CHAPTER- II

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LITERATURE REVIEW

Today, marketers understood that the more senses you appeal to, the stronger the message. Applied to the various market places, appealing the senses of the consumers is the core activity. Sensory marketing is an efficient tool for to ameliorating an offer. Since the literature survey needs to be focused on sensory marketing. We have given below a brief outline of sensory marketing:

2.1 OVERVIEW ON SENSORY MARKETING

Sensory marketing appeals to people’s emotions through the senses: touch; taste; smell; sight and sound. As the senses are closely related to emotions and memories, sensory marketing allows brands to connect on an emotional level with customers and create lasting memories through positive associations with the brand.

In the Marketing techniques that aim to seduce the consumer by using his senses to influence his feelings and behavior.

According to Rieunier (2002), the sensory marketing approach tries to fill in the deficiencies of the “traditional marketing” which is too rational. Classic marketing is based on the idea that the customer is rational, that his behaviour is broken up in defined reasoned steps, according to the offer, the competition, the answer to his needs.

By contrast, sensory marketing put the experiences lived by the consumers and his feelings in the process. These experiences have sensorial, emotional, cognitive, behavioural and relational dimensions, not only functional. It aims to create the adequacy of the products with their design and their packaging, and then to valorize them in a commercial environment to make them at There, the consumer is behaving according to his impulsions and emotions, more than his reason.
For many marketers (and consumers), the affectivity, perception and pleasure are more important than the price, since many products are now technically similar: they have to be differentiated in another way.\textsuperscript{44}

Kotler (1973) had already mentioned the need for brands to be positioned differently according to the price or the assortment. He started to explain the influence of the point of sales physical environment on the behaviour of the customers and gave a definition of the atmosphere as “the creation of a consumption environment that produces specific emotional effects on the person, like pleasure or excitation that can increase his possibility of buying”\textsuperscript{45}

He considered the creation of this atmosphere as the most important strategic way of differentiation for retailers.

The main use for sensory branding is to appeal to the consumer's senses. It is also used to understand the emotions and experiences of the consumer when being drawn to, purchasing or using the product penetrate and dominate market share, increase profitability and to ensure initial and repeat purchases. Sensory branding is used to create an atmosphere that encourages the customer to pay money and can be influenced by sight, noise, touch, taste and smell.

Sensory marketing is defined as a way of measuring and explaining consumer emotions, spotting and capitalizing on new market opportunities, an opportunity to maximize product profitability, ensuring first and repeat purchase (loyalty), ensuring long-lasting product success.

\textbf{2.2 DISCOVERING OUR BRAIN}

The brain is the most complex organ we posses. It contains about 100 billion (100,000,000,000) cells.

\textsuperscript{44}Broad sensory branding, by Martin Lindstrom, Journal of Product & Brand Management, Volume 14, Number 2, 2005, p. 84–87
\textsuperscript{45}Kotler ’P.Atmospherics as a marketing tool’ - Journal of Retailing, (1973), p. 49
When we linked together the number of connections our brain cells can make is estimated to be from one hundred trillion to as much as 10 followed by millions of 0’s (more than the estimated number of atoms known in the universe. These numbers provides the picture of theoretical capacity of the brain. But what about the practical capacity? When on the earth you will have all these potential connections? The answer is none of us have time. Sure we could increase the knowledge skills and brain connections by 10% to 20% but reality there are not enough hours in a day to finally utilize our brain potential.

Some researchers say that our brains begin to lose cells starting from our birth. Others say, cell deterioration begins about age 12. This discussion is not very significant, however when you consider the magnitude of brain cells we are born with: we can afford to lose a few million cells. More significant, is the fact that the brain’s plasticity continues as we age. This means that although we may have fewer brain cells, we are still increasing the connections between the cells. Some evidence, in fact, suggests that brain volume increase slightly in subjects aged twenty-five to thirty-nine-years old. We never have to stop learning. Thus, our brains capacity is more a matter of time, exposure and motivation, than it is of innate design.

2.3 RE-VISITING THE LEFT AND RIGHT BRAINS DIALOGUES

Our brain has two hemispheres Left-side and Right side. Is there more to our brain? Yes, even though it is this lateral dichotomy we hear about the most energy in our brain moves up and down on a vertical. From the brain stems to the cortex and back down again as well. Our brain is design to process spatially from left to right hemisphere, but we process time (past further) from back to front and neuropeptides circulating through the blood also influences our thinking behavior and action. Our brain is indeed a micro-universe.

Contrary to what some would lead you to believe, there is no such thing as right-brain learning or left-brain learning. There are only preferences where more of one hemisphere is activated than another. There is no learning taking place only in the upper cortex or only in the brain stem. Our brain is highly interactive.
Much of the original work of Nobel Prize Laureate Roger Sperry, PhD, who discovered the functioning differences between left and right-brain hemispheres, remains valid today. The challenge, however, has been keeping the finding in perspective. Some have oversimplified the conclusions or taken them to an extreme, creating a “split” in thinking that is unwarranted by the literature. Some books have even appeared that draw up battle lines over the “old left-brain way” and the “updated right-brain approach”. It is an oversimplification to say that an individual is “left brained” or “right brained”. We are all whole brained. Each area of the brain senses what is needed and interacts with other areas in a symbiotic micro-second.

<table>
<thead>
<tr>
<th>Left – brain dominant learners, more often than not, may</th>
<th>Right – brain dominant learners, more often than not, may</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Prefer things in sequence</td>
<td>• Be more comfortable with randomness</td>
</tr>
<tr>
<td>• Learn best from parts to wholes</td>
<td>• Learn best from wholes to parts</td>
</tr>
<tr>
<td>• Prefer a phonetic reading system</td>
<td>• Prefer a whole – language reading system</td>
</tr>
<tr>
<td>• Like words, symbols, and letters</td>
<td>• Like picture, graphs, and charts</td>
</tr>
<tr>
<td>• Rather read about a subject first</td>
<td>• Rather see it or experience a subject first</td>
</tr>
<tr>
<td>• Want to gather related factual information</td>
<td>• Want to gather information about relationships among things</td>
</tr>
<tr>
<td>• Prefer detailed orderly instructions</td>
<td>• Prefer spontaneous, go with the flow, learning environments</td>
</tr>
<tr>
<td>• Experience more international focus</td>
<td>• Experience more external focus</td>
</tr>
<tr>
<td>• Want structure and predictability</td>
<td>• Want open – ended approaches, novelty, and surprises.</td>
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2.4 SOME LEARNING IS AUTOMATIC

Your non-conscious mind acts before your conscious one does! In fact, as early as two seconds prior to actual activity or movement, our brain has already decided what body parts to activate and which side of the brain to use. This means that we are already acting on a thought before we’re even aware of it.

Emanual Donchin, PhD at the Champaign-Urbana campus of the University of Illinois and colleagues has documented a profound statistic (Coles, Donchin, and Porges 1986). He says that more than 99 percent of all learning is non-conscious. This means that the majority of what you and your students are learning - a quantity of stimuli that far exceeds that derived from traditionally delivered content or what’s outlined in a lesson plan- was never consciously intended. From visual cues, sounds, experiences, aromas, and feelings, you are a walking, talking sponge.

To illustrate this perspective, consider that you have just driven from one city to another. You arrive safely and check into a motel or stay with a friend. Someone asks you about something, and you can’t quite recall it. But then they mention the company’s name and suddenly a light goes on. “Yes,” you say, “I have heard of that company, I think I saw their billboard advertisements somewhere on the road. Oh, yes, now I remember. They are the ones who… “You actually learned this information hour ago, but at the time, you are non conscious of it.

The conscious mind is the instructor and the unconscious mind is the Doer. It is important for us to build a strong relationship between our conscious and our unconscious minds and let our unconscious mind do the behaviors.

<table>
<thead>
<tr>
<th>Conscious mind</th>
<th>Unconscious mind</th>
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<tr>
<td>Short term memory</td>
<td>Long term memory</td>
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<tr>
<td>Analytical</td>
<td>Domain of emotions</td>
</tr>
<tr>
<td>Makes decisions</td>
<td>Habits</td>
</tr>
<tr>
<td>Will power</td>
<td>Physical body</td>
</tr>
<tr>
<td>Attention on 7±2</td>
<td>Processes everything</td>
</tr>
<tr>
<td>Processes words</td>
<td>Processes through imagination and pictures</td>
</tr>
<tr>
<td>Thinker</td>
<td>Doer</td>
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</table>
2.5 CHARACTERISTICS OF DATA STORAGE

Every human brain develops uniquely, even brains of identical twins are different. The most amazing thing is that all of us, virtually share the same DNA in 99.5% of our body, but 0.5% is that unique that makes us each different, in this respect, there are many ways in data storage and retrieving the data. Human brain does not have a single preference of storage of data; we are far more complex than this. Since, we have five senses, that input will be either out of Visual, Auditory, Kinesthetic, Olfactory, or Gustatory (Taste / Smell) which our brain stores it, retrieves as and when needed.

Figure 2.1
DATA INPUT PREFERENCES

Here the study shared the various characteristics of sense organs. Those are as follows:
2.6 PROFILING OF SENSES

Visual

Our eyes are capable of registering 36,000 visual images per hour. A huge number when you stop to think about it imagine 36,000 monitory bills (from all different parts of the world) lay out on the floor and your brain has capacity to register each of one. But 80-90% of all information that is observed by your brain is visual with this enormous capacity it is very important to be aware of the environment factors that influence how we see and process information. Essentially elements enabling our eyes to actually compose meaning from our visual field are contrast, tilt, curvature, line-ends, colours, and size, these elements.

Sight is the most used sense for marketing because it is one the most responsive to the environment. We can appreciate logos, corporate colours, characters and other graphical tools with which one can identify a specific product. According to fashion retailer Gina Tricot, 'the eyes buy 70 or 80 percent of what people buy.' Sight is how the customer knows the product offering, quality, changes, store layout, materials, lights and colour. Shapes and colour are the first aspects of a brand that is noticed by the customer.

