Drivers of Consumers’ Emotional Engagement with Everyday Products: An Intensive Review of the Literature and an Attempt to Conceptualize the Consumer-Product Interactions Within the Emotional Design Process

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Drivers of Consumers’ Emotional Engagement with Everyday Products
An Intensive Review of the Literature and an Attempt to Conceptualize the Consumer-Product Interactions Within the Emotional Design Process

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Abstract

This research intensively reviews the literature on designing emotional-driven products and aims to identify the drivers of the consumers’ emotional engagement with everyday products. The research also aims to develop a conceptual framework based on the basic model of product emotions and the classical process control, by which the identified emotional drivers in consumer products, the basic concerns of consumers, the context of the consumer-product interactions, and the design approach(s) would be interrelated and modeled. Furthermore, this research will study the psychological and theoretical perspectives on the human phenomenon of emotion to understand what does an emotion means, and why and how a human experiences emotion when interacts with stimulus (e.g. product), and how important and rewarding to design for emotions. The research has identified four basic concerns of every consumers; personal, cultural, social, and organizational (societal), and it suggests four emotional drivers; seeing-drivers, feeling-drivers, using-drivers, and touching-drivers. Moreover, as a result of the consumer-product interactions, two more emotional drivers are developing overtime to represent conclusive factors in consumer’s decision making process; product and brand experiences. These two emotional drivers also play the role as becoming new consumer’s concerns (emotional references) each time the consumer decide to buy a product.

Keywords: Human Emotions, Human Wellbeing, Positive Emotions, Emotional Drivers, Emotional Design, Emotional-driven Products, Design for Emotions, Design Process, Design Framework, Human-Centered Design, Designer-user Corporation, Product Experience, Brand Experience,
1 Introduction

Consumers usually measure their satisfaction in products as they subtract the costs they incurred from the benefits they expect to obtain, where according to Murphy and Enis, these costs should be hypothesized in two different dimensions; efforts and risks [1]. They urge that the efforts involve the amount of money, time and energy that consumers spend or be willing to spend to select and buy a product (i.e. to obtain a given value), whereas the risk underlies the expectations that the product would not deliver the proposed value. However, the levels of efforts and risk vary according to the type of the product [2], which is basically classified into four types [1]; convenience (e.g. groceries) or preference (e.g. soft drinks), shopping (e.g. automobiles, clothing, appliances), specialty products (e.g. expensive sport car, artifacts, etc.) and unsought (e.g. home alarms). In fact, shopping and specialty products which are the focus of this research are counting for more efforts and risk [1, 2]. Furthermore, as the competition among brands increases day after day, consumers expected to make more efforts and risk in deciding which brand they should select to buy its product. To some extent, this process can be stressful, especially when each competing brand intents to propose similar value(s) in terms of the product’s concept, technical features and functionality, which are basically designed to solve consumers’ problems and meet their personal needs. Therefore, the decision process that consumers go through in selecting and buying products often go beyond the involvement of the basic factors such as the product’s concepts, functionalities, and technical feature to involve more tangible and/or even intangible factors that derive the attentions, particularly those designed to stimulate their emotions. Obviously, consumers are no longer buy products to fulfill their functional needs, but instead, they buy the emotional experience around it [3, 4]. I myself had to go through a somewhat exhausting, but a learning experience in making efforts to choose a tablet among the competing models and brands in the tablets’ market. I realized that both tangible (e.g. geometry, edges, ergonomics, texture, etc.) and intangible (e.g. external design, colors, brand experience, etc.) played somehow equal roles in making my final decision. Most importantly in this context is realizing that the selection process was entirely controlled by raising concerns in regards of each factor contributed in the decision process. To my beliefs as a consumer, this entire process was emotionally driven. In fact, even the technical comparison of similar tablets was derived on the basis of raising concerns, by which certain emotions were evoked to make the tradeoffs. For example, in mobile devices, there is a fact that the larger storage capacity needed the more the price to be paid, which in this case, a larger storage was not an option when the budget is limited (i.e. raising concerns about the budget). Moreover, as the budget is limited and the consumer prioritizes a higher screen resolution or larger screen size on a larger storage therefore, the concerns in this case are raised in regards of both the screen features and size, and the limited budget when making the tradeoffs (i.e. the user chooses to go with lower storage capacity for the sake of a higher screen resolution in order to stay within the available budget). Furthermore, the concerns sometimes broadened to involve more than one reference such as the budget and brand experience. For instance a cheaper tablet with a larger capacity could be found in similar products offered by either a not well-known or not previously experienced brands, where the tradeoffs in this case are between the storage in one hand and both the price and the brand experience on the other hand, which raises concerns in the context of the storage need in regards of brand experience and the budget (e.g. I know nothing about this brand therefore, I prefer to buy an expensive tablet with smaller capacity by a brand that I positively experienced than a cheaper with larger capacity by a brand that I’ve never experienced before). These tradeoffs and more are made through an assessment process (appraisal) of raising concerns by which, a consumer seeks what favors his/her wellbeing within some constraints (i.e. personal preferences, socio-cultural background, society’s standard, etc.) and limited resources (i.e. availability of the similar products or variety of options, budget, etc.).
Therefore, it is not surprising that researches on consumer’s behaviors found that emotions evoked by products improve the pleasure of buying, owning, and using them [5]. More importantly, emotional or experiential quality of products started to increasingly take more importance in the marketplace of consumer products as both differential and advantageous factors [6]. As the products by the competing brands are often similar with respect to the technical features, properties, design, quality, and even prices therefore, the emotions evoked as responses to the emotional drivers in products other than those described to be similar by different brands are considered to be conclusive factors in making some purchases decisions [6]. To this end, this research intents to review the literature on designing emotional-driven products that benefit both consumers in terms of fulfilling their functional and personal needs, and contributing to their wellbeing on one hand, and designers in terms of the economic and moral rewarding on the other hand. This review is constructed to answer the following research questions, by which the drivers of the consumers’ emotional engagement with everyday products will be defined, and conceptually modeled within its context in the product development and creation process.

1. What does an emotion mean, and what are the theoretical and psychological perspective(s) behind this human phenomenon?
2. What are the components of an emotion and how does the relationship between emotions, moods and affect is defined?
3. How does a product contribute to the human wellbeing and bring them pleasure?
4. How an emotion is designed in a product and how it is evoked by consumers, and why it is considered to be very challenging to design for emotions?
5. Theorists on emotional design have developed different conceptual approaches and models to help designers in considering human positive emotions when they design for their products however, the contexts among the dimensions of these models (e.g. the basic model of product emotions) have not clearly defined or it were intentionally left for more researches. The question in this context is what are the factors that underlie these contexts, and how they are interrelated with the emotional drivers that this research intents to identify and conceptually model within the entire emotional process?

2 Human Emotions

Emotions play a very significant role in our lives [7, 6]. They “enrich virtually all of our waking moments with either a pleasant or an unpleasant quality” [6, p. 111] and they essentially drive our behaviors [7]. It is often said that emotion stimulates the mind 3000 times faster than rational thought [7, 8]. Furthermore, according to the daily use of this popular concept, emotions are what people say they are [9]. However, in this chapter, the human phenomenon termed “emotion” will be theoretically defined and discussed, and in order to better understand what does the theoretical concept of emotion mean, a discussion on its components will also be provided, as well as its relationship with moods and affects will be defined.

2.1 Definition of Emotion

The Oxford dictionary defines an emotion as “strong feeling deriving from one's circumstances, mood, or relationships with others”, and the Cambridge dictionary adds specific example to this feeling such as; “love, anger, or strong feeling in general”. Although emotion as a term is used very often to the point of being enormously fashionable nowadays [10] however, defining an emotion described as a major well-known issue due to the wide variety [11] and very high number of definitions [12]. Scholars on emotions ask the same a question “What is an emotion?”, and the answer is often different, i.e. the definition is not the same [10]. William James attempted in 1884 to authorize an answer to this question,
but the debate continued [13]. From a systematic literature review on emotions, Kleinginna Jr. and Kleinginna collected and reviewed 92 definitions and 9 skeptical statements from different sources [11]. These definitions and statements were classified into 11 categories; affective, cognitive, external emotional, stimuli, physiological, emotional-expressive behavior, disruptive, adaptive, multiaspect, restrictive, motivational, and skeptical [11]. Obviously, a single and a well-accepted definition for this human phenomenon is hardly to find, and not easy for a non-psychologist to understand. For example, Frijda and Mesquita define an emotion as; “an event-elicited response set that involves individual’s relationship to some object or person (possibly the self), and that involves control precedence” [14, p. 276]. Nevertheless, Scherer defines an emotion as; “an episode of interrelated, synchronized changes in the states of all or most of the five organismic subsystems in response to the evaluation of an external or internal stimulus event as relevant to major concerns of the organism” [10, p. 697]. Further, Kleinginna Jr. and Kleinginna suggest that a formal definition of emotion has to cover all classical significant characteristics of emotion, and according to that, they define an emotion as “a complex set of interactions among subjective and objective factors, mediated by neural-hormonal systems, which can (a) give rise to affective experiences such as feelings of arousal, pleasure/displeasure; (b) generate cognitive processes such as emotionally relevant perceptual effects, appraisals, labeling processes; (c) activate widespread physiological adjustments to the arousing conditions; and (d) lead to behavior that is often, but not always, expressive, goal directed, and adaptive” [11, p. 355]. Despite that this definition is long and complex yet, it covers the five subsystems of emotion that the above Scherer’s definition has pointed out.

