DIGITAL EMOTIONAL INTELLIGENCE

A CUSTOMER EXPERIENCE FRAMEWORK TO UNDERSTAND AND ANTICIPATE HUMAN EMOTION ACROSS PHYSICAL AND DIGITAL CHANNELS

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EVRYTHNG™

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EXECUTIVE SUMMARY

Humans are emotional beings. The latest neuroscience tells us that emotions underpin all consumer actions, even our most rational, logical decisions.[1] As our physical world inevitably becomes more digitalized and more connected, it's vital that companies don't lose sight of this. Yes, technology adds value with greater utility, efficiency and convenience, but in an increasingly de-materialized world, digital experiences that also connect on an emotional level and make us feel something in our physical selves are more meaningful.

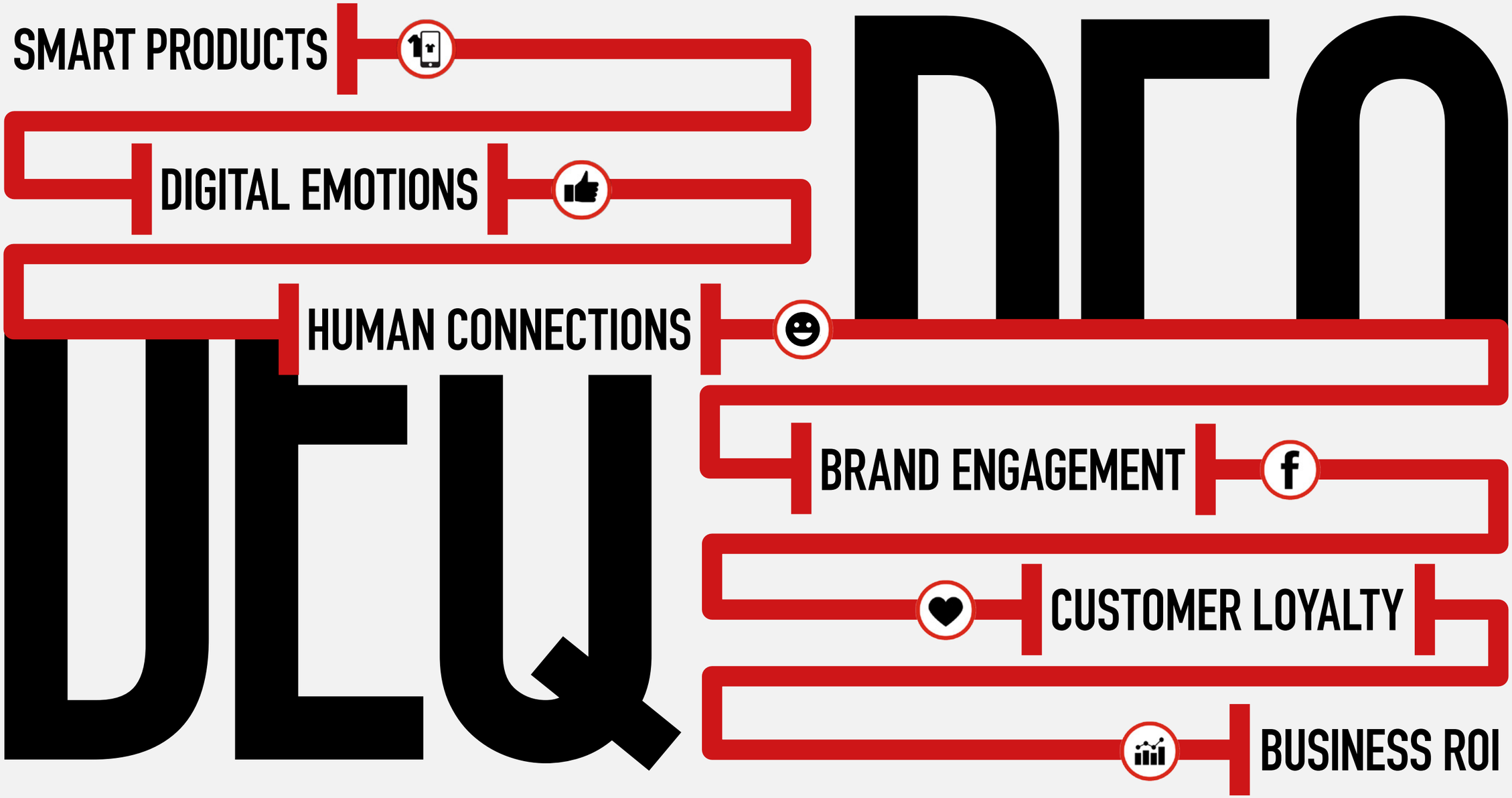
Digital isn't a "poor relation" of physical anymore. Smart technologies and "always on" mobile services combined with physical objects and spaces give our experience of the real world added colour, depth and community. Consumers are adapting to hybrid physical-digital living – the utility of mobile tools combined with personalized, socially-connected experiences – and brands need to catch up with these new human behaviors. In short: brands that use digital technology to connect more emotionally, personally and contextually will win.

This report introduces a thought-leadership framework to do exactly this, by understanding and anticipating how human emotion and behaviors change across physical and digital channels. We call this "Digital Emotional Intelligence" (DEQ). It combines academic insight based on scientific research with practical examples to outline opportunities and competitive advantages. Companies can use DEQ to harness the flood of contextual, real-time data from smart products, connected devices, digital interfaces and Internet of Things sensors, and segment and engage consumers more effectively to drive greater sales and loyalty.