Color is a big influence on visual branding because it can affect people emotionally. According to the Seoul International Color Expo, the color of a brand logo improves brand recognition by 80%, and 84% of people believe that color amounted to the major consideration when they choose a brand. Different colors affect people differently, for example, red 'is the highest stimulation hue. It increases pulse and heart rate, raises blood pressure and stimulates appetite.' This can be used by sensory branding in restaurants to stimulate hunger or in bars to because of its exciting properties.

Auditory

Sound is used in branding to evoke emotions and feelings to influence brand experiences and interpretations. Perhaps the second most used variable by marketing and advertising is the sense of hearing. Sound when matched with a message is a powerful way to make the customer remember it. Background music is an effective way to influence customer behaviour at the point of purchase. If used properly, music can create a mood for the consumer that encourages them to buy, for example playing rock and roll music in a guitar store.
Olfactory

Smell is used in branding because it increases the customers’ remembrance of the brand. The human nose can distinguish over 10,000 different odors, besides being the most sensitive of the senses; it has a tremendous evocative power of memories and experiences over the years. Smell is the sense most linked to our emotional recollection. It can create instant connections between a brand and other memories. Neuro-marketing studies show that 75% of emotions are triggered by smell. Smell is linked to pleasure and wellbeing, emotion and memory. Therefore it can influence customers' emotional state and mood to make the customers more susceptible to impact customer behavior. Restaurants sometimes send artificial smells into the areas around the venue to increase awareness of their product.

Research by the Sense of Smell Institute indicates that while people's visual recall of images sinks to approximately 50% after only three months, they recall smells with a 65% accuracy after an entire year. Similarly, a study carried out at the Rockefeller University shows that in the short term we remember just 1% of what we touch, 2% of what we hear, 5% of what we see, 15% of what we taste and 35% of what we smell.

Gustative

Taste fuses all the different senses together to create a holistic brand experience. Therefore name, presentation, environment, scent, sound and texture must all be considered when branding with taste. Taste is linked to emotional states, and so it can alter mood and brand perception. Gustative marketing is usually used (for obvious reasons) especially for food and beverage brands.

Tactile

Touch strengthens brand identity and image by appealing to this sense. Touch considers physical and psychological interaction between the customer and the product. Touch is a way to control the 'unconscious of the consumers, their perceptions, feelings and tastes. Touch can be manipulated through materials, weight, softness, and comfort of the product.
Kinesthetic

Kinesthetic learners usually succeed in activities such as chemistry experiments, sporting activities, art and acting; it is common for kinesthetic learners to focus on two different things at the same time, remembering things in relation to what they were doing. They possess good eye–hand coordination. In kinesthetic learning, learning occurs by the learner using their body to express a thought, an idea or a concept (in any field). In an elementary classroom setting, these students may stand out because of their need to move; their high energy levels may cause them to be agitated, restless or impatient. Kinesthetic learners' short- and long-term memories are strengthened by their use of movement.

Kinesthetic learners experience the world around them through movement and touch. Their memories are often closely linked to emotions or sensory experiences. This group of people seeks a higher degree of physical interaction so sensory marketing and experiential advertising techniques are particularly appealing to them.

2.7 REVIEW OF RELEVANT LITERATURE

The most prominent and pioneering literary works of researchers relevant to our study have been reviewed below:

**J. Jeffrey Inman (2001)** indicated in their study that the role of sensory-specific satiety in attribute-level variety i.e., to describe the phenomenon where by the pleasantness of a food just eaten drop significantly while the pleasantness of uneaten foods remains unchanged. Their study explored that the consumers are more likely to seek variety on sensory attributes.

**Blair Kidwell, David M. Hardesty, and Terry L. Childers (June 2008)** this study examined about the consumer emotional intelligence (EI) related with food choices beyond cognitive knowledge. And it is explored that consumer emotional intelligence related to product based decision making.

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Jarl Giske, Sigrunn Eliassen, Øyvind Fiksen, Per J. Jakobsen, Dag L. Aksnes, Christian Jorgensen, and Marc Mangel (December 2013)\(^{48}\) in this study explained about emotion systems are collectively described by the proximate constraints on decision making and the processes from perception to behavior. And also it explored that emergent strategies in evolved populations include common emotional appraisal of sensory input related to fear and hunger and also include frequency-dependent rules for behavioral responses.

Aradhna Krishna (March 2006)\(^{49}\) in their study focused on the role of the visual and haptic (touch) senses on the elongation bias. It is indicated that sensory modality would be affected because of an extension of the elongation bias. That is “visual and hepatic cues” (seeing and handling the objects).

Terry L. Childers and Michael J. Houston (1984)\(^{50}\) the study explained about the memo-ability of brand names semantically related to product class was tested in pictorial versus verbal-only under various conditions. The results of their research indicated that picture superiority occurs in both immediate and delayed recall tasks when processing is directed at appearance features than the verbal-only stimuli.

Murphy, James (June 2005)\(^{51}\) in their study indicated that sensory marketing involves moving beyond the traditional method of using channels like television and print to convey a certain message to the rational part of consumers' consciousness. But the practice could face a difficult time ahead. Its power in appealing to the subconscious may draw comparisons to "subliminal advertising", a practice widely regarded as unethical.

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\(^{51}\)Murphy, James Concerns grow over marketing's full sensory assault, Media[HK]17:20(June 2005)
Sigurd Villads Troye and Magne Supphellen (March 2012)\textsuperscript{52} in their study explained about a positive evaluation bias for the input product occurs despite increased self-attribution due to self-production. The result of their explored that perceived self-integration partly mediates the positive effect of self-production on outcome evaluation and also the branded input products may benefit from the evaluation bias caused by self-production.

Stewart Shapiro, Mark T. Spence\textsuperscript{53} this study explained that consumers give more weight age on verbally described market information when they were involved for making brand choice decisions. And also their study proved that memory of sound quality; perceptions of sound quality provide better market information to the consumers towards their decision making for perfect brand choices.

Kumari, Neeraj (Jul 2013)\textsuperscript{54} in this research study explained that sensory marketing influence the consumers’ perception, judgment and behavior related with perfect selection of their branded product. Therefore sensory marketing is a vital part for the consumers’ perception and behavior towards their brand selection.

Jennifer J. Argo, Monica Popa and Malcolm C. Smith (July 2010)\textsuperscript{55} in their study insisted that sound repetition is also one of the influential features for consumers 'brand evaluation. Their study explored that sound repetition in its phonetic structure is gives positive effect, which favorably affects consumers' brand evaluations, and create reactions to cross-selling and product choice.


\textsuperscript{53}Stewart Shapiro, Mark T. Spence, Factors Affecting Encoding, Retrieval, and Alignment of Sensory Attributes in a Memory-Based Brand Choice Task

\textsuperscript{54}Kumari, Neeraj,: Sensory Branding in India, International Journal of Marketing and Technology 3.7 (Jul 2013): 193-204.

\textsuperscript{55}Jennifer J. Argo, Monica Popa and Malcolm C. Smith The Sound of Brands, Journal of Marketing Vol. 74, No. 4,(July 2010), (pp. 97-109)
Mininni, Ted (Nov 2008)\textsuperscript{56} this research study explained about the consumer sensory marketing through the impacts of their vision and sound integrate multi-sensory experiences towards purchase decision making process.

Dogar, Rana (Apr 1997)\textsuperscript{57} in their study indicated that the today’s organizations understood consumers gives more important on sensory details of a product - the way it sounds, smells or feels - influences consumers - at different times within industries. The results of study showed that the consumers are interested on sensory marketing with today’s marketing activities.

Hultén, Bertil (2011)\textsuperscript{58} their research study investigated that multi-sensory brand-experiences related with three sensorial strategies those are sensors, sensations, and sensory expressions to differentiate and position a brand in the human mind as image. And also it is identified that emotional/psychological linkages in differentiating, distinguishing and positioning a brand as an image in the human mind.

Martin A. Koschat and Darius J. Sabavala (1994)\textsuperscript{59} examined that effect on telephone usage is addressed through a systematic analytical process that combines exploratory data analysis with formal modeling. In their study explored that telephone usage does respond to advertising, it can be quantified, and also households with heavy usage of telephone service respond proportionally more than light usage households.

Mason, Sara (Apr 2005)\textsuperscript{60} in their study indicated that sensory marketing play a vital role in satisfying consumer expectations. It’s explained with consumer explained through models silicone technologies innovative forms and textures.

\textsuperscript{56}Mininni, Ted. Multi-sensory packaging emotionally satisfies consumer, Flexible Packaging, Vol. 10.11, (Nov 2008), pp 24-25

\textsuperscript{57}Marketing to the senses, Working Woman Vol. 22, No. 4Dogar, Rana, (Apr 1997), pp: 32-35+.

\textsuperscript{58}Hultén, Bertil (2011): Title: Sensory marketing: the multi-sensory brand-experience concept, European Business Review 23.3 256-273.

\textsuperscript{59}Martin A. Koschat and Darius J. Sabavala, Marketing Science, Vol. 13, No. 4 ,(Autumn, 1994), pp. 374-391

\textsuperscript{60}Mason, Sara Consumers Experience Sensational Silicones, Global Cosmetic Industry Vol. 173 No.4 ,(Apr 2005), pp: 42-46.
Abbas, Syed Musharaf (Mar 2014)\(^{61}\) examined the effect of sensory appeal, self-reference and positive effect on brand attitude. It is explored that sensory appeal, self-reference positive affect are important factors for brand attitude.

Lindstrom, Martin (Mar 2005)\(^{62}\) the study explored that marketer already known about the most effective branding exercise takes place where the emotional connection between product and consumer is formed. And also sensory effects towards consumer behavior exclusively influenced by sights.

VISUAL, AUDITIORY, KINESTICTCES

The VAK learning style uses the three main sensory receivers; Visual, Auditory, and Kinesthetic (movement) to determine the dominant learning style. It is sometimes known as VAKT (Visual, Auditory, Kinesthetic, & Tactile). It is based on modalities—channels by which human expression can take place and is composed of a combination of perception and memory. VAK is derived from the accelerated learning world and seems to be about the most popular model nowadays due to its simplicity. While the research has shown a connection with modalities and learning styles (University of Pennsylvania, 2009), the research has so far been unable to prove the using one's learning style provides the best means for learning a task or subject. This is probably because it is more of a preference, rather than a style.