2.2 Theories on Emotion

There is a consensus among most theorists that emotions serve to establish adaptive responses to stimuli that are critical for the existence and wellbeing [15]. However, different theories on emotion use different approaches to describe its fundamental mechanisms of how stimuli are categorized as emotional [12]. Generally, the theoretical structure consists of four parts as Brosch et al. has discussed; basic emotion theories, the appraisal theories of emotion, dimensional theories of emotion and the constructivist theories of emotion [15]. To summarize these four categories on emotions’ theories, table 1 below is listing each category, with a simple explanation.

<table>
<thead>
<tr>
<th>Category of theories</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic emotion theories</td>
<td>Assume number of distinct basic emotions, including for example; anger, fear, sadness, happiness, disgust or surprise</td>
</tr>
<tr>
<td>Appraisal theories of emotion</td>
<td>Suggest that emotional processes are elicited as the individual continuously appraises objects, behaviors, events and situations with respect to their relevance for his/her needs, goals, values, and general wellbeing</td>
</tr>
<tr>
<td>Dimensional theories of emotion</td>
<td>Emphasize the role of a few key dimensions, usually valence and arousal, in the organization and categorization of emotional stimuli. This approach allows to distinguish between negative and positive emotions of different intensities, which reflects two basic motivational systems, the appetitive and the aversive systems that underlie approach and withdrawal behavior, respectively</td>
</tr>
<tr>
<td>Constructivist theories of emotion</td>
<td>Emphasize the role of culture, language, and high-level cognition in the emergence of emotional experience</td>
</tr>
</tbody>
</table>

2.2.1 Theoretical Perspectives on Emotion

An emotion according to the psychological point of view signifies a meaningful and essential concept [16]. It requires explanations that are different from explaining for example; habit, voluntary action,
and sensory reactions, in fact, an emotion seems to call expressive concepts such as; pleasure and pain, assessment, order priorities, preferences, and desires [16]. Frijda and Mesquita summarize the theoretical perspectives on emotions as in the following five points [14];

1. Emotions are an individual’s responses to an event (e.g. a product) and appraised with respect to his/her concern(s) such as; goals, motives, values, and emotional sensitivities with respect to that event.
2. Emotions are functional processes that deal with associated events which cannot be dealt with in a routine way for the sake of the concerns (e.g. the need for a product to solve individual’s problems).
3. Emotions are interactional processes rather than intra-individual state of feelings (i.e. individual doesn’t evoke emotions when there is no event to interact with).
4. Emotions always have to do with a response or a call for an action (i.e. emotions tend to control behaviors and thoughts, to take an action, to say something and/or do something).
5. Emotions are responses of multi linked components. However, these components may occur in many different combinations, but not necessarily all of them occur on the same time however, when they do, their concentration may not always match.

2.3 Components of Emotion

As discussed before, an emotion is a process or an episode that involves several components [10, 11, 12, 14, 17]. Theorists on emotions vary in constructing and labeling the components and subcomponents of the emotion’s process however, some theorists concur partially about the main components. For example; Frijda and Mesquita propose a process model that consists of 11 components and subcomponents [14], while Scherer proposes an emotion episode that consists of five components and five subsystems [10]. Scherer’s structure of the emotion episode which is known as Components Process Model CPM shown in figure 1 below [17, 18]. This model is basically derived from the appraisal theories of emotion, and it has been adapted and used by variety of researches on emotions (e.g. [12, 19, 20]). The CPM model process is explained in the following steps [17] and also summarized in table 2 below [10, 21].

1. Events and its consequences are appraised with a set of criteria on multiple levels of processing.
2. A motivational effect, often changing the motivational state before the occurrence of the event.
3. Different effects will occur (phycological, response patterns, motor expression in face, voice, and body).
4. All of these components are centrally represented and constantly merged in a multimodal integration area with continuous updating as events and appraisals change.
5. Parts of this central integrated representation may then become conscious and subject to assignment to fuzzy emotion categories as well as being labelled with emotion words, expressions, or metaphors.

<table>
<thead>
<tr>
<th>Emotion component</th>
<th>Organismic Subsystem</th>
<th>Emotion function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive component (appraisal)</td>
<td>Information processing</td>
<td>Evaluation of objects and events</td>
</tr>
<tr>
<td>Neurophysiological component (bodily symptoms)</td>
<td>Support</td>
<td>System regulation</td>
</tr>
<tr>
<td>Motivational component (action tendencies)</td>
<td>Executive</td>
<td>Preparation and direction of action</td>
</tr>
<tr>
<td>Motor expression component (facial and vocal expression)</td>
<td>Action</td>
<td>Communication of reaction and behavioral intention</td>
</tr>
<tr>
<td>Subjective feeling component (emotional experience)</td>
<td>Monitor</td>
<td>Monitoring of internal state and organism - environment interaction</td>
</tr>
</tbody>
</table>
However, Frijda and Mesquita urge that the emotions are nonlinear processes, and all its components may change over time for instance; appraisals of a particular event may change over time, and the attention may dissipate, whereas readiness may also change when individual feel exhausted however, readiness or behaviors may influence the appraisals process [14]. Indeed, all the components can be applied to the concept of product’s emotions, however in this research the focus will be on some components to be discussed in details later in the next chapter.

2.4 Emotion’s Relationship with Affects and Moods

It is difficult to differentiate emotion from other types of affective phenomena [17]. Emotions, affects, and moods are three terms that are closely intertwined [22], and often are interchangeably used without any attempt at conceptual differentiation [23]. However, and in order to precisely differentiate emotions from affects and moods, and to determine the relationships between them, a simple definition of each term has to be provided. An affect, “is a general term that covers a wide range of feelings that people experience. It’s the umbrella concept which includes both emotions and moods” [22, p. 260]. Examples include; pleasure and displeasure, tension and relaxation, energy and tiredness [23]. While emotions besides the psychological definitions provided above, are considered as “the intense feelings that are steered at someone or something” [22, p. 260]. Examples include cognitive appraisal such as; anger, fear, jealousy, pride, and love [23]. On the other hand, mood is “the appropriate designation for affective states that are about nothing specific or about everything-about the world in general” [24, p. 258]. Examples on mood could be when a person is in an anxious mood, the object might be something as general as the whole future or as distant as life in 20 years; when a person is in a depressive mood, the object might be the totality of self; and when a person is in an irritable mood, the object could be anything and anyone [23]. Figure 2 aside demonstrates the relationships between affect, emotions, and moods. Generally, emotions are more fleeting than moods, for instance, if someone is ignorant to someone else, he/she feels angry, where this intense feeling of anger probably comes and goes fairly quickly. However, there is no agreement about how long an emotion may last [25]. On the other hand, when someone is in a bad mood, he/she can feel bad for several hours or may be days [22]. Moreover, emotions are reactions to an event
(i.e. person, object, product, etc.), for instance, seeing a well-designed product makes you feel pleased, or it may remind you about some events that makes you feel sad. Moods otherwise aren’t usually a reaction to an or event [24] however, emotions can turn into moods when someone lose the focus on the event or object that ignited the feeling at first, where good or bad moods can make a person more emotional in response to a specific event [22]. For example, when friends criticize the way you speak, you might become angry at them. That is, you show emotion (anger) toward a specific object (your friends’ criticism). However, when the specific emotion dissipates, you might just feel generally sad.