BRANDS THAT USE DIGITAL TECHNOLOGY TO CONNECT MORE EMOTIONALLY, PERSONALLY AND CONTEXTUALLY WILL WIN.

1. Annual Review of Psychology

Executive Summary



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THIS REPORT WAS CONSTRUCTED FROM LEADING ACADEMIC PAPERS, INDUSTRY RESEARCH, AND ONE-ON-ONE INTERVIEWS WITH THOUGHT-LEADERS ACROSS THE UK AND USA.

METHODOLOGY AND CONTRIBUTION

Lead researcher was Dr. Philip Powell, a Research Fellow at the Institute for Economic Analysis of Decision-making (InstEAD), Department of Economics, University of Sheffield, and a Chartered Psychologist of the British Psychological Society. He specializes in emotion and its effects on people's decision-making, psychological functioning, and well-being.

Prior to being promoted to InstEAD Research Fellow, Philip was employed as a Research Associate on the Engineering and Physical Sciences Research Council (EPSRC)-funded project "Creating and Exploring Digital Empathy" (CEDE). The CEDE project brought together experts in data analysis, design, human computer interaction, behavioral economics, psychology, and mobile psychophysiology to explore and unlock the digital communication of empathy, one of the core elements omitted from digital personhood.

Key outputs from CEDE included new technological and design innovations to facilitate the expression of empathy digitally, and, using experimental and experiential sampling methods, a scientific understanding of the factors underpinning the digital expression of empathy and emotional states, and how they relate to people's economic decision-making. Philip's work has been published in leading academic journals, presented globally, and featured in international media.

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DEQ INTRODUCTION

1.0

INTRODUCTION

Time: the most scarce and valuable resource on the planet. Today's accelerating rate of innovation and flow of information mean that our lives flash before our eyes and we are left feeling that we never have enough time to do what we really want. Recognizing our desire to get more value and experience from our time, businesses strive to offer us more convenience and speed, but despite this, consumer needs are not being met. Loyalty is challenged (67% of US Millennials admit to having switched one of their favorite brands in the last 12 months),[2] trust in all forms of institution, brands included, is in crisis,[3] and consumer expectations are increasing four times faster than brands can satisfy them.[4] Significant investments in product innovation and customer experience to address this seem to consistently miss the mark. Why? Because the real expectation gap isn't functional; it's emotional.

Every consumer brand acknowledges the importance of understanding emotion. We know that emotions inform almost every human decision, even the most seemingly rational ones. They drive behavior, they underpin relationships, they lead to loyalty. As digital technology permeates every aspect of our personal and professional lives, it is inevitably changing the dynamic of our emotions, our motivations, and thus, our connection to brands, but we have yet to fully understand how.

Understanding how digital technologies and human emotions affect each other is therefore of potentially enormous value to product manufacturers, retailers, and brands. This is the relatively uncharted territory this report sets out to explore, and the value it seeks to quantify.

There are a number of key tech pieces to the "digital emotion" puzzle, but we must be careful not to lose our way in a maze of converging, connected technologies from robotics, artificial intelligence, and machine learning, to cloud computing, "big data", and the Internet of Things (IoT)—never mind 3D printing, biotech, or the blockchain. What we want to focus on is the technology that brings together many of these related elements, namely

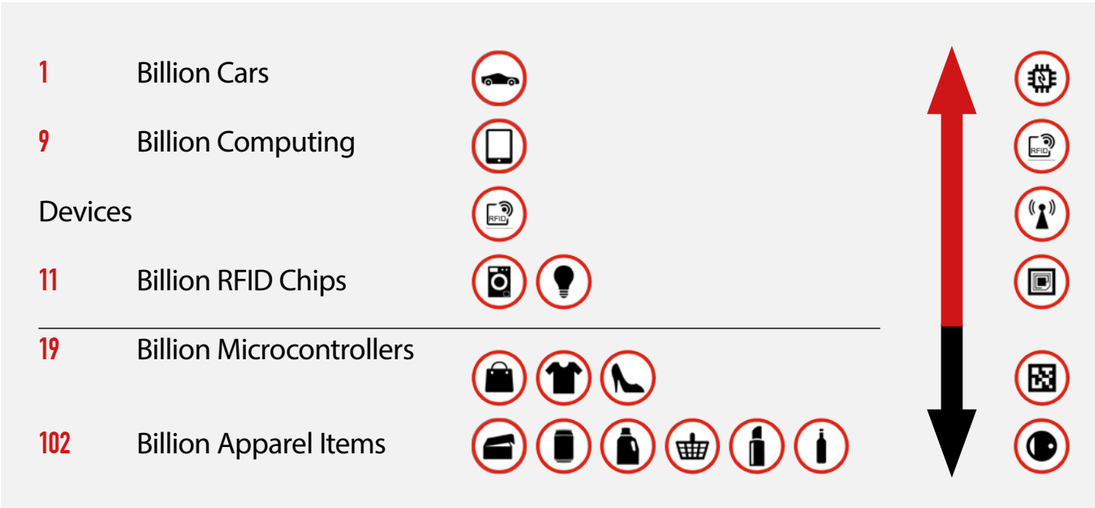
"TECHNOLOGY IS WOVEN INTO US AND WE ARE WIRED INTO THE FABRIC OF IT."

Professor Aladin Aladin
The Social Capital 2017

LOYALTY IS CHALLENGED, TRUST IS IN CRISIS AND THE EXPECTATION GAP IS WIDENING.

