</td>
</tr>
<tr>
<td>Courtesy</td>
<td>6.90</td>
<td>1.80</td>
</tr>
</tbody>
</table>

Note. The sample sizes are 224 for the warm color schemes and 230 for the cool ones, for both variables.

* p < .01

Hypothesis Three - H₃

H₃: There is no difference between male and female subjects’ evaluations of the bank and its employees.

Subjects’ gender was expected to have no effect on their evaluations of the bank illustrations. Results indicate that indeed there were no significant differences in subjects’ evaluations of the bank based on
gender, except for one dependent measure: responsiveness (see Table 9). The mean score for this variable for female subjects ($m = 6.34$) was significantly ($F = 5.316$, $p < .01$) higher than the one for male subjects ($m = 5.98$). Hypothesis three was accepted.

Table 9

Analysis of Variance and Mean of Responsiveness by Gender

<table>
<thead>
<tr>
<th>Dependent Measure</th>
<th>Gender</th>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>5.95</td>
<td>1.83</td>
</tr>
</tbody>
</table>

Note. Sample size for male and female subjects was 195 and 259, respectively.

* $p < .01$
Other Findings

The Aesthetics Variable

The second item in the questionnaire asked the subjects to rate how aesthetically pleasing the bank illustration was to them. The purpose of this question was to prompt the subjects to think about a bank. The mean score for this questionnaire item was consistently below the mid-point on the scale for all four treatments with no significant difference between treatments. The result was the same in terms of value. The light illustrations as well as the dark ones had a mean score below the scale’s mid-point (3), with no significant difference between them (p = .960). Along the hue dimension, the mean scores were still below the mid-point but the mean for warm hues was significantly higher than that for the cool hue (p = .043) (see Table 10).
Table 10

Analysis of Variance and Group Means for Aesthetics by Hue.

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warm</td>
<td>224</td>
<td>2.96</td>
<td>1.04</td>
<td>1</td>
<td>4.486</td>
<td>4.106*</td>
</tr>
<tr>
<td>Cool</td>
<td>230</td>
<td>2.76</td>
<td>1.05</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05

Other Questionnaire Items

After the reliability tests, four questionnaire items were eliminated from the dependent measures. For the purpose of further exploration the results of these items were also analyzed.

Item B4 asked subjects to rate the banks based on their waiting lines. In terms of value, banks with light color schemes (m = 3.29) were given a significantly (F = 19.183, p < .01) higher score than those with dark color schemes (m = 2.82) (see Table 11).
Table 11

Analysis of Variance and Mean of Lines, Hours, and On Hold by Value.

<table>
<thead>
<tr>
<th>Dependent Measure a</th>
<th>Value</th>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Light</td>
<td>Dark</td>
</tr>
<tr>
<td>Lines (4)</td>
<td>3.29</td>
<td>2.82</td>
</tr>
<tr>
<td>Hours (5)</td>
<td>3.13</td>
<td>2.79</td>
</tr>
<tr>
<td>On Hold (14)</td>
<td>3.00</td>
<td>2.74</td>
</tr>
</tbody>
</table>

Note. All three variables have a sample size of 230 for the light color scheme and a sample size of 224 for the dark one.

a The number between parentheses corresponds to the number of the question on the questionnaire.

p < .01

In terms of hue, banks with warm color schemes (m = 3.24) were assigned significantly (F = 10.425, p < .01) higher scores than those with cool color schemes (m = 2.89) (see Table 12). Gender produced no significant difference between evaluations.
Table 12

Analysis of Variance and Mean Lines by Hue.

<table>
<thead>
<tr>
<th>Dependent Measure a</th>
<th>Hue</th>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Warm</td>
<td>Cool</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Lines (4)</td>
<td>3.24</td>
<td>1.20</td>
</tr>
</tbody>
</table>

* Sample sizes are 224 for the warm color schemes and 230 for the cool ones.

* p < .01

Item B5 asked subjects to rate the banks based on how convenient their hours were. Banks with a light color scheme ($m = 3.13$) were rated as having the most convenient hours (See Table 11). Hue and gender failed to produce a difference in responses.

Item E14 asked subjects to rate the banks based on how much the employees put the customers on hold. Overall, this item had the lowest mean score. Subjects thought that in all four treatments customers were put on hold. Between treatments, there was a significant ($F = 9.564, p < .02$) difference in scores only along the value dimension (see Table 11).
Banks with a light color scheme \( (m = 3) \) were thought to put customers on hold less than did banks with a dark color scheme \( (m = 2.74) \).