3 Product Emotions

The term “product emotion” is often referring to all emotions experienced in response to, or elicited by seeing, using, owning, or thinking about consumer products [26]. Boatwright and Cagan add that experiencing a product happens through one of five senses; touch, use, see, feel and taste, by which any product that elicits an emotional response must reach a consumer through one or more of these senses [27]. Basically, consumer products are made to solve our problems and/or to add more convenience to our life yet, products that are not perceived by any of the above senses will not directly carry emotions. As we interact with different products every day on different occasions however, each time an interaction happens, the product works as a stimulus to our emotions. Desmet summarizes the characteristics of the product’s emotion according to the general interpretation of human emotion phenomenon, as in the following points [28]:

1. The concept of emotions is indefinite (i.e. products can evoke many different kinds of emotions). For instance, someone is astonished by the new design of a particular car, frustrated by the slow performance of the laptop, angry at the washing machine, in love with the smart watch, and so on.
2. Emotions are personal (i.e. individuals differ with respect to their personal preferences and emotional responses). For instance, someone admires the bigger size of a smartphone, while someone else feels that the bigger distorts the concept of the mobile phones.
3. A particular product may evoke multiple different emotions “compound emotions” on the same time instead of one single emotion. That is because emotions in a product aren’t limited to the product’s aesthetics only but also to other aspects such as; usability, properties, functionality, technical specifications, brand, etc. For instance; one can feel fascinated by the external design of a chair, but feels frustrated when use it (uncomfortable seat).

In this chapter, the discussion will be focused on how consumers emotionally interact with products and how products contribute to the wellbeing, particularly when the interactions evoke positive emotions as consumers find the product is worthy, attractive, accurate, efficient and so forth. In addition, this chapter will include a section about the basic set of the positive emotions that designers should consider and integrate when they design for their products for the sake of appealing intended consumers.

3.1 Physical and Visual Interactions

Consumers interact with products more often physically (e.g. driving a car, working on a laptop, using a microwave, etc.). These interactions (or experiences) evoke different kinds of emotions based on the quality of such interactions. The quality of the interaction differs from one consumer to another depending on various personal and organizational factors that this research intents to identify. These types of interactions often called the product experiences which we will be discussed in details later in chapter 6. Nevertheless, not only physical interaction with products stimulates consumers’ emotions, but visual
interactions as well are enough to evoke different types of emotions, particularly when the product works as an event that stimulates other events (e.g., looking at an old birthday gift may stimulate emotions as recalling some memories, or derive excitement for the next birthday party). Moreover, visual interaction may lead to evoke emotions that aren’t necessarily related to the past, present and/or future events, but it may be purely related to the consumer’s socio-cultural background, personal preferences, attitudes, and so forth. For example, figure 3 aside is one of a couple photos which were originally posted to tumblr.com by one of its users “bakufundoshi” combined with a caption that says; “Honesty this is so much nicer than red”. [29]. As you can see, the color of the can is sky-blue instead of the very well-known red color, which has been used since the beginning as the theme color of Coca-Cola products. Not surprisingly, few weeks later, the post has been liked and re-blogged more than 195 thousand times. Each time someone re-blogs the post, he/she adds personal opinions representing the emotional responses towards the can’s sky-blue color. In fact, some of the users made comments thinking that these photos were a production of the Photoshop or other graphic design software. However, the owner of the photos has made it clear, and claimed that they were original and have been taken by himself in Turkey, which had excited people even more. What is important in this matter is not the authenticity of the photos, but the people’s emotional responses towards the color of the can. Examples of these emotional responses are listed in Figure 4 below. Importantly, the owner of the post didn’t say anything about the taste and/or the quality of the drink and most of the comments provided by other users were some individual emotional responses in regards of the external form of the product’s canning. Remembering that consumers of Coca-Cola and other soft drinks would eventually throw the cans into the trash right after they done drinking no matter what the color of the can might be. Although soft drinks are preference products, which are not the focus of this research however, this was an example of how a simple change in the external form of the product’s canning (not the product per se) has evoked so many different emotions by some participants who voluntarily decided to provide their opinion on social media. Taking in the consideration that emotions evoked as responses to visual interactions are happening at any time with any stimulus in our surroundings as long as we are awake.

<table>
<thead>
<tr>
<th>User Screen Name</th>
<th>Emotional Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero tide</td>
<td>“This is Coca-Cola I can feel calm drink it. No bright screaming red. No anger. No hatred. Just a nice sky blue. This is a soda I can feel relax with!”</td>
</tr>
<tr>
<td>octavio-strider</td>
<td>“The red is a form of psychological advertising pushing you to buy it impulsively”</td>
</tr>
<tr>
<td>d20-darling</td>
<td>“I haven’t drunk cola in about four years, now, but that turquoise really is a much more pleasant look than the red”</td>
</tr>
<tr>
<td>ramblestories</td>
<td>“Sadly, none of those emotions would make you drink more than one at once”</td>
</tr>
<tr>
<td>lighteninglime</td>
<td>“Maybe I’d actually drink Coca-Cola if it looked like this. It so much more calming”</td>
</tr>
<tr>
<td>littlemissbighead</td>
<td>“Can I have one in Yellow?”</td>
</tr>
<tr>
<td>jessiekitty123</td>
<td>“I’m sorry but my INSTINCT tells me otherwise”</td>
</tr>
<tr>
<td>batmanfantastic123</td>
<td>“Do you mean Pepsi?”</td>
</tr>
</tbody>
</table>

![Figure 3 - Sky-Blue can of Coca-Cola – Source] [29]

![Figure 4 - Example of emotional responses by Tumblr’s users – Source] [29]
3.2 Products Contribution to Wellbeing

People evaluate situations differently, depending on their expectations, preferences, values, and previous experiences. Researchers on subjective wellbeing acknowledge the importance to this subjective element and assess individuals’ thoughts and feelings about their lives [30]. Indeed, there are many ways by which individuals can evaluate the quality of their life. Ryan and Deci suggest that there is some indication that subjective wellbeing is affected by positive and negative life events [31]. Lucas and Diener urge that many previous studies have shown that a human’s general wellbeing is strongly affected by day to day felt emotions [30]. Moreover, Fredrickson suggests that joy, happiness, and other pleasant emotions (positive emotions) widen people’s thinking and enable them to build resources, and she urges that positive emotions can enhance and promote creativity, which may lead people to try new things [32]. Norman agrees with this perspective, and acknowledges that today research is turning toward this dimension [33]. This perspective empowers happy people (emotionally positive) to develop new strategies to face challenges, obtain new social skills, and even new physical resources, where these resources can lead to positive outcomes in people’s lives [30]. However, how does a product contribute to the wellbeing of individuals and positively impact their life? The answer to this question could be found in the example of owning and using medical devices such as the blood glucose monitors by diabetic people. Although there are no emotions expected to be evoked (but it is possible to happen) as responses to how stylish is the design of these types of products, because diabetic people in this context majorly care about how accurate are these devices in calculating the results, and how well it keeps them informed about their blood sugar numbers. In fact, knowing the blood sugar numbers helps diabetic people in controlling the risk of any unexpected increases and/or decreases of their blood sugar percentages, which in fact evokes positive emotions (e.g. feeling safe, assured, healthy, etc.) and then developing a relaxing (comfortable) mood by which a diabetic could perform his/her life’s activities in a good if not a better manner. This example explains the emotions evoked as a response to the value that these product offer (i.e. the function). An opposite example is experiencing the work for long time on a slowly responding and frequently crashing laptop, which may lead to a continuous frustration that eventually develops a long term bad mood, by which the user would be negatively affected (i.e. evokes negative emotions), especially when the work is a creativity-based activity such as performing designing tasks by an engineer or a graphic designer. A bad mood caused by this product in fact is a killer of any type of creativity or learning process. Therefore, the importance of a product for our wellbeing is determined by an appraised concern that either matches or mismatches however, products that match our concerns are appraised as beneficial, and those that mismatch our concerns are appraised as harmful [28]. In additions, a considerable part of positive emotions in our life is elicited by “cultural products” such as cultural art (jewelry, painting, architecture, etc.), uniform clothing, physical emulates, and some consumer’s products [34]. These types of products are considered pleasurable since by assumptions, values and beliefs, people happily willing to touch, use, feel, see and taste every day, which contribute to their wellbeing and eventually to the wellbeing of their societies as well [35]. However, understanding products’ contribution to human wellbeing requires a better understanding of the nature and the basic set of positive emotions that products should be designed to elicit in order to stimulate the intended users.