2. US Millennials Brand Loyalty; YouGuv & GT Nexus (2016)
3. Trust Barometer; Edelman (2017)
4. 19th Annual Customer Loyalty Engagement Index; Brand Keys (2015)

Fig. 1—Digital Enablement of Products & Packaging



Sources: Thin Film; DC; Gartner; World Bank; IMF; HIS; The Semiconductor Industry Association; OICA; IC Insights; Market Line; Apparel Market; Planet Forward; Companies & Markets (2017)

"THE PROMISE OF TECHNOLOGY HAS ALWAYS BEEN THAT IT WILL MAKE OUR LIVES LESS PAINFUL, BUT TO DATE WE HAVEN'T BEEN ABLE TO FOCUS OUR TECHNOLOGICAL EFFORTS ON THE BIGGEST SOURCE OF DISCONTENT: OUR EMOTIONAL LIVES."

Alain de Botton
Author and Founder of The School of Life

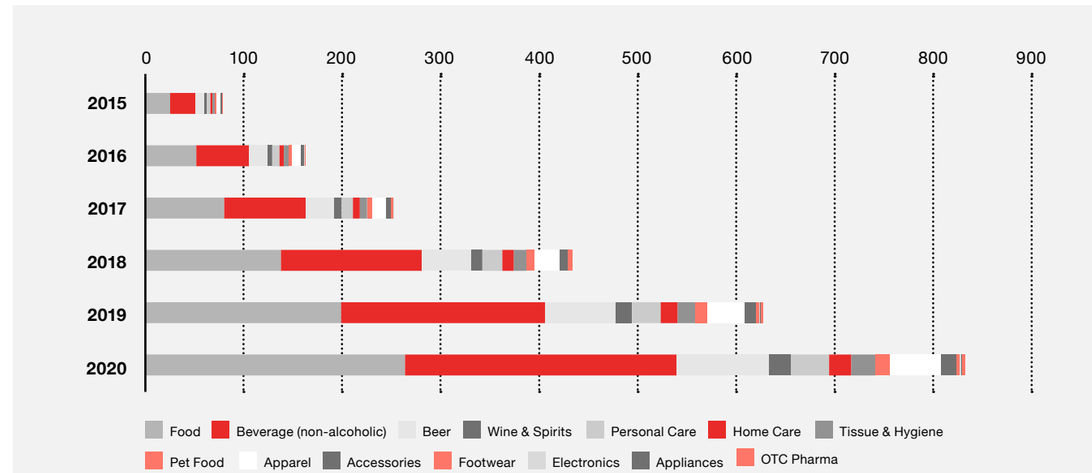
IoT "smart products", powered by intelligent cloud software, and the rate at which it is starting to weave itself into the fabric of our daily lives (Figs. 1, 2, & 3).

Following Avery Dennison and EVRYTHNG's partnership in #BornDigital™ clothing and footwear—representing the world's largest deployment of IoT products, giving more than 10 billion items a digital life—we wanted to decode the impact that highly intelligent, highly evolved products have on human emotions, and to show how IoT smart product technology affects brand engagement, sales, loyalty, and drives business ROI.

This report aims to identify and explain the emerging role of human emotions in a connected world, and to demonstrate how smart, digital technologies and products can augment them. How the data that flows from a connected physical and digital world can, with the users' opted-in permission and based on the information they are willing to share, add enormous value to their emotional as well as functional digital lives. What started out as a way to examine brand loyalty in the digital age ended up exploring a new form of brand intelligence, one that integrates technology with humanity, and offers new ways to meet emotion-led consumer expectations in an increasingly digital world.

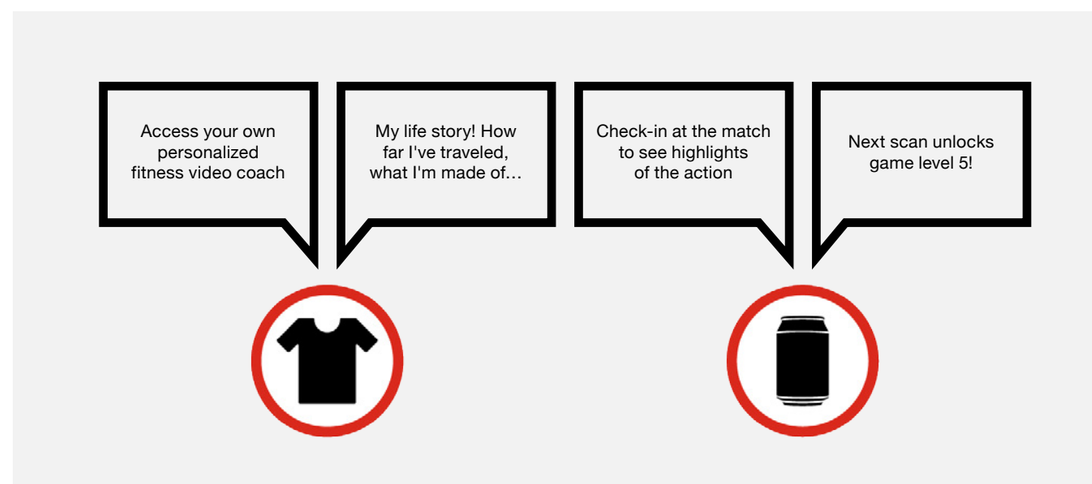
Fig. 2—Digitally Capable Products

800 billion+ digitally capable consumer products shipping p.a. by 2020



Source: Gartner; eMarketer; ComScore; EVRYTHNG data

Fig. 3—IoT Smart Products Use Cases



DEQ ENHANCING HUMAN ATTACHMENT: DIGITAL EMOTIONS

2.0

ENHANCING HUMAN ATTACHMENT: DIGITAL EMOTIONS

Emotions are complex. They are states of feeling that result in physical and psychological changes. Classically, there are six basic emotional states: anger, happiness, surprise, disgust, sadness, and fear (Ekman, 1992). Evolved to help us survive, they underpin our values and drive our behavior. In the physical world we grow up learning to perceive, understand, and express these emotions, from body language and facial expressions to our tone of voice and actions, and use this understanding to help us form connections and maintain relationships (Mayer, 2008).