In item E8 of the questionnaire subjects were asked to evaluate the banks based on the appearance of their employees. This item had one of the highest mean scores but exhibited no significant differences in terms of value, hue, or gender.

Table 13

Analysis of Variance and Mean of Bank Score by Value

<table>
<thead>
<tr>
<th>Dependent Measure</th>
<th>Value</th>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Light</td>
<td>Dark</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Bank Score</td>
<td>16.07</td>
<td>2.93</td>
</tr>
</tbody>
</table>

Note. The sample sizes for the light and dark color schemes were 229 and 224, respectively.

* \( p < .005 \)
Overall scores

Subjects were asked to evaluate the bank and its employees. The questionnaire had two sections: one evaluating the bank, and a longer section evaluating the employees. The bank score was the sum of all of the items in the bank section of the questionnaire, except for the familiarity and aesthetics items and the employee score was the sum of all the items in the employee section. The overall score was the sum of the bank score and the employee score.

Overall, subjects gave banks with a dark color scheme ($m = 16.82$) significantly ($F = 5.316, p < .005$) higher bank scores than they did to banks with a light color scheme ($m = 16.07$) (see table 13). However there was no significant difference between light and dark banks in terms of employees’ score, or total score. Subjects’ evaluations in terms of bank score, employees’ score, and total score did not yield a significant difference in terms of hue, or gender.
CHAPTER V

DISCUSSION

Introduction

The purpose of the study was to investigate the role of color in subjects' evaluations of a bank interior. Color is defined by three characteristics: hue, value, and saturation. It was the intent of this study to focus only on hue and value even though saturation might have a role in people's evaluations of interiors. The study examined warm (red) and cool (blue-purple) hues, at two different levels of value (dark and light), at low levels of saturation. A computer was used to generate four bank interior illustrations identical in everything except in color schemes (i.e. light-warm, light-cool, dark-warm, and dark-cool). In a convenience sample of college students each student was assigned a treatment at random. The treatment was a bank illustration with one of
the 4 color schemes provided to the subjects as part of a questionnaire package. The subjects were asked to look at the illustration and evaluate it according to a number of scale items listed in the questionnaire.

According to Grönroos (1984, 1990), evaluating a service firm is actually evaluating the quality of the service. Because banks are personnel intensive, evaluating the bank means evaluating its employees, as services are often confused with or perceived as the people who render them (Shostack, 1977b).

According to Parasuraman et al. (1985), to evaluate a service, consumers use a set of criteria called “service quality determinants”. These determinants fall under ten characteristic categories: reliability, responsiveness, competence, access, courtesy, communication, security, understanding, and tangibles. The questionnaire items were based on these determinants of service quality except, for credibility and tangibles.

The study’s objective was to test the following specific hypotheses:

1 – There is a difference between subjects’ evaluations of the bank and its employees based on value regardless of hue:

1.a – Banks with a dark color scheme will be given more positive evaluations in terms of reliability, than the banks with a light color scheme.
1.b - Banks with a dark color scheme will be given more positive evaluations in terms of competence, than the banks with a light color scheme.

1.c - Banks with a dark color scheme will be given more positive evaluations in terms of responsiveness than the banks with a light color scheme.

1.d - Banks with a dark color scheme will be given more positive evaluations in terms of security, than the banks with a light color scheme.

1.e - Banks with a light color scheme will be given more positive evaluations in terms of access, than the banks with a dark color scheme.

1.f - Banks with a light color scheme will be given more positive evaluations in terms of courtesy than the banks with a dark color scheme.

1.g - Banks with a light color scheme will be given more positive evaluations in terms of communication, than the banks with a dark color scheme.
1. light - Banks with a *light* color scheme will be given more positive evaluations in terms of understanding, than the banks with a dark color scheme.

2. There is a difference between subjects' evaluations of the bank and its employees based on hue regardless of value.

3. There is no difference between male and female subjects' evaluations of the bank and its employees.

The overall outcome of the experiment was that the value characteristic of color affected subjects' evaluations of the banks more than hue, or subjects' gender.

**Value**

According to Hubel (1995), value is the most important component of visual perception. Objects' hue also helps in defining their shapes, but not as well as the value information in a scene. Color (hue) perception occurs at a later stage in the visual process (Hubel, 1995).