3.3 Basic Set of Positive Emotions

Positive emotional responses motivate users to make their decisions in favoring, selecting, and purchasing a particular product among a line of other similar ones, especially when the product works as a (positive) stimulus [5, 28]. In consumer research, the effects of positive emotions in a product have been
observed to be in line with a general tendency that positive emotions stimulate product’s purchase intentions [36]. However, no matter how positively the appearance of the product effects the consumer perception and emotional responses, still the use of the product is a different story, where it can evoke different types of emotions at the same time, both positive and negative emotions such as: joy, pride, frustration, hope, disappointment and sympathy [37, 38]. Some people are more aware of the differences between these emotions than others. This emotional complexity is called “emotional granularity” [38, p. 1195]. However, as the focus here is about the positive emotions, it is very important to explain the basic set of positive emotions, which often ranges between two to four [26]. Fredrickson for example chooses four basic positive emotions; joy, interest, contentment, and love. She chooses these four based on two reasons; first, those four are extremely different from one another, and second, they seem to be recognizable equally across cultures [32]. However, other psychologists consider only two; joy and love (e.g. [9, 39, 40]), whereas some others consider; joy and interest [41] as the basic positive emotions. However, Desmet suggest five basic positive emotions; joy, love, interest, anticipation, and pleasant surprise [37]. Although each testified typologies of emotions cover both negative and positive emotions however, negative emotions will be excluded since this research is about designing attractive products. Furthermore, differentiating positive emotions themselves is as important as considering and integrating them in designing emotional products, where in fact, each basic positive emotion includes various and different emotions [37]. For example, the basic emotion of joy includes: pride, satisfaction, relief, inspiration and so forth. However, Desmet has found at least 25 positive emotions [37] derived from 9 basic positive emotions that can be qualified in response to products. Table 3 below is Desmet’s typology of 25 positive emotions. For more explanations about each type of these emotions, see (Desmet, 2012) [37, 38]. Obviously, these are different emotions which associated with different eliciting conditions, different feelings, and different behavioral aspects.

### Table 3 – 25 Positive emotions based on Desmet’s typology – Source [37, 38]

<table>
<thead>
<tr>
<th>Empathy</th>
<th>Affection</th>
<th>Aspiration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sympathy, Kindness, Respect</td>
<td>Love, Admiration, Dreaminess</td>
<td>Lust, Desire, Worship</td>
</tr>
<tr>
<td>Enjoyment</td>
<td>Optimism</td>
<td>Animation</td>
</tr>
<tr>
<td>Euphoria, Joy, Amusement</td>
<td>Hope, Anticipation, Courage</td>
<td>Surprise, Energetic</td>
</tr>
<tr>
<td>Assurance</td>
<td>Interest</td>
<td>Gratification</td>
</tr>
<tr>
<td>Pride, Confidence</td>
<td>Inspiration, Enchantment, Fascination</td>
<td>Relief, Relaxation, Satisfaction</td>
</tr>
</tbody>
</table>

4 **Designing Emotions**

The difference between the good and the poor designs is that the first is a lot harder to be noticed than the second, because a good design meets people’s needs very well while the design is invisible, and solve their problems without making an attention to itself, whereas a poor design is obviously making attention to its insufficiencies, which makes it very noticeable [42]. This perspective implies that a good design should stimulate the users’ emotions positively since it solves their problems and delivers the proposed values for which the users are making efforts and risks to obtain. Norman urges that; “the emotional side of design may be more critical to a product’s success than its practical elements” [33, p. 5]. However, designing emotions in products by which intended users to be appealed is a challenging task [28, 43]. That is because emotions elicited by products appearance (i.e. external design such as; material, style, colors, etc.) are often described intangible [28] (i.e. emotions felt by looking at or thinking of the product generally and particularly its external forms, curves, color, texture, etc.). These types of emotions are hard if not impossible to foresee [43], and the most challenging part is that they evoked relatively and differently
from one users to another. It seems to be difficult to establish relationships between design features and emotional responses that can be used in the creative design process [44]. Desmet urges that the challenges to predict and/or to design for emotions in products are basically caused by the characteristics of product’s emotions discussed previously in page 6 above [28]. Moreover, it is obvious that the designers don’t have so much control on those described intangible emotions however, designers can influence the emotions elicited by their designs, may be because these emotions are not as intangible as they seem [28]. Although designers are trained in considering and integrating emotional features in products such as luxury, pride, astonishment, etc. however, their training is described to be; “highly anecdotal, and prone to subjectivity and bias” [43, p. 1]. With all these challenges faced by designers to embed emotions in products yet, products that we select, buy and use in our daily life are often elicit variety of emotions, which implies that designers in fact are capable of embedding emotions in their designs. Moreover, because every manmade product evokes emotions [27], therefore, it is considered a missed opportunity at best if not considering and integrating positive emotions in the design and product creation process [37]. Therefore, designers think it can be rewarding [27] economically and/or morally to design emotional products that can be attractive to or stimulate potential users [28, 43, 37] as positive emotions (pleasure) in product adds extra value to the product and further benefits the users [45]. In this chapter, the discussions will be focused on the approaches that designers use to consider and integrate positive emotions in the products they design for.

4.1 Approaches to Design Positive Emotions

Design theorists have conducted significant studies and contributed in the production of several approaches and frameworks to support and guide designers in embedding positive emotions, and conceptualizing positive product experiences [37]. Generally, there are three basic approaches that have been introduced and applied in the field of product emotions [26]; pleasure-based approach to product emotion by Patrick Jordan in 1999 [46], appraisal approach for product emotion by Pieter Desmet in 2002 [47] and process-level approach by Donald Norman in 2004 [33]. These three approaches are substantially overlapped, and share some basic assumptions and theoretical considerations. However, later in 2007 Pieter Desmet introduced the fourth approach under the label of the nine sources of product emotions [26]. Below is a brief description of each approach.

4.1.1 Pleasure-Based Approach to Product Emotion

Patrick Jordan in 1999 [46] proposed an approach to product emotions or product affects based on pleasure. This approach is derived from the framework of pleasure proposed by Lionel Tiger in 1992 [48], which distinguishes four types of pleasure that people may seek: physical, social, psychological, and ideological pleasure [26, 46]. Jordan used a psychological pleasantness-framework to explain various types of product pleasantness (positive emotions). Table 4 below lists the four types of pleasure, its explanations and relevant example of each.

<table>
<thead>
<tr>
<th>Type of Pleasure</th>
<th>Explanation</th>
<th>Example(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physio Pleasure</td>
<td>Pleasure directly derived from the sensory organ (e.g. touch, taste, smell, etc.)</td>
<td>A couch can generate physio-pleasure because of its soft touch and elegant appearance</td>
</tr>
<tr>
<td>Psycho Pleasure</td>
<td>Pleasure related to people’s cognitive and emotional reactions</td>
<td>A software designed to easily and successfully accomplish the user’s tasks</td>
</tr>
<tr>
<td>Ideo Pleasure</td>
<td>Pleasure related to people’s values</td>
<td>Eco-Friendly and low noise products</td>
</tr>
<tr>
<td>Socio Pleasure</td>
<td>Pleasure derived from relationships with others</td>
<td>Jewelry can attract social comments</td>
</tr>
</tbody>
</table>
4.1.2 **Appraisal Approach to Product Emotion**

Pieter Desmet proposed an approach in 2002 as a model for product emotions [47]. He used the cognitive appraisal theory (table 1, p.3) to explain the process of product emotions. This model has been considered as “basic” since it is applicable to all potential emotional responses elicited by buying, using, and/or owning products [28, 26]. The model consists of three key variables in the emotion process: concern, stimulus, and appraisal. Moreover, this model simply illustrates that a consumer experiences emotions when he/she interacts with products, which are appraised (personally assessed) as having one of the three outcomes; beneficial, harmful or not relevant his/her concerns, i.e. individual’s goals, motives, well-being, or any other emotional sensitivities [26, 47, 49]. This approach is widely known as the basic model of product affects, which will be will be stressed in more details in the next chapter (basic model of product emotions) since it will be used as a guidance in developing this research’s conceptual framework in identifying and studying the context among the key variables of this model.

4.1.3 **Process-Level Approach**

Donald Norman in 2004 [33] introduced a framework of product affect using the explanation of product emotion with a neurobiological emotion-framework that distinguishes several levels of information processing. Norman built this approach based on studying emotions with his colleagues, which suggest that human attributes in the brain mechanisms for accomplishing things, for creating, and for acting result from three different levels of the brain. Norman describes the three levels as; “the automatic, prewired layer, called the visceral level; the part that contains the brain processes that control everyday behavior, known as the behavioral level; and the contemplative part of the brain, or the reflective level” [33, p. 21]. Figure 5 aside is showing the three level of processing. Each level plays a different role in the total functioning of people, and requires a different style of design. The styles of design described as; first, visceral design which is perceptually based and concerned with product’s appearance, second, behavioral design, where expectation based, and concerned with pleasure of use, and third, reflective design, which is intellectually based and concerned with self-image and memories [26].