The human condition hasn't changed, but the world it exists within has. The contexts in which humans interact with one another are increasingly augmented through technology, with new digital devices and applications that enhance, connect, and extend human emotions. Within these digitally mediated spaces, physical constantly influences digital, and vice versa. However, there are fundamental differences in the emotional composition of physical and digital spaces. It is not just the technology and tools we use that have changed, but also how we understand, perceive, manage, and communicate emotions digitally (Kramer et al., 2014).

2.1 Digital Emotions Are Different From Physical Emotions

Digital Emotions can be defined as human emotions that, while still experienced in the body, are primarily influenced, augmented, composed, or expressed through digital technology. This could be a direct digital interface we control, such as a smartphone or kiosk screen, or data collected from sensors embedded in objects or environments around us that is used to affect our experience in that moment. Whereas physical emotions are expressed and experienced simultaneously through individual voice and body language, Digital Emotions are triggered by, and bound up in, contextual content, experiences, and services that can be stored, edited, and analytically interrogated at vast scale. Consequently, Digital Emotions surely have the potential to open a new window into our understanding of the human experience in a "connected world".

"THE FUTURE IS BEING IN THE SPACE IN BETWEEN, PUTTING THE DIGITAL WORLD OUT INTO THE PHYSICAL WORLD WHERE IT AUGMENTS OUR EXPERIENCE OF THE WORLD."

Beau Lotto
Professor of Neuroscience
& Perception, UCL

DIGITAL EMOTIONS CAN BE DEFINED AS HUMAN EMOTIONS THAT, WHILE STILL EXPERIENCED IN THE BODY, ARE PRIMARILY INFLUENCED, AUGMENTED, COMPOSED, OR EXPRESSED THROUGH DIGITAL TECHNOLOGY.

IT HAS BEEN ACKNOWLEDGED THAT DIGITAL EMOTIONS ARE MORE CONTAGIOUS THAN PHYSICAL EMOTIONS.

2.2 Digital Emotions Use Different Indicators & Tools

We have already adapted to these new media and are naturally developing systems and languages to indicate and communicate Digital Emotion ("Social Information Processing Theory," Walter, 1992; Derks et al., 2008). By some calculations, Emojis, our modern hieroglyphics, are the fastest-growing language in history, with 92% of the online population using them.[5] However reductive you may feel they are as a form of communication, their existence demonstrates that people need new ways to express their emotions online. By learning to recognize and interpret the new and constantly evolving digital communication tools behind Digital Emotion (Figs. 4 & 5), and how our online behaviors reflect our emotional state (and the other way around), we will be able to shine a spotlight on what influences our decisions and why.

Fig. 4—Physical vs. Digital Emotion Indicators & Tools

Digital	Physical
Likes/Shares/Ratings	Eye Contact
Emoticons/Emojis	Smile
Emoticons/Emojis	Facial Expression
Device (cell phone, TV, laptop)/Media Platform & Channel (website, social, app)/Comments	Body Language
Views/Haptic Vibrations	Touch
CAPS/Stickers/Abbreviations	Tone of Voice
Language/Images Used	Language Used
Silence/No Reply	Silence
Questions	Questions
Journey (geolocation, websites, social media, apps visited/Device (cell phone, TV, laptop)/Time (hour, day, week, month, season, year)	Journey (where/how/when)
Pattern Disruption (unusual behaviour)	Pattern Disruption (unusual behaviour)

2.3 Digital Emotions Are More Contagious

It has been acknowledged that Digital Emotions are more contagious than physical emotions (Hancock et al., 2008; Kramer et al., 2014), owing to the speed of dialogue and the virality of digital communications. Online communities are bigger and broader, so messages travel farther and faster across generations, time, space, and culture than they do in the purely physical world. Updating your Facebook status, and liking or posting an Instagram photo, can elicit an emotional response in networks of people thousands of miles away.

5. The Emoji Report; Emoji (2015)

Fig. 5—Digital Emotion Communication Tools

1. 
Emoticons and Emojis, image-based representations of facial expressions.

2. 
Symbolic digital actions, such as digital gestures (poking, nudging by clicking, etc.), which mimic intimate interpersonal/emotional actions face-to-face.

3. 
Affective labels/evaluations (liking, loving, etc., on sites such as Facebook and Instagram).

4. 
Textual cues and communication, such as the use of punctuation and stylistic features, as well as things like delay in responding and number of words used (Fox et al., 2007).