Value has been found to be associated with arousal and most of all dominance (Valdez & Mehrabian, 1994). In two separate studies, dark values in clothing were found to project competence (Damhorst & Reed,
1986), power, and aggressiveness (Frank & Gilovich, 1988).

Consequently, the present study hypothesized that banks with a dark color scheme will be judged more competent, more powerful, and more aggressive than the ones with a light color scheme, regardless of hue. The adjectives, powerful, competent, and aggressive were assumed to be best reflected in only four of the eight service quality determinants used, that is, reliability, responsiveness, competence, and security. The banks with light color schemes hence were hypothesized to do better on the remaining service quality determinants (i.e. communication, courtesy, understanding, and access). Based on the service quality determinants’ description (Parasuraman et al., 1985) communication, courtesy, understanding, and access reflect “people skills”.

The study revealed that subjects found the banks with a dark color scheme to be significantly more reliable, more competent, and safer than the banks with a light color scheme. However, subjects did not find any significant difference between dark and light values in terms of responsiveness. In the questionnaire, responsiveness was measured by “call customers back quickly”, and “provide prompt service”. It is possible that the subjects did not associate these performances with power, competence and aggressiveness. The responsiveness variable
involves efficiency but also consideration, which may be one reason there was no significant difference in subjects’ evaluations of the banks between the two levels of value.

As predicted the criteria of courtesy, and communication were significantly more positive for the light color schemes than they were for the dark ones. The access criterion was not included in the study for reliability reasons. This criterion was measured by three scale items in the questionnaire which were, “waiting lines”, “convenient hours”, and “putting customers on hold”. For all three of these items banks with a light color scheme scored significantly higher than banks with dark color schemes. To subjects, banks with a light value had shorter waiting lines, were opened at more convenient hours, and did not put customers on hold as much as the banks with a dark value. These findings are still consistent with the underlying hypothesis that light value is associated with “people skills.”

The criterion of understanding, however, did not exhibit a significant difference between banks in terms of value. This criterion was measured by the following characteristics of the employees: “give individualized attention to customers”, “recognize regular customers”, and “make the effort to understand customers’ needs.”
Value yielded another significant difference in subjects' evaluations of the banks. Banks with a dark value had a significantly higher bank score mean than banks with a light value. However value generated no significant difference in terms of employee score, or total overall score. The employees' section of the questionnaire included 14 items, as opposed to only 7 in the bank section. These 14 items were in the most part long and more difficult to answer, as indicated by some of the subjects' comments on the questionnaire sheet. Five percent of the total number of subjects included some of the following comments on the questionnaire: "There are no employees in the bank", "Can't answer these with information given", and "No basis for comment". Some still answered but by circling the scale's mid-point (3) for all items except the "employees' appearance", and "putting customers on hold". The first item, Familiarity, was almost consistently above the mid-point (4 or more), and the second item, Aesthetics, was almost consistently below the mid-point (2 or less). The employees' section was less concrete and more detailed than the bank section and the illustrations did not include people. The subjects were under a time constraint as the experiment was conducted before their regular class started and took them an
average of only 5 minutes to fill in the questionnaire. This might not have provided them with enough time to think about the questions.

**Hue**

According to Valdez and Mehrabian (1994), the psychological effects of the hue characteristic of color affects mainly the Pleasure dimension in the PAD model, and has very little effect on Arousal or Dominance. Hue is what affects color preference (pleasure) but in Bellizi’s et al. study (1983), color preference did not appear to affect subjects’ responses.

Hue did not generate the expected difference in subjects’ evaluations as hypothesized. In terms of familiarity, subjects thought that banks with a warm color scheme appeared significantly more familiar than banks with a cool color scheme. Specifically, they thought that the dark warm color scheme was the most familiar. This result may be due to the fact that the subjects were relatively young (mean age 19) and grew up in the 1990’s when the trends in interior colors steered away from the cool blues and purples of the 1980’s into warm earth tones. Subjects found all color schemes not very pleasing, as indicated
by the mean scores for all four color schemes which were below the scale's mid-point (below 3). However subjects, indicated that the warm color schemes were significantly more appealing than the cool ones. This may also be due to current trends in interior colors, as familiar colors tend to be more pleasing and easily accepted (Fehrman & Fehrman, 2000). Another possible explanation is the fact that this study was conducted in a rainy, cold region of the country, during the month of January.