4.1.4 **The Nine Sources of Product Emotion**

Pieter Desmet later in 2007 [26] has developed another approach, which was an assembled framework that combines some fundamental assumptions and theoretical considerations shared by the three above approaches [50]. Obviously, this framework embodies a psychological view on product emotions because it is also based on cognitive appraisal theory-appraisal approach that intervenes between seeing, using, owning, or thinking about a product, and the emotional outcomes from appraising stimulus events (e.g. products) [26]. Desmet urges that the key factor of the appraisal viewpoint on the emotion’s elicitation and distinction is the assumption that people always appraise (actual or imagined) stimulus events for their personal wellbeing, where in the appraisal process, the concerns of the users are matched with the attributes of the stimulus [26, 50]. The combination of different types of concerns (Jordan’s framework) and different types of stimulus (Norman’s approach) has resulted with nine distinct and conceptually different sources of product emotion as listed in Table 5 below.
Table 5 - The matrix of the nine source of product emotion – Adapted from [26]

<table>
<thead>
<tr>
<th>Stimuli</th>
<th>Concerns</th>
<th>Attitudes</th>
<th>Goals</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td>Enjoying the rounded shape of the product</td>
<td>Desiring for owning a route navigator of a particular brand</td>
<td>Admiring the designer for making an innovative design</td>
<td></td>
</tr>
<tr>
<td>Usage</td>
<td>Enjoying the gestures required for selecting a route</td>
<td>Frustrated for not being able to connect music player</td>
<td>Being angry with the product for not finding signal</td>
<td></td>
</tr>
<tr>
<td>Consequences</td>
<td>Enjoying the sense of the freedom experienced because of the device</td>
<td>Satisfied by being able to reach destination efficiently</td>
<td>Being prod of my new established flexibility</td>
<td></td>
</tr>
</tbody>
</table>

5 Parameters of the Emotional Process

As discussed in chapter 4, Desmet in 2002 [47] introduced the appraisal model of product affect to be the first model in the literature of designing emotional products which was developed on the basis of the cognitive appraisal theory and it conceptualizes the key dimensions of the stimulus-user-emotions process. Later, Desmet and Hekkert [51] have developed the basic model of product emotions on the same basis of the appraisal model of product affect but they changed the key variable “stimulus” to a more specifically “product”. Still it represents the same underlying process. The model, which is shown in Figure 6 aside, specifies four main parameters in the eliciting process of emotions: (1) product, (2), concern, (3) appraisal, and (4) emotion. The first three parameters, and their interplay determine if a product elicits an emotion(s), and if so, which emotion(s) is evoked. Desmet and Hekkert applied this basic model into five classes of product-evoked emotions; instrumental (e.g. satisfaction), aesthetic (e.g. attraction), social (e.g. admiration), surprise (e.g. amazement) and interest (fascination) product emotions [28]. In this chapter, we will discuss the three parameters of the emotional process; product, concern and appraisal since the outcome “emotion” has been already stressed in the previous chapters.

5.1 Product

As it has been discussed before, emotions motivate us to engage and strengthen relationships, by which we support our wellbeing or, to break off or weaken these relationships that jeopardize our wellbeing. Emotional tendencies towards products can be for example; “to touch or taste a product, to buy, to turn away from, to discard, to approach, to reject, to examine, to stop using a product, to retry interactions, to use more force, or sometimes to yell at the product” [50, p. 5]. Desmet suggests that there can be at least three different relationships between individuals and products [52]; product-focus, activity-focus and self-focus which are described in table 6 below. However, for every product there have to be particular semantics by which the product’s ideas, values, meanings, usages are communicated. In this section, it is very important to briefly discuss the product semantics and its relevance with the product usability, and how these two aspects of the product affect the outcome of the general emotional process in the user-product interactions.
Table 6 – Individual – product relationships – Source [52]

<table>
<thead>
<tr>
<th>Focus</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product-Focus</td>
<td>Emotional responses to a product depend on properties such as material qualities, purposes, meanings, expressions, and on what a product does or fails to do so (e.g. a laptop fails to startup, a DVD player works perfectly, etc.). These emotional responses include not only responses to actually perceiving a product, but also thinking, reading or hearing about it.</td>
</tr>
<tr>
<td>Activity-Focus</td>
<td>Products are made to achieve some objectives in the sake of supporting human wellbeing. Individuals use products to get something done, and to achieve some human activities which can be useful (e.g. helping with cooking), pleasurable (e.g. playing video games), and/or rightful (e.g. enhancing the environment). The emotional responses of individuals to an activity are basically caused by individuals’ concerns related to these activities.</td>
</tr>
<tr>
<td>Self-Focus</td>
<td>Individuals have the tendency to own and use products that enable them perceiving themselves in a better image. Some kinds of products such as expensive and fancy ones affect an individual’s self-perception and how they are perceived by others (e.g. this leather jacket makes me look very recognizable).</td>
</tr>
</tbody>
</table>

5.1.1 Product Semantics

Product semantics was developed and introduced by Krippendorff and Butter [53] and is defined as the “study of symbolic qualities of man-made shapes, in the cognitive and social context of their use” [54, p. 1348]. It is considered to be the application of the acquired knowledge in term of meanings and making sense to the industrial design [55]. Therefore, and according to its definition, product semantics is concerned with the relationship between the user and the product on one hand, and the significance that the product makes in an operational and social context on the other hand [54]. Furthermore, product semantics empower designers to recognize that users don’t respond to the physical qualities of the products however, they respond to what these objects mean to them [56]. Based on this concept and recognition, designers can rethink their work, and develop their own languages, by which they can communicate their designs’ ideas with their potential users [55]. According to Krippendorff, an object (e.g. a product) does not speak about itself, but it is what it says to the user [56]. For example, an on-off switch when perceived as such doesn’t say what it is, but it tells the user what to do (what this switch has been made for), and what the consequences might be when changing the status from an on to an off and vice versa. Moreover, the product through its design and function, it expresses values, where users assess the importance of these values in respect to a specific social context in terms of either accepting or rejecting, liking or disliking however, the product can, through its semantic and expression, either strengthen or weaken this context by creating either positive or negative perceptions, emotions, and values [54]. One of the most important aspect in product semantics in the regards of the emotional context in products is the metaphor, where metaphors “transfer meanings from one usually familiar domain of experiences to another usually less structured or novel domain” [55, p. 4]. In another word, the metaphor expresses things that are unfamiliar in terms of things that are familiar. For example, when someone talks about something that is abstract, he/she often uses metaphors to explain it clearly and easily for others to understand. Moreover, a metaphor is a form of speech that uses images, stories or tangible things to express less tangible things. The verbal use of metaphors is considered as a very effective skill in communication, because metaphor does not only provide better understanding, but it also establishes a strong emotional connection between the audience and the intended meaning of the subject [57]. More importantly, the use of metaphor provides the advantage not only via verbal communication, but also in the use of the non-verbal communication, especially in the design domains of products, graphics, user interface, and in services [57]. Therefore, product semantics in general
are points of references that users appraise in regards of their concerns as if they are favoring or harming to their wellbeing. Table 7 below lists the key concepts of product semantics.

Table 7 - Key concepts to product semantics – Adapted from [55]

<table>
<thead>
<tr>
<th>Product Semantics</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making Sense</td>
<td>Something makes sense when we understand it, and it has a solid explanation of why it is there</td>
</tr>
<tr>
<td>Meaning</td>
<td>Meaning can be dependent on someone’s understanding however, things have meanings when they make sense</td>
</tr>
<tr>
<td>Categories</td>
<td>Categorizing a product into a related category helps users to easy understand it and interact with it</td>
</tr>
<tr>
<td>Interfaces</td>
<td>Interfaces encompass parts of both a product’s surface and a user’s mind in the person-product interaction</td>
</tr>
<tr>
<td>Affordances</td>
<td>A product will be easy to use when the design meets the intended function(s) it has design for to achieve (e.g. a car affords traveling)</td>
</tr>
<tr>
<td>Motivation</td>
<td>A well-designed and easy to use product motivates users to interact with</td>
</tr>
<tr>
<td>Cognitive models</td>
<td>There are four types of cognitive models however, the most important in this context is the user conceptual models and interface models which are the models that designers construct to examine the possible interfaces that can arise when users cooperate themselves with the developed or proposed product</td>
</tr>
</tbody>
</table>