Learners use all three modalities to receive and learn new information and experiences. However, according to the VAK or modality theory, one or two of these receiving styles is normally dominant. This dominant style defines the best way for a person to learn new information by filtering what is to be learned. This style may not always to be the same for some tasks. The learner may prefer one style of learning for one task, and a combination of others for a different task.


Classically, our learning style is forced upon us through life like this; In grades kindergarten to third, new information is presented to us kinesthetically; grades 4 to 8 are visually presented; while grades 9 to college and on into the business environment, information is presented to us mostly through auditory means, such as lectures.

According to the VAK theorists, we need to present information using all three styles. This allows all learners the opportunity to become involved, no matter what their preferred style may be.

**Constantinidou and Baker, (2002)** proved that visual presentation through the use of pictures was advantageous for all adults, irrespective of a high or low learning-style preference for visual images. Indeed, it was especially advantageous for those with a strong preference for verbal processing.

**Alan Branthwaite** this study explored about the visual imagery effectively and potentially powerful effects on human psychology and physiology, affecting their ideas, perceptions, beliefs, feelings, behavior and health towards their buying behavior. It plays a central role in most advertising, especially posters, print and TV etc.

**John R. Rossiter** visual advertising also effectively created interest about the product among the consumers, based on this idea their study explored that visual imagery applied to advertising practice and it is induced the consumer purchase intention.

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Hoegg, Jo Andrea& Alba, Joseph W (2011) 66 their study investigated about one of our five sense organs i.e., seeing. Visual image of a product is highly influenced the consumers buying behavior. Because the usage of product depends on Colour, design, features and its functions which are communicated through the various advertisements and its impressive visual image effectively affect the consumer.

Meng Zhu (2010) 67 this study related to consumers are influenced by visual cues in inducing a halo effect and consumption experience of food products, the visual cues bias consumption in an advertising context, and its contextual factors influenced the customer towards consumption of food product.

Andrey, Javalgi Rajshekhar (Raj) G, Mikhailitchenko Galina, Laroche Michel 68 this study explored about visual imagery, brand familiarity, brand claim and imagery potency from the consumer point of view of memory-evoking effects among the two countries cross cultural advertising communication. Their study results revealed that the four aspects of cross cultural environment help the customer to recall the brand of a product.

Richard P. Bagozzit and Alvin J. Silk (1983) 69 this research study examined about recall and recognition of brand through effective advertisement. Both these findings appear compatible with the views of recall and recognition referred that human memory which is found in cognitive psychology, it showed valuable perspective among the consumer perception and memory responses towards brands effective advertisement.

Tina M. Lowrey, L. J. Shrum, Tony M. Dubitsky (2003)\textsuperscript{70} their study examined the relation between the presence of linguistic features in brand names and memory for various products. Their research study proved that there was positively related between brand-name and memory among the consumer towards buying behavior.

Childers, Terry L, Heckler, Susan E & Houston, Michael J\textsuperscript{71} this study specifically examined about the visual and verbal impact on print advertisements among various types of consumers and their study revealed that the visual and verbal function in print advertisements effectively influenced among the consumer towards their brand recall.

Robert L. Underwood, Noreen M. Klein, and Raymond R. Burke\textsuperscript{72} their study examined about designs of package of any product effectively attracts the consumer towards their buying behavior. And too developed their consumers’ perceptions of the brand and enter the consideration set.

Shabu B Raj B Dharmangadan, S Subramanian\textsuperscript{73} their research study explored about the influence of human beings cerebral hemispheres towards recalling visual and auditory stimulus related with brand recall. And their study revealed that the dominance of the right hemisphere was correlated with intellectual giftedness in verbal reasoning and right hemisphere’s superiority for spatial memory tasks among male and female respondents. Female respondents were highly influenced by visually presented words towards brand recall.


Michel Wedel, Rik Pieters (2000)\textsuperscript{74} advertising playing a vital role among the consumers. Its effectively communicate about the product and its usefulness for them. It’s created brand recall among the consumers. In other hand, their studies were indicated that eye movement is an eminent indicator of visual attention.

James R. Bettman (1979)\textsuperscript{75} this study explored about the memory factors of consumer. Those are product stimuli, advertising, word of mouth, and other sources of product-related information. The result of this study suggested that memory plays a major role in consumer choice.

Joanne P. S. Yeoh, Adrian C. North (2010)\textsuperscript{76} their study examined about the consumer product recall intention is influenced by music in advertisement. And also their studies explored that music is primary thing to selection of certain products and consumers’ behaviors associated with that music.

Emma Rowe (2010)\textsuperscript{77} this study is related with decision making through advertising and branding creates in people’s lives. Cognitive psychology is involved in advertising through its connections with attention, perception, association, and memory. A large part of someone’s decision to buy a brand over and over again is brand loyalty. Somehow, brand loyalty and identity can exist even when the brand product is inferior to another brand’s product.

The study proved with various evidence one among that is Tropicana changed their packaging and identity, from the orange-with-a-straw carton that we all recognized as kids to a sleeker, more modern, albeit more generic carton. People went absolutely insane, e-mailing and calling Tropicana and demanding that they bring back their old packaging. There is some crazy psychology that makes people so angry about a change in the brand that doesn’t involve a change in the actual product itself at all. Here the study proved that brand identity psychologically influenced the consumers very effectively.

\textsuperscript{74}Michel Wedel, Rik Pieters, Fall, \textit{Marketing Science Informs}, Vol. 19, No. 4, 2000

\textsuperscript{75}James R. Bettman, Spring, \textit{The Journal of Marketing}, Vol. 43, No. 2, 1979

\textsuperscript{76}JOANNE P. S. YEOH, ADRIAN C. NORTH, December 2009 \textit{Empirical Musicology Review}, Vol. 5, No. 1

\textsuperscript{77}Emma Rowe, January 31, 2010
Michael L. Ray, Rajeev Batra (2011)\textsuperscript{78} this study indicated about cognitive skill of consumer behavior through effective advertisement and its affects, influenced by psychologically through the various advertisement. And also the cognitive and affective reactions that are engendered by exposure to products that are high in visual product newness.

David Allan (2007)\textsuperscript{79} their study explored about the effectiveness of sound advertising among the consumers. The result of their study explored that the effects of music is commercial and influenced the attention, memory, attitudes, and purchase intention of consumer.

Judy I. Alpert, Mark I. Alpert\textsuperscript{80} music is a powerful language, and it interacts with other nonverbal and verbal advertising elements. And also this study indicated that the role of music in advertising has been attracted and created interest among the consumers purchase intention.

Wilson, Rick T. & Till, Brian D (2011)\textsuperscript{81} products placements is happened in various mode of communication i.e., TV, movies and so on. Through these brand recall from product placements their study suggested that product placements useful for significantly increase consumers' subsequent category-cued recall of the brand name of the product placement.

Martin S. Roth (June1992)\textsuperscript{82} brand image plays a vital role for brand recognition and recall. An image that clearly communicates the needs satisfied by the brand contributes to brand equity and helps combat brand parity. The normative model of brand image management suggests that marketers should base their images on a single set of consumer needs (depth strategy), rather than multiple sets of needs (breadth strategy). The results of this study indicated that depth strategies to do best performance among the customer needs. there are conditions under which breadth strategies perform just as well.

\textsuperscript{78}Michael L. Ray, Rajeev Batra, Graduate School of Business, Stanford University, Research Paper No. 661

\textsuperscript{79}David Allan, Ph.D. Fall, Journal of Media Psychology, Volume 12, No. 3, 2007

\textsuperscript{80}Judy I. Alpert, Mark I. Alpert, University of Texas at Austin

\textsuperscript{81}Wilson, Rick T.\textsuperscript{1}, Till, Brian D.\textsuperscript{2}: International Journal of Advertising; 2011, Vol. 30 Issue 3,

Kevin Lane Keller (Jan 1993)\textsuperscript{83} examined about the customer-based brand equity i.e., consumer response to the marketing of the brand. And the Brand knowledge is conceptualized in terms of two components is brand awareness and brand image. This study explores that customer-based brand equity and it is insisted that consumers were familiar with the brand and holds some favorable, strong, and unique brand associations in memory.

France Leclerc, Bernd H. Schmitt and Laurette Dubé (May, 1994)\textsuperscript{84} their study examined the notion that foreign branding-the strategy of pronouncing or spelling a brand name in a foreign language-triggers cultural stereotypes and influences product perceptions and attitudes with three experiments such as Choosing French brands and its French pronunciation, country-origin, of a brand name and actual product taste. Despite the presence of direct sensory experience, consumer perceptions of a product change as a result of French branding.

April Wright (2002)\textsuperscript{85} their study explored about the global branding image towards retail financial services and its impact on consumer attitudes in banking and its services. The result of their study identified that consumers were benefited through various technological services of banks/financial institutions like online transactions and its brand image is motivated the consumers towards buying behavior.

Mason, Sara (Apr 2005)\textsuperscript{86} this study indicated about that brand recognition and recall happens through the effective advertisement. In other words, recognition is the term for trying to access a memory of brand by prompting with a creative advertisement. Recall is the term used when one prompts with a brand name while looking for feedback on the memory of the advertisement.

\textsuperscript{83}Kevin Lane Keller, Conceptualizing, Measuring, and Managing Customer-Based Brand Equity, Journal of Marketing Vol. 57 (January 1993), 1-22
\textsuperscript{84}Advances in Consumer Research Volume 16, 1989 Pages 253-257
Craig J. Thompson, Aric Rindfleisch and Zeynep Arsel (Jan. 2006)\(^{87}\) this study insisted that emotional branding is a vital part of a marketing success. Apart from this research study explained about the emotional branding paradoxically encourage the formation and also propagation of doppelganger brand imagery. Their research study insisted that a brand image has been determined that the perceived authenticity of an emotional-branding story and also it gives identity value to the consumers. And this study suggested that emotional branding story created awareness among the marketing managers to understand their own consumers buying behavior.