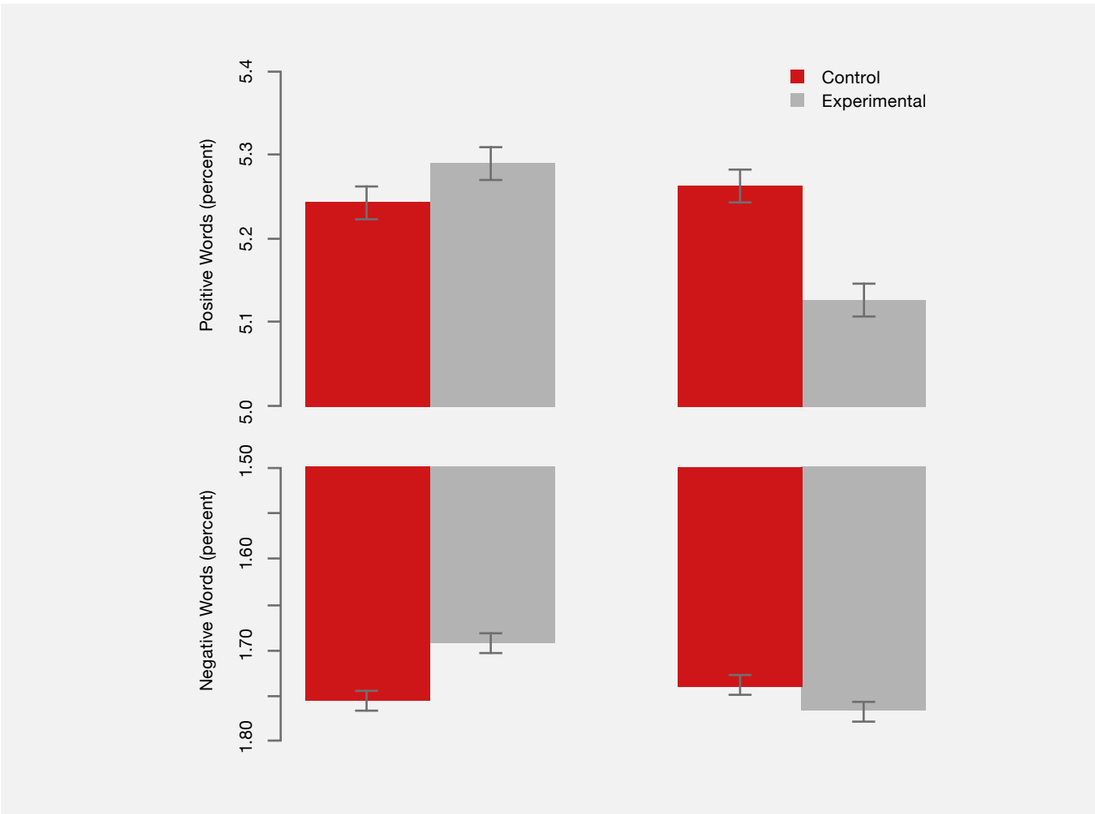
5. 
Explicit language refers to simply stating how you are feeling. We don't do this very much in day-to-day communication, but we seem to do it more digitally to compensate for a lack of nonverbal cues such as body language, to clarify emotional meaning, and to strengthen sentiment.

6. 
Voice and video tools to convey emotions, much as we interact face-to-face. Note that, although body language and full posture are more important than just facial responses for decoding emotions—especially their intensity (Aviezer et al., 2012)—voice and video combined with the other digital tools can provide an equivalent indicator; it's just that we're not as good at reading them as we are cues in the physical world.

7. 
Biofeedback devices, a modern digital tool (sending someone your heartbeat via Apple Watch), and haptic devices (virtual hugs; Pradana et al., 2015), to imitate and augment emotional communication.

Facebook infamously manipulated the flow of positive and negative posts appearing in the newsfeeds of 689,003 users to research the effects of "massive-scale emotional contagion" online[6] (see Fig. 6). They found that the emotions expressed by our friends digitally affect how likely we are to feel the same way. Reducing positive posts in feeds led to fewer positive posts and more negative posts being produced; reducing negative expressions had the opposite effect.

Fig. 6—Massive-Scale Emotional Contagion Through Social Networks



In other words, our moods and behaviors spread through social networks, as do our tastes in fashion or food. Harvard researchers, such as Nicholas A. Christakis, analyzing the flow of communications on social networks like Facebook and Twitter reported that we copy everything from depression, joy, and altruism, to alcohol consumption, obesity, or quitting smoking.

6. Emotional Contagion; Kramer, Guillory, & Hancock (2014)

Contagions are multiplied even further when specific consumer types are targeted. Following a study that identified two types of shopper—"Utilitarian Shoppers", who are more convenience and transaction-led, and "Hedonic Shoppers", who like to shop for fun, enjoyment, stimulation, and affective gratification (see Fig. 7). Research by Jones et al. (2006) showed that a hedonic shopping experience, particularly if the retail experience is digitally enhanced, is a strong predictor of positive word-of-mouth and positive anticipation of a future shopping experience with the same retailer.

Fig. 7—Hedonic vs. Utilitarian Shopper Characteristics

Utilitarian Shoppers	Hedonic Shoppers
Practically oriented	Emotionally oriented
Demand convenience and speed	Demand the personal touch
Shop with their head	Shop with their heart
Work to a strict shopping list	Prone to more impulsive purchases
More likely to be value and financially oriented	More likely to be experientially oriented

2.4 Digital Emotions Enhance Human Emotions

It's fascinating to explore the parallels between physical and digital, but the real game-changer comes from an emerging academic school of thought identifying how Digital Emotions have the potential to not just mirror, but enhance human emotional experiences and communication. Hyperpersonal theory (Walther, 1996) describes increased intimacy in digital exchanges, allowing a more favorable interaction than in a purely physical realm (Bargh, McKenna, & Fitzsimons, 2002). For example, most people are more confident expressing feelings online that they may be uncomfortable saying in person, because they feel a helpful abstraction from reality in virtual environments (for the same reason, we spend more money using a credit card than we do with a wallet full of cash we can touch and see).