5.1.2 Product Usability

Usability according to the International Organization for Standardization (IOS) is defined as; “the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use” [58]. The issue of usability becomes ever more relevant, since most of the products that we are using in our daily life become increasingly more complex [59]. When a user has the impression that a product is not usable, he/she is more likely to be less satisfied with it. However, according to the above IOS’s definition of usability, satisfaction considered to be the attitudinal component of the usability which is clearly referring to the comfort and acceptability of a product use. The main concern is that when consumers use a product, they should be interacting within an acceptable level of tiredness, discomfort, frustration and personal efforts. However, the attitudinal aspect of usability is concerned with avoiding negative emotions rather than producing positive emotions. Furthermore, the users also seem to be increasing their awareness of usability of products, and obviously, they tend to refuse low usability. As users started to seek an ease of use as core to product quality, companies have started to respond by incorporating human factors throughout the design process [59]. Taking in the consideration that incorporating human factors throughout the design process means, incorporating their wants and needs. In another word, incorporating their concerns. Figure 7 aside illustrates the new philosophy of design compared to the old one, as designers in the old one are the authorities of how products should look and be used. However, in the new philosophy, designers cooperate with users in interfering into their practices of living, were products are seen as empowering users to create meaningful practices or making sense of things [56]. However, a usable product is not necessarily a pleasurable product. This implies that usability is not the only determination factor in designing pleasurable products yet, pleasure and usability are interrelated and parallel, which means that a pleasurable product is more likely or in some cases is guaranteed to be usable. In fact, individuals perceive the complex design of a product as a point of reference to evoke negative emotions, because individuals appraise complexity in the direction of displeasure, discomfort, and dissatisfaction [58]. For example, appraising product’s usefulness in regards of its
complexity may result in avoiding, or discarding the product, simply because the product is unusable, while appraising the pleasantness of such a product may result with a displeasure, because product’s complexity frequently disappoints users, and eventually causes them bad moods. Adding to that, the expected outcome of appraising the rightfulness of a complex design product, would be dissatisfaction since this type of products is very complicated to use (doesn’t meet the standards of usability). An artefact cannot be designed in the absence of user’s participation, and designers must provide motivation to people to get them involved in the product design and creation process [55].

5.2 Concern

From figure 6 above, it’s clear that an emotion is a result of an appraised event for one or more of individual’s concerns such as; motives, values, sensitivities. Indeed, these concerns are among the emotion antecedents [14]. Individual’s concerns vary from one to another due to the variations of personal preferences and/or cultural background (e.g. traditional clothes, artifacts, food products, etc.). Moreover, for every emotion there is a hidden concern(s), that is, a more or less stable preference for certain states of the world [28]. According to Frijda and Mesquita, concerns can be regarded as points of reference in the appraisal process [14]. Therefore, the importance of a product for individual’s wellbeing is a determination of an appraised concern(s), which could match or mismatch individual’s concern(s). In fact, a product that matches individual’s concerns are appraised as a beneficial, and those that mismatch his/her concerns are appraised as harmful products [28]. For example; I am very attracted to my car, because it matches my concerns for safety, or I’m frustrated with this laptop repeatedly crashes, because it mismatches my concern for efficiency. In some cases, a product neither matches nor mismatches someone’s concerns, in this case, a product isn’t considered as a point of reference, thus no concern(s) to be appraised. Human concerns are infinite and based on the literature, types of concerns for instance can be; drives, needs, instincts, motives, goals, values and so forth. Frijda suggests that there are two types of concerns; terminal and instrumental and they are fundamentally distinguished [60]. The difference between the both is that terminal concerns are basic (i.e. they are not derived from higher-level concerns) however, they are abstract universal (e.g. concerns for entertainment), whereas instrumental concerns are basically derived from terminal concerns therefore, they are less abstract and more immediate (e.g. concerns for honesty) [61]. This argument suggests that the relationship between human concerns and emotional responses can be stronger when the focus is on instrumental rather than terminal concerns.

5.3 Appraisal

Generally, people’s emotions evoked as responses to their perceptions of their surroundings, which it can be immediate, imagined, and/or remembered [62]. This assumption is considered as the core emphasis of the current appraisal theories of emotions. Theoretically, there has to be a reason “stimulus(s)” for someone to perceive in order for him/her starting the appraisal “the assessment process”, which is depending on the relevance to the wellbeing, he/she may or may not evoke a specific type of emotion. According to Desmet, “this appraisal is a non-intellectual, automatic evaluation of the significance of a stimulus for one’s personal well-being” [28, p. 3]. However, the theorists of cognitive also argue that in some particular mental situations such as; hormones, been under the effects of taking drugs, and brain simulation, emotions can be produced without the needs for specific reason(s) [62]. Furthermore, based on the interpretation of the appraisal’s concept, the responsible for evoking specific class of emotion is the meaning that we attach to the event not the event as such [28]. For example; when a colleague criticizes your opinion, you may experience anger when the meaning you attach to this event as it was to embarrass
you, or you may feel thankful when you the meaning as it was to correct you. However, in the case of products, the appraisal process has three possible outcomes; the product is beneficial, harmful or not relevant for individual’s wellbeing. The three mentioned outcomes generally result in either pleasant or unpleasant, or a complete lack of emotions when there is no relevant appraisal for subjective wellbeing. Since the concept of appraisals goes between products and emotions, people then differ in regards of their emotions towards a particular product [50]. For example; the response to a CT Scanner is different from one patient to another depending on how each one perceives the experience with this device. Patient A may feel scared to be put into the scanning process with the expectations of some sad results, whereas patient B may experience hope to get his body scanned and diagnosed correctly no matter what the results might be. However, there are three main types of appraisals [50]; usefulness, pleasantness and rightfulness. The three main appraisals are briefly discussed below.

5.3.1 Usefulness Appraisal - Goal driven emotions

People appraise a product to be either useful or harmful. However, a product appraised to be useful when it meets or attains and maintains people’s goals, needs and ambitions. In this case, the appraisal of usefulness ends up with evoking positive emotions towards the product. Positive emotions are the motives and the courage factors by which we tend to buy, use and keep a particular product. Otherwise, a product may evoke negative emotions. However, a product that is not relevant to individual’s concern(s) wouldn’t experience any appraisal process.

5.3.2 Pleasantness Appraisal – Sensitivity driven emotions

People perceive products as they are objects that are including properties and features, which can be appraised as pleasant or unpleasant. For example, one is attracted to leather jackets, feeling great when wearing specific perfume, enjoy driving specific cars, or disliking rectangular edges. The appraisal in this case is sensitivity driven to the act of using the product rather than the product as such, which generates sensations that are pleasing or displeasing. Adding to that, the consequences of using or owning a particular product can also be pleasant or unpleasant. For example, the consequence of listening to a favorite piece of music can result in a pleasant feeling such as; inspiration and/or relaxation, or when using a complicated interface product can cause unpleasant.

5.3.3 Rightfulness Appraisal - Standard driven emotions

People also perceive products whether they are compliant to the standards of individuals, community, or life in general or not. For example, one can be feel comfort to own and/or use a high quality - low noise lawn mower, since it doesn’t bother neighbors. In those cases, the product is appraised based on the outcome of the action of some person or institute, and that particular action is appraised as either praiseworthy or blameworthy. The second stimulus level involves expectations of how products should behave when they are used.

6 The Context of the Emotional Process

Reviewing the basic model of product emotions (figure 6) reveals that the context among the four parameters (product, concern, appraisal, and emotion) in one way or another is undefined, which implies that this conceptual model was developed to underlie a wide consideration of various potential factors related to the user-product interactions. However, Desmet has developed an approach of three levels by combining the three key appraisals (usefulness, pleasantness, rightfulness) with the three levels of individual-product relationships (self-focus, activity-focus, product-focus) discussed above [50]. As in
Table 8 below, this emotional new matrix fundamentally is similar to the first one discussed in section (4.1.4, table 5) however, its more focused and driven from the parameters of the basic model of product emotions. Furthermore, the examples in the matrix represent concerns that are touched upon by interacting (seeing, using, owning, thinking about, etc.) with products.