Delattre, Eric Colovic, Ana (2009)\(^{88}\) their study indicated that memory and perception of consumers are influenced by brand placement in movies and TV series through the songs attracted their attitude and made some changes towards consumption behavior.

Samu, Sridhar Krishnan, H. Shanker Fall 2010\(^{89}\) their study explored that firms’ choice of brand names and media needs to consider the combination of brand name characteristics are helpful to create brand familiarity among the consumers.

Valerie Hemar – Nicolas & Mathilde Gollety\(^{90}\) in this study insisted about the recall and recognition of brand through improve a relationship with young consumers. Their study explored about the children perception related with brand recall and recognition. The result of their study explained that the marketers should create a brand character and brand loyalty among the children. It is used with them and also create a close relationship with them for long term through realistic brand character and made them to experience with the brand.


\(^{88}\) Eric Delattre; Ana Colovic, Memory and perception of brand mentions and placement of brands in songs, International journal of advertising - Vol. 28, 2009, 5, p. 807-842


Katherine Sullivan\textsuperscript{91} visual image is our own perception of reality without further analyzing the context. In this study discussed about the impact of visual images of advertisements towards perceptions of consumers on branded products and also their revealed that visual image of advertisements affects consumers perception towards product effectively to recognize and recall of brands.

Jenni Romaniuk, Magda Nenycz-Thiel, Nicole Hartnett, Armando Corsi\textsuperscript{92} consumers learn a brand’s identity elements through direct experience when buying and using a brand, and indirect experience via advertising. This research examined the impact of direct and indirect experience on the formation of brand identity through packaging and advertising of products in the market. The result of their study revealed that the combined use of brand identity elements on packaging and advertising to enhances memory and brand recognition among the brand users.

Brand recall recognition is extent to which a consumer can correctly identify a particular product or service just by viewing the product or service's logo, tag line, packaging or advertising campaign. Brand recognition requires the consumer to recall prior knowledge. In order to build brand recognition, an organization must repeatedly provide consumers with a consistent visual or auditory learning experience. It can be contrasted with brand awareness, which simply means the consumer knows that a particular brand exists.

Abhilasha Mehta Gallup & Robinson, March 2006\textsuperscript{93} recall, one of the key metrics in advertising testing has been criticized over the years as favoring rational advertising over emotional advertising. Their analyses showed that emotional advertising is not penalized by recall, and that emotional content in well-executed commercials can actually boost recall. Strong empirical evidence shows that recall is a valid measure of advertising effectiveness and emotion in advertising that builds brands.

\textsuperscript{91} Psychological Perception of Images as Reality- Pg no. 26 and 27


\textsuperscript{93} Abhilasha Mehta Gallup & Robinson, Reconsidering Recall And Emotion In Advertising, Journal Of Advertising Research, March 2006
Ming H. Hsieh (2002)\textsuperscript{94} the research study identified that the pattern of brand image and perception in a global market towards consumers’ brand recognition. The results of their study proved that global brand image management is effectively useful for Brand recognition.

Wei-Lun Chang and Hsieh-Liang Lin\textsuperscript{95} colour is an important process of building a brand and first communication towards consumers. Their study examined about an impact of color traits on corporate brand. Colours always attract the various types of customers and it is an identity for corporate products. And also their study referred with Birren’s Colour Theory to identify each colour trait, brand identity and corporate identity. This research study revealed that each colour trait created consistency between color traits of the corporate brand and corporate brand identity. It is proved that the consumer could easily recognized brand through its corporate identity.

Radford, Scott K and Bloch, Peter H.(Nov.2011)\textsuperscript{96} this study evaluated about the ability of consumers to recognize and assess product through innovation of visual design. Their study revealed that the visual design plays a central role for marketing the various products among the consumers. And also the research study proved that there is a strong relationship between innovation of visual design and brand recognition by the consumers. Their study suggested that both innovation researchers and product managers need to be aware of the impact of visual design among the consumers or brand users.

Samu, Sridhar Krishnan, H Shanker, Fall2010\textsuperscript{97} their study explored that firms’ choice of brand names and media needs to consider the combination of brand name characteristics are helpful to create brand familiarity among the consumers.


\textsuperscript{95}Wei-Lun Chang and Hsieh-Liang Lin African, Journal of Business Management Vol. 4(15), pp. 3344-3355, 4 November, 2010

\textsuperscript{96} Peter H. Bloch, Seeking the Ideal Form: Product Design and Consumer Response Journal of Marketing Vol. 59, No. 3 (Jul., 1995), pp. 16-29

Delattre, Eric Colovic, Ana (2009) their study indicated that memory and perception of consumers are influenced by brand placement in movies and TV series through the songs attracted their attitude and made some changes towards consumption behavior.

Hoegg, Joandreaalba, Joseph W (2009) their study investigated that impact of product forms on perceptions of functional performance of a product judgment by the consumers. Their study revealed that the product forms are naturally influenced the feature of product information. It is useful for the consumers to know about the product. The result of the study suggested that product developers should concentrate towards products designs and marketing communication on specific features on product based on customer requirements.

Wilson, Rick T Till, Brian D (2009) product placement is increasing in importance as a non-traditional method to reach consumers. The study explained the product placements with four movies and brand recall in a broad way musical. The result of this study suggested that visual, verbal are prominently influenced the consumers brand recognition and brand recall.

Swee Hoon Ang and Elison Ai Ching Lim (2009) in this study explained about the usage of various type product and its brand personality perception and attitudes among the consumer buying behavior. And also their study insisted that metaphors influenced brand personality perceptions particularly for utilitarian products. The result of their study suggested that the purchase intention were also enhanced with metaphoric advertisements.


Wilson, Rick T Till, Brian D. Journal of Advertising

this study explored the brand experience dimensions like sensory, affective, intellectual, and behavior. Apart from that, the brand experienced were measured customer delights towards brand attachment, brand involvement and brand personality. The result of their study suggested that brand experience dimensions are useful to understand the consumer satisfaction and brand loyalty.

**Lindstrom, Martin (2005)** this study showed that the relationship between the five senses and brands. The results of their study revealed that emotional connections are effectively made with a synergy of all five senses i.e., multi-sensory brand communication between consumers and their product.

**Liang, Jin-Long; Chen, Ying-yu, Duan, Yi-Shiang; Ni, Jia-Jen.** this study examines the relationships between the five experiential values (i.e. sensory, emotional, cognitive, behavioral, and relational values), purchase intentions among the various types of consumers. The result of their study showed that five dimensions were positively related with purchase intentions.

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2.8 HISTORY OF TELEPHONE NETWORK PROVIDERS IN INDIA

Jain (1993) analyzed that in response to the business needs of faster, cheaper, and more varied modes of communication, the telecommunication sector in many countries has been undergoing rapid technological and structural changes over the past few years. Since the mid 1980s, the telecommunication sector in India, too, has undergone major transformations. Private participation in the manufacture of end user equipment and services, reorganization of the monolithic Department of Telecommunication, and raising finances from the public for investment in the state owned factories and organizations have been some of the policy initiatives of the government. The Indian telecom sector is characterized by under-investment, amalgamation of regulatory and operational functions, ill-defined sector policies, and lack of financial and administrative autonomy - features which are common to many other developing countries. In such a scenario, the consequences of sectoral changes have implications both for decision makers at the national level as well as in other developing countries. The policy changes initiated by the government and the lessons to be drawn from India's experience are reviewed.

Bhattacharya (2000) constructs a vision of the Indian telecommunication sector for the year 2020. The paper aims at isolating agents of change based on international experiences and situates India in the development continuum. The agents of change have been broadly categorized into economic structure, competition policy and technology.

Das (2000) this study explains about the liberalization of the Indian telecommunications services which is started in mid nineties with no change in the existing public monopoly structure, entirely controlled by Department of Telecommunications (DOT). In order to evaluate any proposed industry structure, it is essential to analyses the production technology of DOT so as to determine the rationale of liberalization and sustainability of competition. Accordingly, the researcher estimates a frontier multi-product cost function for DOT, where the cost function has been duly

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105Rekha Jain, Review of the policy changes in the Indian telecom sector, implications for decision makers, Indian Institute of Management, 1993


modified to account for the production technology of a public monopoly. The study finds that although DOT displays high allocation inefficiency, it is still a natural monopoly with very high degree of sub additively of cost of production. This study implies that the choice of any reform policy should consider the trade-off between the loss of scale and scope economies and cost saving from the reduction in inefficiency of the incumbent monopoly in the event of competition.

**Rao (2000)** this article explored about the “Internet service providers in India”, it provides a broad view of the role of an Internet service provider (ISP) and the factors to be considered before entering the ISP market. Apart from that, it is described the Internet/ISP scene within India and discusses the configuration of local, regional and national level ISPs, and the supporting infrastructure. The aim of this article is to explain about ISP services and it highlights some of the areas of ICT and also it helps to identify the various success factors of ISP and ICT.

**Dey (2004)** this study discussed about the Federal Communications Commission (FCC), communications policy makers and regulators in other countries towards several clusters of issues where further research would directly benefit them. This article explored about decision making, enforcement, and understanding consumer issues that arise often in the FCC’s discussions with other regulators. And also technological change is potentially shifting market definitions. In the FCC’s discussion with other regulators over the last two years, the overlap of wire line telecom, wireless telecom and cable television has become more pronounced.

**Singh (2005)** in this study discussed about the “the role of technology in the emergence of the information society in India” and the information and communication technologies were played for Indian society to educate them formally or informally which is ultimately helping India to emerge as an information society. Though India has a huge population, the illiteracy rate is also huge in this country. India is taking for application of technology, development of infrastructure and human resource for

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108 Rao ,“Internet service providers in India”. Indian Journal of Marketing(2000) .


110 Singh,”The role of technology in the emergence of the information society in India” Technology Insights (2005).
meeting national needs. The study concludes that The Indian software and service industry has significantly helped to boost the Indian economy.

Banka (2006) explained about the mergers and acquisitions in the telecommunication industry. According to that Government's decision to raise the foreign investment limit to 74% is expected to spur fresh rounds of mergers and takeovers in India. The study foresees a sector that represents humongous opportunity waiting to be tapped by Indian and foreign conglomerates.