3

D—E—Q
DIGITAL EMOTIONAL INTELLIGENCE

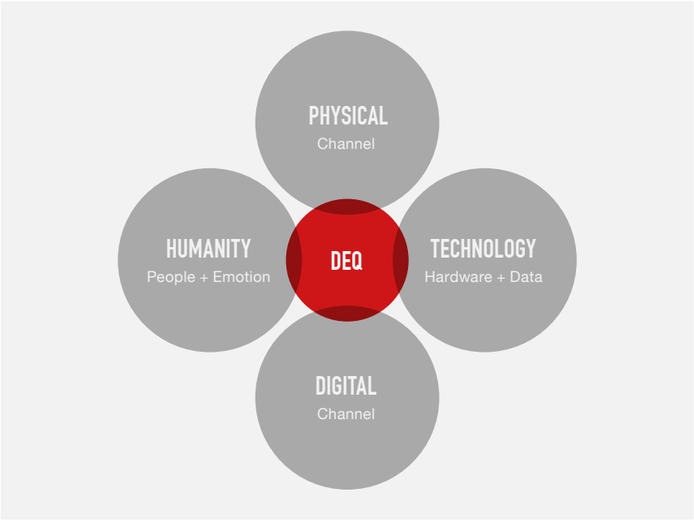
3.0

DIGITAL EMOTIONAL INTELLIGENCE

Digital Emotional Intelligence (DEQ) is a framework for applying real-time data from smart, connected devices, products, and environments to build deeper, more emotionally intelligent connections with customers (Fig. 8). It combines our understanding of psychology with technology to guide brand interactions that bridge physical and digital channels to be more personal, more intimate, and more experiential.

DIGITAL EMOTIONAL INTELLIGENCE (DEQ) IS A FRAMEWORK FOR APPLYING REAL-TIME DATA FROM SMART, CONNECTED DEVICES, PRODUCTS, AND ENVIRONMENTS TO BUILD DEEPER, MORE EMOTIONALLY INTELLIGENT CONNECTIONS WITH CUSTOMERS.

Fig. 8—Connected Elements of DEQ



Building on the existing definition of Emotional Intelligence (EQ), Digital Emotional Intelligence (DEQ) can be defined as the ability to digitally sense emotional response—our own or other people's—and to use this affective information to guide thinking, behavior, and decisions (Fig. 9). "DEQ gives brands the ability to understand the interpersonal dynamics in the connected space by using data intelligence to create empathy" (Powell, 2017).

Fig. 9—DEQ Competencies

Perceive	Identifying touchpoints and using listening tools to generate and access data
Understand	Understanding what the data indicates
Use	Evaluating data and knowing how to turn it into insight
Manage	Knowing how data can drive physical and digital consumer behavior
Connect	Applying it to one-to-one, ongoing consumer–brand relationships

3.1 Opportunities

There are three main ways brands can apply the DEQ model: Accuracy, Anticipation, and Application.

3.1.1 Accuracy

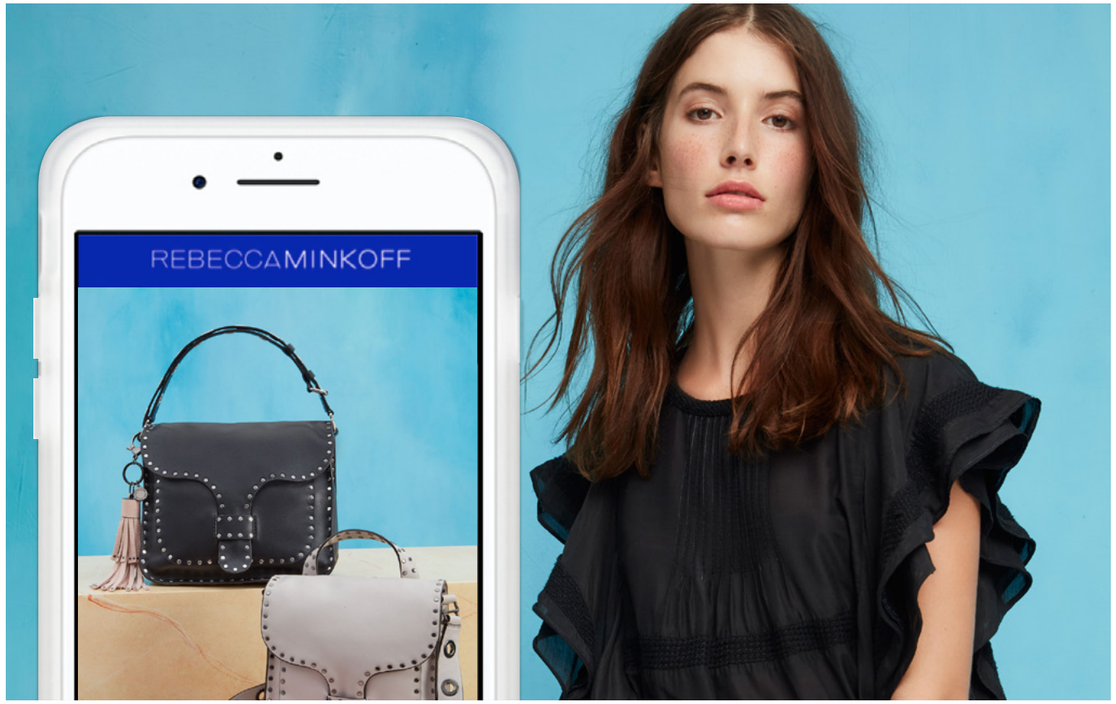
Humans are hardwired to survive. We use biological and psychological triggers to guide us through our day-to-day lives, but these human instincts and senses are challenged in the digital world. Firstly, body language may play an instrumental role in our daily lives, but this is diminished via digital channels. The physical limitations mean we're unable to pick up on these nonverbal cues that make up 55% of emotional communication.[7] Secondly, we've previously relied on our memories and past experiences to guide our decisions,[8] but owing to rapid shifts in "real-time" culture and technology remembering for us this is becoming less necessary. Studies in neuroscience show that our brains are "cognitively restructuring" from memory-based learning to multi-tasking in response to the rising number of devices, apps, and conversations we are engaging in simultaneously.[9]