**Table 8 – Appraisals versus focuses – Adapted from [50]**

<table>
<thead>
<tr>
<th>Focus</th>
<th>Appraisal</th>
<th>Usefulness Appraisal</th>
<th>Pleasantness Appraisal</th>
<th>Rightfulness Appraisal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Focus</td>
<td><em>What I want to be?</em></td>
<td>I want to have a recognizable look</td>
<td><em>What I enjoy being?</em></td>
<td><em>What I should be?</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>I enjoy being creative graphic designer</td>
<td>I should be wearing dress when go to work</td>
</tr>
<tr>
<td>Activity-Focus</td>
<td><em>What I want to do?</em></td>
<td>I want to do banking through my phone</td>
<td><em>What I enjoy doing?</em></td>
<td><em>What I should do?</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>I enjoy using this microwave</td>
<td>I shouldn’t bother the neighbors when vacuuming my house</td>
</tr>
<tr>
<td>Product-Focus</td>
<td><em>What I want the product to be?</em></td>
<td>I want it to be a route planner</td>
<td><em>What I enjoy the product to be?</em></td>
<td><em>What the product should be?</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>I enjoy it to be elegant and stylish</td>
<td>It should be easy to use</td>
</tr>
</tbody>
</table>

In this chapter, we will discuss the expected outcomes of the emotional process context underlying the product experience and brand experience, taking in the considerations that any change happens in this relationship between the consumer and the product will eventually lead to evoke variety of different certain emotions.

### 6.1 Product Experience

Product experience is defined as; “the change in core affect that is attributed to human-product interaction” [49, p. 59]. However, the concept “core affect” has been introduced by James Russell in 2003 [63] which represents a blend of the affect dimension and the physiological arousal into a model of two-dimensional circle as in figure 8 aside. In this model, the horizontal dimension (unpleasant-pleasant) ranges from extreme (disappointed) to neutral point (adaptation level-center point) to the opposite extreme (fascinated), while the vertical dimension ranges from extreme (astonished) to neutral point (adaptation level - center point) to the opposite extreme (calm) [49, 63]. It is clear that all possible experiences involved in the interactions between users and products can be defined in terms of core affect. For example, one may experience calm pleasantness when smells a favorite perfume, or experience calm unpleasantness when remembers a broken smartphone. However, in the other direction, one may experience activated pleasantness when feeling excited about the performance of the car, or experience activated unpleasantness when feeling frustrated because of the frequent crashing of the laptop [63]. Generally, product experience is determined based on all involved factors related not only to the product’s characteristics such as; shape, texture, color, and behavior, but also on the factors related to the user’s characteristics such as; personality, skills, background, cultural values, and motives [49]. In addition, all
the other actions and processes that are involved, such as; perceiving, exploring, using, remembering, comparing, and understanding are all factors that contribute in shaping the product experience. According to Hekkert, product experience can be “the entire set of affects that is elicited by the interaction between a user and a product, including the degree to which all our senses are gratified (aesthetic experience), the meanings we attach to the product (experience of meaning) and the feelings and emotions that are elicited (emotional experience)” [64, p. 160]. From this definition, one can understand that the product experience is classified into the three types; emotional experience, aesthetic experience, and experience of meaning. Desmet and Hekkert later have proposed the framework of product experience on the basis of the three defined types as shown in Figure 9 aside, which represents the all the possible interactions between the user and the product. Importantly, a particular type of product experience may stimulate other types of experiences, where experiencing meaning in a product may stimulate emotional experience and aesthetic experiences, and vice versa. For example, an aesthetically pleasing product may activate an experienced meaning of exclusiveness and an emotional response of desire. Although the relationships between the three types of experiences are mutual however, it’s obvious that aesthetic experience and experiencing of meaning are particularly prominent, and the nature of these experiences seems to be hierarchical. Following is a brief review of each type of product experiences [49, 64].

6.1.1 Aesthetic Experience

In this type of experience, users interact with products using their sensory capabilities. For instance; product can be physically fascinating when looking at, sounds pleasantly when hear it, feels good when touch it, or even smells nice. “Aesthetics of interaction” is the concept that is used to stand for the beauty of use, by which users experiences beauty when physically interacting with products.

6.1.2 Experience of Meaning

In this type of experience, users interact with products using their cognitive capabilities, where the level of meaning and cognition work out. At this level, product semantic and symbolic qualities come to the play. Through cognitive processes such as; “interpretation, memory retrieval, and associations” users are able to observe metaphors, understand meanings, recognize categories, analyze signifiers and characters and assess the personality of the products. An example for experiences of meaning is attachment (emotional engagement). The experience attachment can be found in products that have some deep meaning to the user. Indeed, users have been observed to develop stronger emotional engagement with products that have similar personalities to their own personalities.

6.1.3 Emotional Experience

In this level, users experience different types of emotions that were discussed before along with this research. Whenever a user interacts with a product, an evaluation (appraisal) process takes place relatively to the product and user’s concern(s) to determine whether a product (it could be a part or parts of the product) is beneficial or harmful to his/her well-being. Appraising an event (product) eventually causes the evoking of emotions. As stated before, in fact, the appraisal process, is the interpretation of an event (product), rather than the event (product) itself, which causes the emotion.
6.2 Brand Experience

“A great brand taps into emotions. Emotions drive most, if not all, of our decisions. A brand reaches out with a powerful connecting experience. It's an emotional connecting point that transcends the product” - Scott Bedbury.

Generally, a consumer buys a product to attain goals (basically to fulfill functional need), but there is a question that is often arising in this context; what makes a consumer pays more and sometimes even much more to buy a product of his/her favorite brand when similar products of other brands (assuming similar functionality) cost less? May be the answer to this question is that the distinguished emotional drivers that this research has intended to discuss such as; appealingness, usability, and so forth are what derives the consumer's purchasing decisions. Still, if these emotional drivers can be relatively found in similar products of different brands, what else could always derive the consumers towards specific brand? There could be a simple answer to this question by which we understand that consumers are no longer buy products to fulfill their functional needs, but instead, they buy the emotional experience around it [3, 4].

Moreover, the theory of experience marketing attempts to answer the question to what exactly makes a purchasing of a product an experience, and what influence the experience marketing has [65]. However, brand experience is conceptually defined as; “subjective, internal consumer responses (sensations, feelings, and cognitions) and behavioral responses evoked by brand related stimuli that are part of a brand's design and identity, packaging, communications, and environments” [66, p. 53]. Bedbury and Fenichell urge that different ways can be used to establish these internal and behavioral responses and maintain it, and they propose eight principles for achieving brand leadership [67]. As this research is concerned with the emotional drivers in engaging consumers, the fourth principles suggested by Bedbury and Fenichell is to establish links to the fundamental human emotions or profound cultural factors in ways that cannot be faked and cannot even be easily duplicated by competitors, because a great brand respects and meets the emotional needs of their customers [68]. In fact, most people are indefinitely mindful that these emotions can be ranked in a hierarchy of needs [68] explained by Abraham Maslow’s pyramid that people are motivated by unmet needs [69] as shown in figure 10 aside. Abraham Maslow’s hierarchy of needs applies not only in setting the people unmet needs in the zone of brand experience, but in fact, it applies on the entire package of developing, designing, creating, delivering consumer products. However, brands become part of the individual’s self-concept when they help consumers to achieve their goals that are motivated by the self [70]. Therefore, different brands should be able to meet different needs on Maslow’s hierarchy. However, Maslow’s hierarchy suggests that when the lower needs fulfilled, the higher need comes into the play [69]. Maslow’s hierarchy of needs serves as a significant tool to understand purchasing decisions since these decisions are related to building and maintaining self-concept [67]. Furthermore, the literature reveals many different methods to measure the effectiveness of brands via measuring the intensity of consumers’ brand experience. For example, the brand experience model of Brakus et al. in 2009 [66], which empirically validated brand experience scale based on the four dimensions; sensory, affective, intellectual and behavioral. They concluded that brand experience is shaped by brand-related stimuli that constitute subjective, internal consumer responses, such as sensations, feelings and cognitions, as well as behavioral responses. Moreover, this model demonstrates and confirms that brand...
experience positively affects satisfaction and loyalty of consumers. Although all the four factors are required to shape brand experience however, the most important factors in the context of this study are the “affective” and “intellectual” since they both concerned with emotions, where the relationship and the interplay between these two factor are obvious. Remembering that “brands are sponges for content, for images, for fleeting feelings. They become psychological concepts held in the minds of the public, where they may stay forever” [68, p. 2].

7 Conceptualizing the Process of Emotional Design

From what has been presented in this research, we are proposing a conceptual framework for integrating positive emotions in consumer products on the basis of the basic model of product emotions (figure 6) and the classical process control for a system as shown in figure 11 aside. In this controlled process, we suggest that the setpoint will be integrating positive emotions in the product design, while the process will be represented by the process of consumer-product emotional interactions, including, consumer’s attributes, product’s emotional drivers and appraisal process. In addition, the desired output is considered to be the pleasurable and positive product and brand experiences, while the feedback is a sampling of the output (i.e. emotions evoked by consumers and reflected on product experience, and brand experiences), and finally, a comparator (i.e. the 25 set of positive emotions), which looks at the setpoint and feedback, and makes an adjustment when the two are not in agreement. However, before constructing our framework, we will identify and discuss the consumer’s attributes (concerns) and the product’s attributes (emotional drivers).