In terms of the dependent measures of reliability, competence, responsiveness, courtesy, security, understanding, and communication, only competence and courtesy showed a significant difference between evaluations due to hue. Banks with a cool color scheme were found to be significantly more competent than the warm ones which, in turn, scored significantly better in terms of courtesy. The literature holds few clues as to the meaning of this finding.

Hue revealed a significant difference in subjects' evaluations of the banks' waiting lines. Subjects thought that banks with warm color schemes had significantly shorter waiting lines than did ones with cool color schemes. Research has shown that color, or more specifically hue, can affect time perception. Unfortunately researchers do not agree on
what effect it has on time perception. According to Goldstein (1942) in red surroundings time is overestimated. In 1988, Grant found that casino patrons spent more time in a warm environment than they did in a cool one, which may mean that they underestimated time in the warm environment. Subjects in the present study were not experiencing the environment they were evaluating. The experiment did not last more than 6 minutes, therefore their positive evaluation of the banks with a warm color scheme could be due to their association of the warm hue with friendly service as earth colors, such as reddish browns, may be instinctively associated with warmth and cheer (Fehrman & Fehrman, 2000). Hue did not affect the overall scores given to the bank.

**Gender**

Based on previous research, Hypothesis three predicted that there would be no significant differences in subjects’ evaluations based on their gender. This was true for all dependent measures except for responsiveness. Female subjects gave significantly higher evaluations with all treatments in terms of responsiveness. A possible explanation is
that male subjects are more critical of banks when it comes to providing prompt service or calling customers back quickly.

**Limitations**

The data collected from the experiment might have yielded different results regarding the effect of color on subjects' evaluations of a bank's service quality had it not been for some limitations. These limitations concerned the subjects' color vision, the stimuli used, the data collection instrument, the sampling method, and some aspects of the experimental procedures.

Subjects' total and partial color blindness information was gathered by self reporting of the subjects on the questionnaire. This information was one of the criteria used to eliminate a subject's response. Ideally the subjects' color vision would have been tested, but this option was not feasible in the present study. The testing technique was not available and the sample was too large. Abnormal color vision occurs in only 6 percent of males and one percent of females (Hall, 1988). Therefore, the probability that the results of this study were seriously
tainted because subjects failed to report their color vision problems is low.

Two aspects of the present study raised a question in terms of validity: the stimuli, and the data collection instrument. Previous studies used actual interiors or pictures and slides of actual interiors. The pictures were either architectural renderings or pictures of real interiors (Guerin et al., 1994). According to Scott (1992), it is difficult to disassociate between color and other interior elements, consequently, and in order to ensure greater reliability, the stimuli provided to the subjects in this study were computer generated and designed so that there were no intervening variables. The interior used a monochromatic color scheme, contained no patterns, and no identifiable style (no furniture included). In terms of color research a study is as good as the color stimuli it uses (Valdez & Mehrabian, 1994). The stimuli used were not pictures of an actual bank interior in order to ensure complete control over the treatments color characteristics. The attempt to minimize any source of "noise" and to ensure the colors used could be duplicated required giving up a degree of external validity. Subjects were asked to evaluate the service quality of a bank and its employees based
on the picture of an "artificial" interior. Results might have been different if the picture were of an "actual" bank interior.

This is an exploratory study therefore the development of the data collection instrument was based on the face validity of material taken from the literature. The items in the questionnaire were based on Parasuraman et al.'s (1985) list of service quality determinants and their definitions without any pre-testing. Once again the results of the study might have been different if such pre-testing had been conducted.

One of the study's goals was to use a large sample (N=486). Accordingly a convenience sample of college students in two lower division courses was used raising three issues. First, slides could not be used because the four treatments were administered to all subjects simultaneously, in the same environment. In an attempt to keep the treatments separate, subjects were each presented with a 5 ½ X4 inch picture, pasted on the last page of the questionnaire. However, in answering the questionnaire, several subjects looked around to see what other subjects were doing, and in doing so, saw other treatments. The use of slides would have provided large, life-sized images that can give subjects a better perspective of the environment they are to evaluate (Bellizzi et al., 1983), and would have required that the treatments be
administered separately. This would have guaranteed the between group design of the experiment.