Thomas (2007) this study explained that the contribution of telecommunications in India by the state and civil society to public service, this article aims to identify the state’s initial reluctance to recognize telecommunications provision as a basic need as against the robust tradition of public service aligned to the postal services and finds hope in the renewal of public service telecommunications via the Right to Information movement. This study suggested that telecommunication of India can be strengthened by learning gained from the continual renewal of public service ideals and action by the postal services and a people-based demand model linked to the Right to Information Movement.

Maheshwari (2008) this study analyzed the Indian telecom industry and ascertains that Indian telecommunications has been zooming up the growth curve at a mounting pace, and India is has surpassed US to become the second largest wireless network in the world. This growing subscriber base is basically created by tapping into rural India, which is an emerging market for the industry. The estimate for the next five to ten years is that the rural market will form 40% of the subscriber base. The study has analyzed the human resource management process of the industry, and specially the latest trends of recruitment of this massively growing industry.


Anderson (2008)\textsuperscript{114} this study discussed about “Developing a route to market strategy for mobile communications in rural India” through an interview with Gurdeep Singh, Operations Director, Uttar Pradesh, Hutch India” expressed that managers need to go beyond traditional approaches to serving the poor, and innovate by taking into account the unique institutional context of developing markets. And also managers should have practical implication for mobile network operators (MNOs) and other firms in other developing markets who are hoping to serve the rural poor. The company has recognized the value of leveraging existing local institutions, and has seen gaps in local infrastructure or missing services as potential opportunities rather than barriers to growth. Also this article demonstrates that MNOs can deliver availability and affordability to achieve increased individual or household penetration through business model innovation.

Mani (2008)\textsuperscript{115} addresses a number of issues arising from the growth of telecom services in India since the mid-1990s. The telecom industry in India could slowly become an example of the service sector acting as a flip to the growth of the manufacturing sector. A beginning towards this has been made. The formation of a Telecom Equipment Export Forum and the announcement of the Indian Semiconductor Policy 2007 are steps in this direction. Success crucially depends on the response of the private sector to these incentives. Given the importance that a regulatory agency can play in this crafting, no effort should be lost in strengthening the powers of the TRAI. The benefits to the Indian economy from having both a strong services and manufacturing segments in the telecom sector cannot undermined.

Narayana (2008)\textsuperscript{116} expressed that the contribution of telecommunication (or telecom) services to aggregate economic growth in India. Estimated contribution is distinguished between public and private sectors to highlight the impact of telecom privatization on economic growth. Knowledge of policy determinants of demand of telecom services is shown to be essential to enhance growth contribution of telecom services. Using a recent sample survey data from Karnataka State in South India, price

\textsuperscript{114}Anderson , “Developing a route to market strategy for mobile communications in rural India” A marketers Review,(2008).

\textsuperscript{115}Mani, “Growth of telecom services in India” International Journal of Communications, (2008)

\textsuperscript{116}Narayana, “Contribution of telecommunication (or telecom) services to aggregate economic growth in India”. Marketers Guide(2008).
and income determinants of demand for telecom services are estimated by capacity of telephone exchanges. Estimation results offer evidence for significant negative own price elasticity and positive income elasticity of demand for telecom services.

**Sharma (2009)**\(^{117}\) dealt with the major challenges faced by India’s telecom equipment manufacturing sector, which lags behind telecom services. Only 35% of the total demand for telecom equipment in the country is met by domestic production. This is not favorable to long-term sustained growth of the telecom sector. The country is also far behind in R&D spending when compared to other leading countries. India needs to see an increase in R&D investment, industry-academia-government partnership, better quality doctoral education and incentives to entrepreneurs for start-ups in telecom equipment manufacturing. In 2006-07, 65% of the total consumption of equipment was met through imports. This trend has far-reaching implications for the economy and should not be allowed to continue for long. In a country like India which has a problem of massive unemployment, the manufacturing sector should be promoted to create more employment.

**Shah (February, 2009)**\(^{118}\) analyzed about the Indian telecom industry and studied the sector keeping in mind three companies; namely Bharti, R. Com and idea in the background of recent global meltdown. The study suggests that though there is no sign of slowdown in this sector, but surely a strong turmoil is going on in the industry. With the help of newer technologies, wireless penetration is expected to increase in the near future, which is basically fuelling the growth of the sector. The article has thoroughly investigated about the intense competitive scenario, pricing pressure, high capital intensity & substantial regulatory uncertainties currently faced by the industry. The article has also described the causes are increasing rural coverage, rising affordability, declining handset/subscription costs, substantially low tariffs & established brand/distribution. However, the study also suggested the telecom industry that a steeper economic slowdown could start impacting the subscriber usage patterns as well as operator capital investments & thereby could substantially restrict high revenue growth rates forward.

\(^{117}\)Sharma ,“Challenges faced by India’s telecom equipment manufacturing sector” Indian Telecom Magazine(2009).

\(^{118}\)Shah ,“Indian telecom industry” Technology Insights, (February, 2009),
Debnath et al. (2008)\textsuperscript{119} stated that Technological modernization is increasingly viewed as a premeditated necessity in today's era of growth and prosperity for any country. Telecommunications has entered a new age of development with advanced technology and increased competition with established players. The technological advances in the telecommunication sector are associated with an uninterrupted growth of the mobile sector. The prime focus of the service providers is to create a loyal customer base by benchmarking their performances and retaining existing customers in order to benefit from their loyalty. The paper aims to address these issues. This paper employs the method of data envelopment analysis (DEA) to compare the relative efficiency of mobile service providers in India. The identification of the strongest and the weakest service providers could be very useful in improving their efficiency and performance. Mathematically, DEA determines the best weights for each input and output for a particular unit under study so as to maximize its relative efficiency. The results are insightful to the telecom policy planner as benchmark them in terms of their efficiency. It also identified the inefficient service providers who can improve their efficiency by making the efficient providers as their role model. This research paper contributes to the literature in two ways: firstly, this research identifies the different parameters for the mobile service providers in India for the benchmarking of the service providers. It also categorized them into various input and output parameters contributing towards the number of subscribers for different service providers. In the next stage, this research takes a further step and examines whether there are differences between the number of subscribers and the performance of the service providers. Benchmarking of the service providers would depend on the efficiency and quality of service. There is still great diversity in the relative performance of various service providers, which is a matter of concern to the telecom planner in this country.

Srinivasan (2009) stated that India is the fastest growing economy post its liberalization and globalization activism and Asia's third largest economy behind Japan and China. India's telecom density is not so high as compared to the western market. Many companies are easily attracted to the telecom sector and are interested in investing large amount which is good for both the telecom sector as well as the economy of the country. India's telecom market is the fastest growing investment pocket in the world. By 2010, it is expected that the investment will be around $24 billion and that the total number of subscribers to be around 500 to 600 million. Bharat Sanchar Nigam Ltd, Reliance Communication, Tata Teleservices, IDEA Cellular, Vodafone Essar and Bharti-Airtel are interested in investing further in the sector between $12 million to $15 million in 2009-10.

CONCLUSION

This chapter discussed about three aspects such as sensory marketing, Brand recall, recognition and VAK (visual, auditory and kinesthetic) towards consumers brand identity and purchase intention. Apart from that the study reviewed the telecommunication and information technology services.
RESEARCH DESIGN

2.9. STATEMENT OF THE PROBLEM

Customers are exposed to several kinds of advertisements. Everyday these advertisements will make a conscious and sub-conscious impact. Human senses have long been ignored in marketing despite its awareness having greater significance in this field. The five human senses are of crucial importance for an individual’s experiences in different purchases and consumption processes. It is through these senses that, every individual becomes conscious of those firms and their products and brands. If utilized in the right way, the knowledge gained might make a firm’s marketing efforts more successful. Thus, paving way for the personalized experience for the individuals across those domains is significant.

Of the five senses, the sight sense has so far dominated marketing practice. But, the other human senses smell, sound, taste, and touch have been neglected for a long time, which is evident from literature. Despite their importance in individual’s conscious and subconscious decisions, these senses have remained dormant till today.

Literature reviews, mainly in case of developed countries show evidence of the study of the individual senses (visual, auditory, kinesthetic, olfactory, and gustative) individually, but no effort has been done to understand the holistic nature of these senses. Thus, there is a need to study the combined effect of the VAK on the buying behavior of the customers. This would find more relevance in the service sector which has been a life line of our country.

Thus, there is a need to understand the influence of sensory cues on purchase intentions of the cellular service providers through advertisement. The research question emerging from this is “How do VAK advertisement appeals impact the spectrum of purchase intentions and buying behavior in respect of the mobile network service providers?”

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2.10 OBJECTIVES OF THE STUDY

1. To analyze the sensory cues influences on demographics (gender, age, income, education) variables.
2. To explore the sensory cues impact on the cellular service providers selection.
3. To study the impact and relationship of sensory (Visual, Auditory, and Kinesthetic) variables on brand identity, recall, recognition and purchase intentions of mobile service providers.
4. To analyze the significant differences among various service providers and demographic variables on their experience with various service providers parameters (connectivity, value for money, customer services, value added services and internet download).

2.11 SIGNIFICANCE OF THE STUDY

Human brains can receive the information majorly through five senses (sight, smell, sound, taste, and touch) among these senses one or two senses are predominate in every individual data storing process. Brains use the data to create an analogy, and it helps in reasoning, thinking, and discussion making process. There is evidence from many researches undertaken on children learning behavior through visual and auditory, that there is less evidence of senses influence on service industry.

The studies have already shown how VAK influences the advertisement viewing and buying behavior of the customers. But they do not examine the relationship of VAK on brand identity, brand recall, brand recognition and its combined effects on purchase intentions.

The significance of this work lies in attempting to understand the influence of sensory cues on purchase intentions of the cellular service providers through advertisement campaigns.
2.12 SCOPE OF THE STUDY

The scope of the study is limited to cellular service providers within Bangalore city, the capital of Karnataka State. The city being considered as one among the largest consumers of cellular services and also city being metropolitan and a hub for multi-cultural and linguistic population, it represents wide diversity of the samples. The study limits to seven dimensions, of which three dimensions are of sensory cues (Visual, Auditory, and Kinesthetic) four dimensions are brand identity, brand recall, recognition and purchase intention.