7.1 Consumer’s Concerns

Further to what has been discussed in section (5.2) about the concern parameter of the basic model of product emotions, the concerns of the consumers (users) generally are those point of references that represent the individuals’ interests, importance, priorities, values, goals, needs, wants, etc. Desmet, Hekkert, and Hillen have conducted an empirical investigation in the relationship between emotional responses to products and human values, and they found that these relationships represent different types of concerns [61]. Despite these findings imply that the data of the intended values of the users can be useful to predict emotional responses to new designs however, these relationships were not strongly enough to establish prominent predictive values [61]. However, as this research is mainly concerned about human emotions in products therefore, the discussion on human concerns will be limited to identify them as they represent the point of references mentioned above. We suggest four basic types of concerns; personal (i.e. the need, goals, wants, preferences, motivations, resources, etc.), cultural (value, basic assumptions, beliefs, habits, rituals, traditions, etc.), social (life styles, education, skills, experiences, etc.) and organizational or societal (attitudes, standards, regulations, etc.). These represent the fundamental concerns that any consumer would sets as the points of references whenever he/she appraises any stimulus during his/her waking moments.

7.2 Product’s Emotional Drivers

It is not surprising that reviewing the literature on emotional design did not reveal a general or universal list of the product’s emotional attributes (the emotional drivers) that designers embed when
designing a particular product to be perceived a universally pleasurable. That is because even products of
the same category (e.g. specialty products) are different in terms of the problems, wants, needs they were
developed, designed and created to solve and fulfill, as well as to the differences of the other aspects that
shape out the products, such the design concept, features and so forth. For example, the practical needs
behind the design of a special branded car are completely different from those behind the design of a special
branded hand watch although both could share similar emotional unmet needs such as the need for
belonginess or self-actualization. Although products in general share some similar emotional drivers (e.g.
aesthetics) however, some emotional drivers such as the technical performance cannot be applied in every
product (e.g. clothing, vase, portrait, etc.). Therefore, and according to what has been presented, we urge
that pleasure or positive emotions in a particular product should be considered and integrated distinctly
based on the context of that particular product. However, and according to the argument of Boatwright and
Cagan that any product elicits an emotional response must reach a consumer through one or more of the
five senses; see, feel, use, touch, and taste [27] and since we excluded convenience product as consumers
would not make extensive efforts when select to buy, we therefore suggest the following list of the four
basic emotional drivers; seeing-drivers, feeling-drivers, using-drivers and touching-drivers. Table 8 below
is a list of these suggested emotional drivers with explanations, examples, type of appraisals, and examples
of the positive emotion that should be integrated in consumer products.

Table 9 - Suggested emotional drivers, type of appraisals, and examples of positive emotions

<table>
<thead>
<tr>
<th>Suggested Drivers</th>
<th>Type of Appraisal</th>
<th>Example of Positive Emotions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Seeing-Drivers</strong></td>
<td>Pleasantness</td>
<td>Affection, Aspiration, Enjoyment</td>
</tr>
<tr>
<td>These drivers should be considered in the appearance of the product. Consumers respond emotionally according to the visual and imaginal interactions with the products. <strong>Examples:</strong> The external forms, geometry, shape, edges, materials, colors.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Feeling-Drivers</strong></td>
<td>Usefulness, Rightfulness, Pleasantness</td>
<td>Animation, Gratification, Interest, Optimism, Assurance</td>
</tr>
<tr>
<td>These drivers should be considered in the concept of the product. Consumers respond emotionally according to the feeling when a product solves their problems, fulfills their needs, meets their wants, and eventually contributes to their wellbeing. <strong>Examples:</strong> Functionalities, features, attributes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Using-Drivers</strong></td>
<td>Usefulness, Rightfulness, Pleasantness</td>
<td>Gratification, Interest, Optimism, Enjoyment, Assurance</td>
</tr>
<tr>
<td>These drivers should be considered in the mechanisms and semantics of the product. Consumers respond emotionally according to the physical interactions with of the product. <strong>Examples:</strong> Interface, signifiers, meanings, making sense, affordance, ease of use, cognitive models, safety, performance, quality, reliability, durability</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Touching-Drivers</strong></td>
<td>Usefulness, Pleasantness</td>
<td>Affection, Aspiration, Gratification, Interest, Optimism, Assurance</td>
</tr>
<tr>
<td>These drivers should be considered in the ergonomics and human factors embedded in the product. Consumers respond emotionally according to the physical interactions with of the product. <strong>Examples:</strong> Texture, grips, posture</td>
<td></td>
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</table>
7.3 The Framework

Figure 12 below is our suggested conceptual framework of the consumer-product emotional interaction in the design process of emotional products. The figure illustrates the process of evoking emotions when an interaction (visual, physical, or even imaginal) happens between a consumer and product. However, on the long-term interactions, evoked emotions over time develop one or more types of product experiences, which eventually shape out consumer’s experience with the brand. The shaped product and brand experiences eventually become new concerns in the perspective of the consumer and added emotional drivers in the perspective of product design as it is illustrated by the feedback arrows from each respectively. Moreover, the emotions evoked by the consumer suggested to be feedbacked to the repository of design to be mitigated when negative and integrated when positive along with the intended set of positive emotions that should be the setpoint of this process.
8 Conclusion

Psychologists and theorists on emotions argue that every decision we make in our life is emotionally driven, no matter if these decisions are about falling in love with someone or with an object (e.g. product). However, some consumers think or believe that their decisions in regards of selecting and buying products are purely objectively driven as they go through processes of informative investigations and technical comparisons to make their final decisions. In fact, most of the consumers nowadays support their decisions by reviewing other consumers’ opinions and experiences, or they ask those who are experts in the category of the product they plan to select and buy for the sake of acquiring more knowledge about the product. However, these objective techniques still in the space of emotions. For example, someone wants to buy a car but doesn’t know which make and made to go with, therefore he/she goes through a very long and sometimes a complicated and stressful process to choose a car among a wide variety of options within the available resources (budget). Assuming that this consumer finally decided to buy the car of a specific make and made by focusing on reliability as it is the main driver of eliciting the final decision. Still, choosing reliability as the driver to make the decision implies that the consumer’s wants, needs and/or goals underlie the intentions to own a car that is seldom to fail. In another word, to avoid the frequent maintenances, fixes and services, which means avoiding frequent waste of money, time, and efforts besides, frustrations, disappointment, which often lead to develop bad moods. This objective decision is in fact is a result of an emotional process as the consumer appraise the drivers relatively to his/her concern(s). However, emotions in a product can be infinite while designers often make exceptional efforts to incorporate all the possible emotional features in a product through the applications of the new design philosophies such as; designer-user corporation and user-centered design. Still, the product may not be considered a fully pleasurable as long as other attribute lack the emotional features that are mandatory into the play of the emotional design. Furthermore, what pleases consumer A in product X may not necessarily please consumer B and C, basically because consumers are different with respect to their concerns. Therefore, we doubt that there would be a universal pleasurable product unless it is designed to meet very specific segment of consumers such as those products that designed to meet very special needs and wants such as luxury and fancy cars.

There is no doubt that attractive things should be favored over ugly ones, and the answer to why attractive things work better is because they perceived to be easier to use. Further, people naturally choose pleasurable products since pleasure in products is perceive as the emotional, hedonic and practical benefits associated with products. From basic definition and the design approaches reviewed in the literature, one can understand that describing a product as “pleasurable” doesn’t mean that pleasure in product is only perceived or found in the external form (i.e. appearance), but also in every other factor that contributes in creating the general pleasure in a product (i.e. every practical benefit(s) associated with the product) such as; the functionality, ease of use and so forth. However, the problem lies in the difficulty of identifying a general list of the emotional drivers that could be integrated in any type of consumer product, simply because products are different in every aspect they are developed to comprise. Therefore, we suggest for future work to select a specific product from a specific market segment to investigate the emotional drivers in that product on the basis of the suggested four emotional drivers; seeing-drivers, feeling-drivers, using-drivers and touching-drivers using this conceptual framework (figure 12) to test the emotional responses and develop a list of the drivers based on the priority of pleasure, using for instance surveys and fuzzy cognitive maps FCM to elicit weight of the importance of each the deriver in the perspectives of different consumers.
References