Second, the researcher could not control the duration of the experiment or the lighting conditions. The experiment was conducted at the beginning of class time and did not give subjects a lot of time to think about the questionnaire items. Although great care was taken in developing the stimuli, not being able to account for the lighting conditions might have compromised the integrity of the chosen color characteristics (i.e. hue, value, and saturation). Finally, a byproduct of choosing a convenience sample was that the subjects were not representative of the student population of the university or of the town population. The sample included more women than men, the majority was between the ages of 18 and 21, and they were all college students. Therefore, the results of this study are limited, (ex. in terms of age group and occupation) and its implications are not generalizable beyond this sample.
CHAPTER VI

CONCLUSIONS

Implications and Conclusions

Banks provide very intangible and undifferentiated services. They face increased competition from other banks as well as from non-banks. Any innovation adopted by any bank is likely to be copied by competitors right away. Consumers have a negative opinion about the banking industry as a whole, and banks' marketing choices are severely restricted by regulatory and legislative forces. Under these circumstances the marketing objective of most bank is to increase segmentation and differentiation through image. Banks' physical environments play an important role in determining the image they project. This study looked at color in particular. A convenience sample of college students was provided with a picture of a bank interior and asked to evaluate the bank and its employees by rating them on seven service quality criteria. The
subjects were each assigned one of four pictures (treatments) at random. The pictures were computer generated and used a monochromatic color scheme manipulating the hue (cool vs. warm) characteristic at two value levels (dark and light). The objective of the study was to explore the effect of three independent variables on subjects’ evaluations of the banks’ reliability, responsiveness, competence, communication, security, understanding, and courtesy. The independent variables were hue, value, and gender. In this experiment, value had the most effect on subjects’ evaluations with banks with a dark color scoring significantly higher in terms of reliability, competence and security. Banks with a light color scheme were perceived to perform better in terms of communication, courtesy, and in terms of waiting lines, prompt service, and putting customers on hold. The hue characteristic did not effect subjects’ evaluations as much as anticipated and resulted in a significant difference only in terms of competence and courtesy. As expected, gender was not a source of difference between evaluations, even though female subjects gave a higher score to all treatments in terms of responsiveness.

The implication of these findings to banks is that color decisions can possibly have an effect on consumers’ perceptions, evaluations, and
ultimately their satisfaction with the bank. Obviously this effect is not the only important one, but it could enhance a specific marketing plan. Image is the by-product of any design decision, and it is logical to align it work with the goals and objectives of the organization. The hue characteristic of a color as measured in this study did not have a substantial effect on subjects' evaluations of the bank. According to Piotrowski and Rogers (1999) contemporary banks use a variety of color schemes to project a modern image. In general however, hue and saturation are strongly influenced by fashion trends. A bank could then vary the value between different areas of a branch in order to project the needed image. A dark value could be used around the teller area where safety and privacy are important to the consumer. A light value could be used in areas that require an impression of friendliness and accessibility such as in the loan department. These measures might reassure existing customers and make a good first impression with potential ones.

The present study was guided by a theoretical framework developed by Bitner in 1992. The objective of the framework was to understand the relationship between the built environment and its users in service organizations. The importance of such a quest is stressed by the fact that we live in a service economy with a marketing industry thus
far ill equipped to market services. Up until recently, marketing research focused on goods marketing and assumed that it applied to services as well. The present study adds to the increasing body of literature focusing on marketing services and their specific characteristics. One such characteristic is the important role the physical environment plays in selling (or not) services. The study used Bitner's model shed some light on the role of one environmental component in the user-environment dynamic: color. Color is a very complex and intriguing subject. It is also surrounded by numerous myths and unproved assumptions. They are unproved because they are untested, based on intuition or experience, or improperly tested (flawed research studies). This is especially true in the field of design and architecture. Color is an integral part of the design process and yet color choices are usually based on aesthetic criteria. In most cases aesthetic criteria do not take into account the purpose of the environment and the impact it will have on users. The present study contributes much-needed empirical research in the design field, especially in interior design. The interior designers of the new millenium are expected to be more specialized and to be experts in their area of specialization. This study helps pave the road for a new area of expertise in interior design: interior design as a marketing tool for service
organizations. More specifically, this study investigated the impact color on subjects' evaluations of a bank and its employees. Bank counter operations closely resemble other routine services (e.g., airline ticketing, fast food) in terms of role demands. Therefore conclusions of this study may be able to be generalized to more than just banks.

**Future Research**

The data collected for this study would lend itself to further study and analysis. Individuals considering a replication or expansion of this study might consider improving the data collection instrument by developing questionnaire items specifically for the study. Pre-testing the questionnaire items and statistically testing their reliability before the final experiment might increase the experiment's validity. The questionnaire items about the employees would benefit the study better by being shorter and easier to understand.