2.13 HYPOTHESES

The following major hypotheses have been drawn in sync with the research objective:
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<tr>
<th>Sl. No.</th>
<th>Hypothesis</th>
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<td>1.</td>
<td>To analyses the sensory cues influences on demographics (gender, age, income, education) variables.</td>
</tr>
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</table>
|        | 1. **H₀**: There is no significant differences in mean scores of various dimensions such as visual, auditory, kinesthetic, brand identity, brand recall, brand recognition and purchase intention of sensory cues across gender.  
|        | **H₁**: There is a significant differences in mean scores of various dimensions such as visual, auditory, kinesthetic, brand identity, brand recall, brand recognition and purchase intention of sensory cues across gender. |
| 2.     | **H₀**: There is no significant differences in mean scores of various dimensions such as visual, auditory, kinesthetic, brand identity, brand recall, brand recognition and purchase intention of sensory cues across gender.  
|        | **H₁**: There is a significant differences in mean scores of various dimensions such as visual, auditory, kinesthetic, brand identity, brand recall, brand recognition and purchase intention of sensory cues across gender. |
| 3.     | **H₀**: There is no significant differences in mean scores of various dimensions such as visual, auditory, kinesthetic, brand identity, brand recall, brand recognition and purchase intention of sensory cues across income.  
|        | **H₁**: There is a significant differences in mean scores of various dimensions such as visual, auditory, kinesthetic, brand identity, brand recall, brand recognition and purchase intention of sensory cues across income. |
| 4.     | **H₀**: There is no significant differences in mean scores of various dimensions such as visual, auditory, kinesthetic, brand identity, brand recall, brand recognition and purchase intention of sensory cues across educational qualification.  
|        | **H₁**: There is a significant differences in mean scores of various dimensions such as visual, auditory, kinesthetic, brand identity, brand recall, brand recognition and purchase intention of sensory cues across educational qualification. |
2. To explore the sensory cues impact on the cellular service providers selection.
5. $H_0$: Visual cues are independent of service providers selection (Airtel, Vodafone, etc.,)
   $H_1$: Visual cues are dependent of service providers selection (Airtel, Vodafone, etc.,)
6. $H_0$: Auditory cues are independent of service providers selection (Airtel, Vodafone, etc.,)
   $H_1$: Auditory cues are dependent of service providers selection (Airtel, Vodafone, etc.,)
7. $H_0$: Kinesthetic are independent of service providers selection (Airtel, Vodafone, etc.,)
   $H_1$: Kinesthetic are dependent of service providers selection (Airtel, Vodafone, etc.,)

3. To study the impact and relationship of sensory (Visual, Auditory, and Kinesthetic) variables on Brand Identity, Recall, Recognition and Purchase Intentions of mobile service providers.
8. $H_0$: The sensory (Visual, Auditory, and Kinesthetic) variables and Brand Identity of cellular service provider’s ads are independent of each other.
   $H_1$: The sensory (Visual, Auditory, and Kinesthetic) variables and Brand Identity of cellular service provider’s ads are dependent of each other.
9. $H_0$: The sensory (Visual, Auditory, and Kinesthetic) variables have no significant impact on Brand recall of cellular service provider’s ads.
   $H_1$: The sensory (Visual, Auditory, and Kinesthetic) variables have significant impact on Brand recall of cellular service provider’s ads.
10. $H_0$: The sensory (Visual, Auditory, and Kinesthetic) variables have no significant impact on Brand recognition of cellular service provider’s ads.
   $H_1$: The sensory (Visual, Auditory, and Kinesthetic) variables have significant impact on Brand recognition of cellular service provider’s ads.
11. $H_0$: The sensory (Visual, Auditory, and Kinesthetic) variables have no significant impact on purchase intention of cellular service provider’s ads.
   $H_1$: The sensory (Visual, Auditory, and Kinesthetic) variables have significant impact on purchase intention of cellular service provider’s ads.
4. To know the significant differences among various service providers and demographic variables on their experience with various service providers parameters (connectivity, value for money, customer services, value added services and internet download).

12. \( H_0 \): There are no significant differences among various service providers and demographic variables on their experience with various service providers’ parameters.

\( H_1 \): There are significant differences among various service providers and demographic variables on their experience with various service providers’ parameters.

13. \( H_0 \): There are no significant differences in mean scores of various dimensions services such as connectivity, value for money, customer service, value added service and internet downloads across age groups of respondents.

\( H_1 \): There are significant differences in mean scores of various dimensions services such as connectivity, value for money, customer service, value added service and internet downloads across age groups of respondents.

14. \( H_0 \): There are no significant differences in mean scores of various dimensions services such as connectivity, value for money, customer service, value added service and internet downloads across levels of education of respondents.

\( H_1 \): There are significant differences in mean scores of various dimensions services such as connectivity, value for money, customer service, value added service and internet downloads across levels of education of respondents.

15. \( H_0 \): There are no significant differences in mean scores of various dimensions services such as connectivity, value for money, customer service, value added service and internet downloads across levels of income groups of respondents.

\( H_1 \): There are significant differences in mean scores of various dimensions services such as connectivity, value for money, customer service, value added service and internet downloads across levels of income groups of respondents.
2.14 FORMULATION OF RESEARCH DESIGN

This research design is a blend of descriptive and explanatory nature, through measures it describes various constructs like VAK, branding, and purchase intention, and simultaneously it attempted to explain the relationship between VAK and branding and purchase intention.

2.15 QUESTIONNAIRE DESIGN

In the process of designing a fully structured questionnaire, utmost care has been taken in order to further relevant and accurate information from the respondents. Also respondent’s time and willingness to take up survey was considered while designing the questionnaire so that respondents show interest to complete the same. The pilot survey questionnaire developed helped the researcher to develop and refine the final questionnaire to make it more focused, crisp, and unambiguous to the respondents.

Numerous literatures from both marketing and social science reviewed gave lot of input while developing the questionnaire. Also established (tested and verified for reliability and validity) scales from marketing scales handbook are used to develop the items to measure the constructs. The scales used in the first part of the questionnaire are Visual cues, Auditory cues, and Kinesthetic cues. When the scale was tested for reliability the Chronbach’s alpha was found as Visual (0.743), Auditory (0.747) and kinesthetic (0.735).

The second part of the questionnaire contains questions related to brand identity, brand recall, brand recognition, and purchase intentions. When the scale was tested with Chronbach’s Alpha was found to be respectively as Brand Identity (0.714) Brand Recall (0.692) Brand Recognition (0.605) and Purchase Intention (0.705).

Most of the construct are more than 0.6 and some are more than 0.7 which shows the instrument is very much consistent. The measurement error is curtailed; the respondents have provided consistent response to the items of the concerned constructs.
The third part of construct questionnaire relates to the nature of the cellular phone, internet facility, and number of phones and their experience of various value added services provided by the network providers.

The last part of the questionnaire deals with demographic details (age, marital status, family size, education qualification, working status, monthly household income, etc.,) of the respondents. In order to understand the profiles of the respondents that impact their selection of the cellular service providers and that which helps in building the relationship between VAK and its impacts on their purchase intentions this construct has been developed.

2.16 MEASUREMENT AND SCALING PROCEDURES

Established marketing scaling such as *Five Point Likert Scale* is used. Some of the scales are used with a slight modification on the size of the scale and the reliability test was conducted and found reliable to suite the Indian cellular phone service providers.

In order to ease the respondent scale size is uniformly maintained between 1-5 where 1 indicate strongly disagree and 5 denote strongly agree.

The following table gives the list of all the scales used in the development of the scheduled questionnaire.

**MARKETING SCALES USED FOR THE STUDY**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Scale Name</th>
<th>Explanation of the scale</th>
<th>Modification</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Visual Cues</td>
<td>The scale measures the degree of visual cues that best describes you</td>
<td>Items are not modified but the size of Likert scale is taken from 1-5</td>
<td>Neo way NLP practitioner program NFNLP,USA Pg. no. 23</td>
</tr>
<tr>
<td>2</td>
<td>Auditory cues</td>
<td>The scale measure the degree of auditory cues that best describe you</td>
<td>Items are not modified but the size of Likert scale is taken from 1-5</td>
<td>Neo way NLP practitioner program NFNLP,USA Pg. no. 24</td>
</tr>
<tr>
<td>3</td>
<td>Kinesthetic Cues</td>
<td>The scale measure the degree of kinesthetic cues that best describe you</td>
<td>Items are not modified but the size of Likert scale is taken from 1-5</td>
<td>Neo way NLP practitioner program NFNLP,USA Pg. no. 25</td>
</tr>
</tbody>
</table>
### Part II: Brand Constructs Items

<table>
<thead>
<tr>
<th></th>
<th>Brand identity</th>
<th>The scale measure the degree of acceptance of brand popularity</th>
<th>Items are not modified but the size of Likert scale is reduced to 1-5 scale. Some scales developed and tested for reliability and found significant</th>
<th>Marketing Scale handbook Vol:2, by Gordon C Bruner and Paul Hensel. Pg. 134</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Brand identity</td>
<td>This scale measure the respondents brand recalling ability and brand promotions of service providers</td>
<td>Developed scale and tested for reliability and found significant</td>
<td>Self</td>
</tr>
<tr>
<td>5</td>
<td>Brand recall</td>
<td>This scale measure the respondents brand recall ability and brand promotions of service providers</td>
<td>Developed scale and tested for reliability and found significant</td>
<td>Self</td>
</tr>
<tr>
<td>6</td>
<td>Brand recognition</td>
<td>This scale measure the respondents recognitions of the promotions of service providers</td>
<td>Developed scale and tested for reliability and found significant</td>
<td>Self</td>
</tr>
<tr>
<td></td>
<td>Purchase intention</td>
<td>This scale measure the respondents purchase intention of the cellular of service providers</td>
<td>Items are not modified but the size of Likert scale is reduced to 1-5 scale. Some scales developed and tested for reliability and found significant</td>
<td>Marketing Scale handbook Vol:2, by Gordon C Bruner and Paul Hensel. Pg. 103</td>
</tr>
</tbody>
</table>

#### 2.17 CONTENT VALIDITY

The validity of the content of the questionnaire was established by obtaining suggestions from experts from the fields. They included academicians and industry people along with criteria check list for relevancy of the tool to the objectives of the study. The questionnaire was edited based on the results of the reviews, and the suggestions have been aptly incorporated.