Such disparities signal a need to develop strategies that focus on overcoming consumer biases (Fig. 10), particularly if they are holding people back from making a purchase or repurchase. In the digitally connected space, cloud-powered sensors can augment existing human senses, like our ability to detect someone's emotion from their tone of voice. Brands can start to digitally sense and process human emotion by instrumenting physical products, environments, and social relationships. For instance, an artificial-intelligence program developed by MIT CSAIL uses voice data captured by a wearable device to detect the emotional content and tone of conversations and analyze how people you're talking to are feeling.[10]

"DEQ GIVES BRANDS THE ABILITY TO UNDERSTAND THE INTERPERSONAL DYNAMICS IN THE CONNECTED SPACE BY USING DATA INTELLIGENCE TO CREATE EMPATHY."

Dr. Philip Powell
2017

7. A. Mehrabian. Silent Messages. Belmont, CA: Wadsworth (1971)
8. E. Weber. Constructing Preferences from Memory. New York: Cambridge University Press (2006)
9. Bahador Bahrami. Cognitive Restructuring. DH READY; UCL (2015)
10. Wired (2017)



Smart and digital products can augment and expand our senses by giving us a whole new range of fine-grained data inputs on what is being experienced in specific moments, via sensors and tags on products, in devices and environments, and through capturing mobile interactions by consumers. Analyzing this data in real-time and combining it with machine learning can expose and predict physical emotional response, far beyond assessing purely digital behaviors. It can reveal, as Wired magazine put it, "how we can be persuaded, moved and motivated to acquire goods and services in line with our true needs."[11]

Simply enabling content experiences to be far more targeted and relevant, and communication more personal and perfectly timed, can be a powerful tool to get emotionally closer to customers. Consider this observation by Eric Korman, CEO and Founder of the online fragrance retailer PHLUR: "We believe a lot of what's behind the macro trend of 'personalization' is simply the desire for human connection, to be able to see that actual thoughtful caring human beings are involved. In a world of mass retail, we have to work hard to make that element shine through, enabling that incredibly important human connection on a one-to-many basis."[12]

IN THE DIGITALLY CONNECTED SPACE, CLOUD-POWERED SENSORS CAN AUGMENT EXISTING HUMAN SENSES, LIKE OUR ABILITY TO DETECT SOMEONE'S EMOTION FROM THEIR TONE OF VOICE.

11. Wired (2015)
12. The Beauty Debrief; PSFK (2017)

DIGITAL EMOTIONAL INTELLIGENCE CAN HELP BRANDS TO DESIGN MORE EFFECTIVE PHYSICAL-DIGITAL CONSUMER JOURNEYS, AND MORE EFFECTIVELY GUIDE AND INFLUENCE THE CHOICES THEY MAKE.

DEQ can help brands to design more effective physical-digital consumer journeys, and more effectively guide and influence the choices they make. It has the potential to play a critical role in understanding the differences between how emotions are experienced and communicated in a digital context. The technologies associated with DEQ, such as mobile devices, the Internet of Things, and cloud computing, allow us to track, generate, and analyze more contextual data on specific experiences than ever before, by using unobtrusive information-gathering techniques (Lee et al., 2012). Thus, DEQ can pinpoint "moments of emotional truth" (disproportionately influential encounters based on affective insights) that profile customers more accurately for future personalized marketing.

As an example, think of how Facebook Timeline movies remind us of our defining friendship moments. Consumers could be incentivized to scan a unique code on their new Rebecca Minkoff handbag and digitally attach selfies of great experiences they have with it. The more frequently consumers interact with the garment, the richer and more personalized this experiential archive becomes. Beyond the enhanced social media reach the sharing generates, these digital memories of positive product experiences could be replayed to the consumer the next time they shop. Reminding people of the amazing time they had with their previous purchases will overcome human biases mentioned earlier and encourage customers to buy more.

DEQ CAN PINPOINT "MOMENTS OF EMOTIONAL TRUTH" THAT PROFILE CUSTOMERS MORE ACCURATELY FOR FUTURE PERSONALIZED MARKETING.

Fig. 10—Biases Affecting Digital Communications

Digital textual communication where people more often misinterpret the emotional tone of a neutral message as being more negative.	"Negativity bias" (Kramer et al., 2014)
Emotion expressed online via social networks is more positively skewed than it is face-to-face, presenting an "idealized" view of how people are actually feeling.	"Positivity bias" (Kramer et al., 2014)
Evaluation of our future states is affected by our current emotional state.	"Projection Bias" (Wilson & Gilbert, 2003)
Overestimating the intensity and duration of future emotional responses.	"Impact Bias" (Wilson & Gilbert, 2003)
A person who expects a positive experience and receives a negative one will rate it even worse than a person with no expectations.	"Expectation Bias" (Geers, 1999)

"IF A BRAND CAN UNDERSTAND THE FLUID INTERPLAY BETWEEN CONSUMER "TRAITS" AND "STATES," IT CAN PREDICT FUTURE BEHAVIOR AND OUTCOMES MORE ACCURATELY."

Wells et al.
2011

"THE CHALLENGE IS THAT THE HUMAN CONDITION IS NOT STATIC, IT IS MULTIDIMENSIONAL."