Further comparisons could be made between different sets of color schemes, or different color characteristics could be used with the same type of color scheme in this study. This experiment used monochromatic color schemes, which are not very realistic. Most interior color schemes
contain more than one color. Analogous and complementary color schemes could be tested. If a monochromatic color scheme is retained, new combinations of hue and value could be used.

The present study used value, hue, and gender as independent variables. Other studies could focus on different combinations of variables such as saturation, contrast, or subjects’ age and occupation.

In order to increase generalizability, a similar experiment could be executed with a randomly chosen sample of subjects. The sample would then be more typical of a predetermined population. To ensure that a between group design is respected, the treatments could be administered to four separate groups of subjects, guaranteeing that each subject receives one, and only one, treatment. Instead of using small pictures, subjects could be shown a large slide projection. More control can be sought in terms of experimental time and experimental conditions such as lighting or distance between subject and stimulus.

There is still much research to be accomplished in the area of the effects of color in interior environments on consumers in consumption settings. Other ideas for future research would be to use a different service business as a focus of the study. These could include
professional services offices, such as those of lawyers, doctors, or architects, or retail settings such as restaurants or department stores.


APPENDIX
INSTRUCTIONS

1. Read and sign the Informed Consent form (page 2)
2. Look at the illustration at the end of your packet and fill out the questionnaire (pages 3 & 4).

- Interior designers use this kind of illustrations all the time and we would like to find out what they communicate.

- This is a study about first impressions. It is widely acknowledged that we form first impressions of both people and places all the time. These impressions can be right or wrong but we form them none the less. This is what the following survey is asking you to do: communicate your first impressions about this bank and its employees.

Remember: there are no right or wrong answers, just note the first impression that comes to your mind.

THANK YOU!
INFORMED CONSENT FORM

Project Title: Perceptions of Bank Interiors
Investigators: Carol C. Caughey and Rahma Sferi.

This is a survey about people’s first impressions of places and the people who use them.

Your name will not be associated with your responses. Thank you for your participation. It will take you from 4 to 6 minutes to complete the survey.

If you have any questions or would rather not participate in this study, please inform the interviewer.

I voluntarily agree to participate in the project.

Name (please print)  Signature  Date

Questions about the research, should be directed to Carol Caughey, at (541) 737-0992

Questions about my rights, or research-related injuries should be directed to Laura Lincoln at (541) 737-3437.
### QUESTIONNAIRE

1. To what extent do you think this bank **appears** to: (circle one number for each)

<table>
<thead>
<tr>
<th></th>
<th>not at all</th>
<th>completely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Look like a bank you know</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>2. Be aesthetically pleasing</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>3. Invest money poorly</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>4. Have long waiting lines</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>5. Be opened at convenient hours</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>6. Keep customers' money safe</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>7. Keep customers' transactions private</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>

2. To what extent do you think the employees working at this bank **appear** to: (circle one number for each)

<table>
<thead>
<tr>
<th></th>
<th>not at all</th>
<th>Completely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Make billing mistakes</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>2. Call customers back quickly</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>3. Keep inaccurate records</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>4. Make the effort to understand the customers' needs</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>5. Reassure customers when a problem occurs</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>6. Provide prompt service</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>7. Greet customers with a smile</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>8. Have a clean and neat appearance</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>9. Recognize the regular customers</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>10. Keep customers informed about offered and costs involved</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>11. Have no idea what they are doing</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>12. Give individualized attention to customers</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>13. Be rude</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>14. Put customers on hold</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>
In order to help us interpret this information, please respond to the following:

3. How old were you on your last birthday? ..........................................

4. You are: (Circle one)
   1. Male  2. Female

5. Are you a U.S. citizen? (circle one)
   1. Yes  2. No
   Country of origin .................................................. (Please indicate)
   How long have you been in the U.S.? ........... (Please be specific)

6. What is your current major? ..........................................

7. What is your class standing this term? (Circle one)
   1. Freshman
   2. Sophomore
   3. Junior
   4. Senior
   5. Graduate student
   6. Other ...................................................(Please indicate)

8. Have you ever worked at a bank? (circle one)
   1. No  2. Yes
   If yes, how long ago? .............................................
   What was your job title/functions. ..............................

9. Do you have a bank account? (circle one)
   1. Yes  2. No

10. As far as you know, are you: (circle as many as apply)
    1. near sighted
    2. far sighted
    3. astigmatic
    4. color blind or partially color blind