#### 2.18 PILOT SURVEY

A pilot study of 100 respondents was conducted before the main survey in the sample city to detect weakness in design and instrumentation. It also helped to determine the duration for the interview, evaluate the effectiveness of the structured questionnaire and to determine the method of statistical analysis. The questionnaire length, instruction to respondents, and anonymity were all considered in the final questionnaire design in order to generate a high response rate.
SAMPLING AND SAMPLING PROCESS

2.19 TARGET POPULATION

The target population comprised of users of cellular services from telecommunication service providers across the age group of 18 to 60 and above and the respondents should have used the cellular services of a company for a minimum of 6 months.

2.20 SAMPLING FRAME

Censes in India is conducted once in ten years. The latest census report available is 2011 report. According to that the population of Bangalore City is around 8.5 million. (Census 2011 Bangalore statics) As a result the vast changes that has taken place both in case of demographic and economic front in the past four years, is challenging the researcher in getting accurate and reliable data. As a result convenience sampling procedure (with sample size of 660 respondents) has been used

2.21 SAMPLE SIZE

The issue of sample size is the number of elements to be included in the study. A detailed review of literature revealed different perspectives on the appropriate sample size. However, experts are unanimous in their view that SEM like any multivariate technique is sensitive to sample size.

Hinkin (1995) has recommended an item-respondents ratio of 1:6, Hair et al (2007) argue that Maximum Likelihood Estimation (MLE) is the most common estimation procedure is ‘too sensitive’ thus making goodness-of-fit measure indicate poor fit as the sample size becomes large (exceeding 1000) they recommend a critical sample size of 200. However, Hair et al (2006) argue for a much higher item-respondent ratio for performing Confirmatory Factor Analysis (CFA). While 1:5 is considered ‘adequate’, a more stringent view is that the ration should be 1:10. So we have chosen a stringent sample of 1:10 ratio in our research study. Hence, in all 660 customers are selected for the study.
The number of mobile phone service providers is limited to seven: (a) Airtel; (b) Vodafone; (c) Idea; (d) BSNL; (e) Tata Teleservices and Tata Docomo; (f) Reliance Communications; and (g) Aircel.

2.22 SAMPLING PROCEDURE

A multistage sampling in which, area sampling and stratified random sampling techniques are used to collect the data. In case of area sampling entire sample city Bangalore is divided into five zones North, East, West, South and Central (Census 2011). The cellular service subscribers using more than 6 months were selected and interviews were personally conducted around 15 to 20 minutes duration of the interview.

2.23 DATA COLLECTION TECHNIQUES

- Primary data has been collected using a structured and focused questionnaire; which covered various dimensions of the research questions. The questionnaire has been administered through personal interviews of the respondents.

- Secondary data has been collected from books, internet, literature and other relevant documents. Magazines, Journals, Fact sheets and Web resources, online libraries and websites are other sources.

2.24 DATA SCREENING

Data Screening is done prior to analysis in terms of variables and cases, to substantiate the cleaned data. Data quality is ensured through check on missing data and extreme values after reviewing univariate statistics for normality. All the variables which include the constructs such as Visual, Auditory and Kinesthetic (VAK), Brand related constructs such as Brand Identity, Recall and Recognition and Purchase Intention (PI). The dimensions of all constructs are within normality limit there is no large values of standard deviation. Out of these constructs, Purchase Intention considered as dependent variable and the rest independent variables.
2.25 SENSORY DATA ANALYSIS AND INFERENCES

Data are analyzed using statistical software package such as SPSS v18, AMOS v18 and also MS Excel 2007. In addition, along with the descriptive statistics and frequency distribution, to test the research hypothesis, various statistical tests are applied such as Chi-square, ANOVA, Games Havel, T test, Correlation, Exploratory Factor Analysis, Confirmatory Factor Analysis and Structural Equation Model, Abreast these, to check the measurement error, researcher employed various types of reliability and validity techniques.

2.26 PLAN OF DATA ANALYSIS & STATISTICAL TECHNIQUES USED

**Frequency Distribution** to understand the demographic profile of the respondents in meaningful way, frequency distribution is used especially variables like region, age, designation etc.,

**Descriptive statistics** is applied for all the variables for the given constructs, which populated the minimum, maximum, mean and standard deviation. Minimum and maximum values are ensured for all the variables data points are properly entered, standard deviation for all the variables is one-third below the mean, which ensured there is no outlier in the data set.

**Item Parceling** is done to getting the single score for dimension wise for all the constructs for instance: VAK as a construct contains 3 sub constructs or dimensions, such as Visual, Auditory and Kinesthetic each dimension has 10 items, in order to arrive score for dimension item parceling is done.

**Correlation** is employed to explore the relations among the constructs. Correlation is ranged between -1 to +1, correlation score more than .5 is normally considered high correlation. In this study, constructs like VAK, Branding and Purchase intention relations are explored through correlation analysis.
One Way Analysis of Variance (ANOVA)\(^{121}\)

The ANOVA tests are used to test the significant difference on dependent variable based on Factors, i.e. independent variable in the form of categorical variables. Before doing anova, estimates rely on the following assumptions.

- Response variable residuals are normally distributed (or approximately normally distributed).
- Samples are independent.
- Variances of populations are equal.
- Responses for a given group are independent and identically distributed normal random variables (not a simple random sample (SRS)).

The ANOVA produces an F-statistic; it is the ratio find the significant difference between explained variance and unexplained variance.

**F test statistic**

The F test statistic is found by dividing the between group variance by the within group variance. The degrees of freedom for the numerator are the degrees of freedom for the between group (k-1) and the degrees of freedom for the denominator are the degrees of freedom for the within group (N-k).

\[
F = \frac{\hat{\sigma}_b^2}{\hat{\sigma}_w^2}
\]

**Summary Table**

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Between</strong></td>
<td>SS(B)</td>
<td>k-1</td>
<td>SS(B) [\frac{\hat{\sigma}_b^2}{\hat{\sigma}_w^2}]</td>
<td>MS(B) [\frac{\hat{\sigma}_w^2}{\hat{\sigma}_w^2}]</td>
</tr>
<tr>
<td><strong>Within</strong></td>
<td>SS(W)</td>
<td>N-k</td>
<td>SS(W) [\frac{\hat{\sigma}_w^2}{\hat{\sigma}_w^2}]</td>
<td>.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>SS(W) + SS(B)</td>
<td>N-1</td>
<td>.</td>
<td>.</td>
</tr>
</tbody>
</table>

N is sample of the study, K is number of groups in factor B is between groups or explained variance, W is within group or unexplained variance, MS is Mean square of between and within variance.

**Decision Rules**

The decision will be to reject the null hypothesis if the test statistic from the table is greater than the F critical value with k-1 numerator and N-k denominator degrees of freedom. If the decision is to reject the null, then at least one of the means is different. However, the ANOVA does not tell you where the difference lies. For this, you need another test, either the Scheffe’ or Tukey test.

**Games -Howell Test**

Games-Howell test procedure is perhaps the most popular of the post hoc procedures this test is used when variances are unequal and also takes into account unequal group sizes. Severely unequal variances can lead to increased Type I error, and with smaller sample sizes, more moderate differences in group variance can lead to increases in Type I error. The Games-Howell test, is designed for unequal variances based on Welch’s correction to df with the t-test and uses the studentized range statistic. This test appears to do better than the Tukey HSD if variances are very unequal (or moderately so in combination with small sample size).

For each pair of groups:

\[
df' = \frac{\left(\frac{s_{i}^{2}}{n_{i}} + \frac{s_{j}^{2}}{n_{j}}\right)^{2}}{\left(\frac{s_{i}^{2}}{n_{i}}\right)^{2} + \left(\frac{s_{j}^{2}}{n_{j}}\right)^{2}} \frac{n_{i}-1}{n_{i}-1} + \frac{n_{j}-1}{n_{j}-1}
\]

**Application of ANOVA in the study**

ANOVA is applied in three cases namely age group, educational level and income group. Firstly, we intend to see whether there is a difference in mean score of visual cue (under sensory cues) across different age groups. As the age is classified into more than two groups, ANOVA would be applied. Similarly, we intend to find
the existence any difference in mean score of Auditory and Kinesthetic cue (under sensory cues) across different age groups. Furthermore, the perception of respondents across age group in terms of levels of acceptance on the influence of Brand identity, brand recall, and Brand recognition and purchase intention of buying their products is captured.

As like the age group, one of the socio-demographic variable namely education profile of respondents would also have more than two levels of classification. Here also we intend analyze on whether there is any significant difference in perception through mean scores ranked by the respondents among any pair of educational status (i.e., any difference in rating between the under graduate and graduate respondents, and between graduates and post graduates and so on). The appropriate statistical tool is ANOVA. Thus, intend to see whether there is a difference in mean score of visual cue, Auditory and Kinesthetic cue (under sensory cues) across different levels of educational status of respondents. Furthermore, the perception of respondents across educational status in terms of levels of acceptance on the influence of brand identity, brand recall; brand recognition and purchase intention of buying their products is captured. The same procedure is followed with income group and also across different service providers.

**Chi-Square test of independence**

A chi square ($X^2$) statistic is used to investigate whether distributions of categorical variables differ from one another. A chi-square test is a statistical test commonly used for testing independence and goodness of fit. Testing independence determines whether two or more observations across two populations are dependent on each other (that is, whether one variable helps to estimate the other). Testing for goodness of fit determines if an observed frequency distribution matches a theoretical frequency distribution. In both cases the equation to calculate

$$X^2 = \frac{\sum (O - E)^2}{E}$$
The chi-square statistic is where \( O \) equals the observed frequency and \( E \) the expected frequency. The results of a chi-square test, along with the degrees of freedom, are used with a previously calculated table of chi-square distributions to find a \( p \)-value. The \( p \)-value can then be used to determine the significance of the test.\(^{122}\)

**2 x 2 Contingency Table**

There are several types of chi square tests depending on the way the data was collected and the hypothesis being tested. We'll begin with the simplest case: a 2 x 2 contingency table.\(^{123}\) If we set the 2 x 2 table to the general notation shown below in Table 1, using the letters \( a \), \( b \), \( c \), and \( d \) to denote the contents of the cells, then we would have the following table:

<table>
<thead>
<tr>
<th>Variable 1</th>
<th>Variable 2</th>
<th>Data type 1</th>
<th>Data type 2</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>A</td>
<td>b</td>
<td>a + b</td>
<td></td>
</tr>
<tr>
<td>Category 2</td>
<td>C</td>
<td>d</td>
<td>c + d</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>a + c</td>
<td>b + d</td>
<td>a + b + c + d = N</td>
<td></td>
</tr>
</tbody>
</table>

For a 2 x 2 contingency table the Chi Square statistic is calculated by the formula:

\[
\chi^2 = \frac{(ad - bc)^2(a + b + c + d)}{(a + c)(b + d)(c + d)(a + b)}
\]

Where Degrees of freedom (df) can be calculated as the number of categories in the problem minus 1.

**Application of Chi Square test of dependency in the study**

We intend to test the following hypotheses for which follows the assumption and principles of chi square test. The null hypotheses are:

\(^{122}\)Source: [http://www.chegg.com/homework-help/definitions/chi-square-test-31](http://www.chegg.com/homework-help/definitions/chi-square-test-31)

\(^{123}\)http://math.hws.edu/javamath/ryan/ChiSquare.html
H₀: Impact of Visual cues is independent of service provider’s selection (Airtel, Vodafone etc.)

H₀: Impact of Auditory cues is independent of service provider’s selection (Airtel, Vodafone etc.)

H₀: Impact of Kinesthetic is independent of service provider’s selection (Airtel, Vodafone etc.)

H₀: To study the impact of sensory (visual, auditory and kinesthetic) variables on Brand identity, recognition, recall and purchase intentions of mobile service providers.

The rejection or acceptance of the null hypothesis would be based on the Pearson Chi-Square calculated value and comparing it with the significance level of alpha. The Phi and Crame’s values also indicate a moderate association between the variables discussed above.

**Independent t-test**

A *t-test* is a statistical hypothesis test in which the test statistic follows a student distribution if the null hypothesis is supported. It can be used to determine if two sets of data are significantly different from each other, and is most commonly applied when the test statistic would follow a normal distribution if the value of a scaling term in the test statistic were known.

The *t* statistic to test whether the means are different can be calculated as follows:

\[
t = \frac{\bar{X}_1 - \bar{X}_2}{s_{X_1X_2} \cdot \sqrt{\frac{1}{n}}}
\]

Where,

\[
s_{X_1X_2} = \sqrt{\frac{1}{2} \left( \frac{s_{X_1}^2 + s_{X_2}^2}{2} \right)}
\]

Here \(s_{X_1X_2}\) is the grand standard deviation (or pooled standard deviation), \(s_{X_1}^2\) and \(s_{X_2}^2\) are the unbiased estimators of the variances of the two samples. The denominator of *t* is the standard error of the difference between two means.
For significance testing, the degree of freedom for this test is $2n - 2$ where $n$ is the number of participants in each group.

**Application of independent t-test in the study**

Independent t-test is applied in the following case. Firstly, we intend to see whether there is a difference in mean score of visual cue (under sensory cues) across gender. As the gender is classified into two groups, independent t-test would be applied. Similarly, we intend to find the existence any difference in mean score of Auditory and Kinesthetic cue (under sensory cues) across male and female respondents. Furthermore, the perception of respondents across gender in terms of degree of acceptance on the influence of Brand Identity, Brand Recall, Brand recognition, and purchase intention of buying their products is captured.

**Structural Equation Modeling (SEM)**

One of the primary objectives of multivariate techniques is to expand the researcher’s explanatory ability and statistical efficiency. Multiple regressions, factor analysis, multivariate analysis of variance, discriminate analysis and the other techniques discussed in previous chapters all provide the researcher with powerful tools for addressing a wide range of managerial and theoretical questions. But they all share one common limitation: each technique can examine only a single relationship at a time. Even the techniques allowing for multiple dependent variables, such as multivariate analysis of variance and canonical analysis, still represent only a single relationship between the dependent and independent variables.

SEM is an extension of several multivariate techniques, most notably multiple regression and factor analysis. SEM modeling examines a series of dependence relationships simultaneously. It is particularly useful when one dependent variable becomes an independent variable in subsequent dependence relationships. This set of relationships, each with dependent and independent variables, is the basis of SEM. The basic formulation of SEM in equation form is:

\[ Y_1 = X_{11} + X_{12} + X_{13} + \ldots + X_{1n} \]
\[ Y_2 = X_{21} + X_{22} + X_{23} + \ldots + X_{2n} \]
\[ Y_m = X_{m1} + X_{m2} + X_{m3} + \ldots + X_{mn} \]

(metric)  \hspace{1cm} (metric, non-metric)
SEM modeling has been used in almost every conceivable field of study, including education, marketing, psychology, sociology, management, testing and measurement, health, demography, organizational behavior, biology, and even genetics. The reasons for its attractiveness to such diverse areas is twofold (1) It provides a straightforward method of dealing with multiple relationships simultaneously while providing statistical efficiency, and (2) Its ability to assess the relationships comprehensively and provide a transition from exploratory to confirmatory analysis. This transition corresponds to greater efforts in all fields of study toward developing a more systematic and holistic view of problems. Such efforts require the ability to test a series of relationships constituting a large-scale model, a set of fundamental principles, or an entire theory. These are tasks for which structural equation modeling is well suited. SEM techniques are distinguished by two characteristics: (1) Estimation of multiple and interrelated dependence relationships, and (2) The ability to represent unobserved concepts in these relationships and account for measurement error in the estimation process.

2.27 STEPS IN STRUCTURAL EQUATION MODEL

To test the theoretical models, structural equation modeling (SEM) is used as per the guidelines of (Brown and Kline, 2005) SEM literature. SEM tests theoretical models using the scientific method of hypothesis testing to advance researcher understanding of the complex relationship amongst constructs. The goal of using the SEM analysis is to determine the extent to which the theoretical model is supported by sample data. It followed 5 building blocks they are:

1. Model Specification
2. Model Identification
3. Model Estimation
4. Model Testing
5. Model Modification
Model specified and variables used in the model

Model that is proposed for the study is shown below in the diagram 1, model specification which indicates relations among or between the variables, the given model is attempted to test the, VAK impact on Branding, in turn, how Branding can influence on Purchase Intention.

Key constructs are VAK, Branding and Purchase Intention, each constructs are represented by manifested variables (mean score by using item parceling) and each path is tested, the hypothesis are given below.

![Figure 2.2
NOTATION OF THE SEM](image)

Model Identified

In model identification, Assessing the *Order Condition* is the first step to determine identification, the formula to calculate Order condition is equal to \( P(P+1)/2 \), \( P \) is the number of observed variables in the sample variance-covariance matrix. To proceed to the next step of model estimation, the model should be Just or over identified.
**Model Estimation and Testing**

To estimate the model, in SEM, Maximum Likelihood method (ML) is used, the hypothesis is already mentioned above. The outcome of the testing is assessed based on four criteria:

1. **General Goodness of Fit**
2. **Absolute fit measures**
3. **Incremental fit indices**

In normal SEM application the proposed base model need some level of re-specification based on *modification index in* AMOS.

**Chi square** is close to close zero is perfect model; the chi square value is 168.62 which is quiet low.

P value is <.05, hence reject null hypothesis, however the SEM known for sample sensitive, this measure may not reflect the perfect fit, however, CMIN is 2.19 which is less than 5, model indicates goodness of fit. The alternative statistics should be considered, the other fit indices such as GFI, CFI, TLI, and RMSEA etc. to ensure the fit of the model with data.

**Absolute Fit Measures:** It provided the most basic assessment of how well a researcher's theory fits the sample data. They do not explicitly compare the goodness of fit (GOF) of a specified model to any other model.

The limitation of general goodness of fit can be overcome with help of absolute fit measures which includes RMR, RMSEA and SRMR.

**RMR is Root Mean Residuals**, the average of the residuals between individual observed and estimated covariance and variance terms, if the value is <.10 the model is better. Model ‘s RMR is <.55, which shows model is better.

**RMSEA is Root Mean Square Error of Approximation**, which measures measure attempts to correct for tendency of the chi square, <.1 of RMSEA indicate the model is absolutely fit. Model secured .071, fit more close to the threshold value.
Incremental Fit Indices assess how well specified model fits relative to some alternative baseline model. The most common baseline model is referred to as a null model all observed variables are uncorrelated.

CFI is Comparative Fit Index, when CFI is better when value is, >.90, this model contained .944 which is quite good.

TLI is Tucker Lewis Index, mathematical comparison of a specified theoretical measurement model and baseline null model, when TLI exceed .9, the model is very fit. In this measure also, TLI score is .921

GFI is Goodness Fit Index, when GFI is better when value is, >.90, this model attained, this model secured .939.

Fig no. 2.3
LOGICAL FLOW OF DATA ANALYSIS PLAN
2.28 LIMITATIONS OF THE STUDY

The limitations of this research investigation are mentioned below:

- **Experiential Data:** The study has captured the perception of the usage of the respondents so the data may be biased due to the problems encountered by respondents of understanding the questions. Therefore, the respondents might have been influenced by these problems.

- **Geographical Constraints:** The present study captured majority the experiential data from sample based in Bangalore City.

- **Focus of the Study:** The present study mainly focuses on the influence of the VAK on brand identity, brand recall, recognition and purchase intentions. Other dimensions of sensory marketing of taste and smell and other aspects of branding are not considered.