Crispian Dawes
CEO and Founder of
The Human Connective, Imfree

3.1.2 Anticipation

CRM plays a critical role in identifying and aligning marketing actions with customer purchasing and engagement histories. With 67% of CRM led by data to segment and target customers,[13] it's important that the data brands use tells the full story and there are no blind spots. Anticipated emotion—one of the key drivers of consumption (Bagozzi et al., 2016; Rezvani & Jansson, 2016), brand attachment, and consumer loyalty (Proksch et al., 2015; Taylor et al., 2016)—is one such blind spot.

Traditionally, segmentation for relationship marketing (as opposed to digital advertising) largely relies on "categorical" groupings of stable characteristics, such as shopping and engagement behavioral patterns. However, this data becomes diluted because customer expectations change as their lives evolve. Communications strategies and messages become less relevant and therefore lack the ability to form meaningful emotional attachment. The flaw is in the data and segmentation models predominantly based on static, historical consumer traits. Compare this to how modern gaming companies are masters at using real-time analytics to optimize gameplay and revenue: for example, Zynga A/B tested Cityville's "Add Coins & Cash" button and improved the way it worked within minutes.

If a brand can understand the fluid interplay between consumer "traits" and "states", it can predict future behavior and outcomes more accurately (Wells et al. 2011). Brands must connect "categorical" and "continuous" data to accurately appraise the consumer's state of mind in that moment, anticipate expectations before they've been set, and respond in real-time. In short, combining emotional personality profiles accumulated over time with dynamic decision-making and content delivery is the digital way to create brand empathy.

To illustrate, there have been decades of research into the effect that music choice has on mood: music can, for example, "be used to activate associations, memories, experiences, moods, and emotions" (The Psychological Functions of Music Listening, Schäfer et al., 2013). Perhaps individual products could come with their own soundtracks, and a brand could allow consumers to unlock curated musical playlists attached to different products by scanning them at point of sale and post-purchase. Analyzing real-time streaming playlist preferences—which songs they listen to, save, or skip—would reveal information about how a person feels in the moment and allow retailers to test which emotionally tuned product content or incentives created greater engagement, sales, loyalty, and advocacy.

13. Yesmail Interactive; Gleanster (2013)

3.1.3 Application

The more ways there are for humans to connect, the more emotions can be conveyed. As our physical objects and spaces become digitally connected, and turn into media channels and interactive interfaces, this increases the possibilities for emotional communication. Two large academic studies support this theory. The first shows that the more dimensions used for content delivery, the greater the emotional reactions (Ambadar et al., 2005). The second shows the importance of information in multiple contexts helping us to understand the emotions of others (Barrett & Kensinger, 2010).

A recent Harvard Business Review study of 46,000 shoppers also showed that the more channels customers use, the more valuable they become. Compared to customers using a single channel, shoppers using four or more channels spent nearly 10% more in-store.[14] Not only that, but six months later, these omnichannel customers had recorded 23% more repeat visits compared with single-channel shoppers, and there was a greater likelihood that they would recommend the brand to family and friends.

So the more contexts the brand engages a consumer in, the more opportunities it also has to map out how behaviors are connected and influenced throughout the decision-making journey, and to convert specific points of emotional connection into greater sales and loyalty (Fig. 11). This is the power of multi-channel marketing, and where DEQ can be best applied.

THE MORE WAYS THERE ARE FOR HUMANS TO CONNECT, THE MORE EMOTIONS CAN BE CONVEYED.

14. Omnichannel Retailing Works; Harvard Business Review (2017)

"THE KEY IS TO THINK IN ALL CHANNELS HOLISTICALLY AS CONSUMERS DO. THE SHOPPING EXPERIENCE BEGINS BEFORE A CUSTOMER ENTERS THE STORE AND CONTINUES AFTER THE CUSTOMER LEAVES. RETAILERS MUST FIND WAYS OF TAKING ADVANTAGE OF ALL THE TOUCHPOINTS ON THE CONSUMER'S CONNECTED JOURNEY. THIS IS THE BIG CHALLENGE NOW. DEQ CAN LEVERAGE THE POWER OF SMART PRODUCTS AT POINT OF PURCHASE AND EXTEND IT INTO POST-PURCHASE TOO."

Dr. Philip Powell
2017

Additionally, by addressing the unfilled needs of the Hedonic Shopper (shoppers focused on experience, not simply utility), brands can significantly increase loyalty and purchase intent (Anderson et al., 2014). Research shows that enhancing an offline channel with a layer of digital experience (e.g. smart products triggering smartphone-based content and services, or interactive displays in-store) makes consumers anticipate future shopping experiences at the same retailer more positively. Enjoying the experience of shopping rather than just the convenience makes them more likely to come back. This experience is a combination of functional, technological, sensory and emotional responses. Fashion is a naturally more "experiential product" than other more functional goods (Dhar & Wertenbroch, 2000), so apparel brands have a bigger opportunity to create more valuable, superior customer experiences based on a more nuanced understanding of digital emotion in the online and offline shopping journey.

Connecting the digital and physical can enhance multi-sensory retail marketing. Hedonic Shoppers already respond positively to sensory experiences, whether it's the smell of coffee in Starbucks, aroma diffusers in MUJI or freshly cut wood in Lowe's for DIY inspiration. In a study, NIKE found that scent marketing in stores increased intent to purchase by 80%[15]. Therefore, by blending existing experiential retail with "digital senses" brands can create a powerful multi-sensory emotional response.

But a successful omnichannel strategy involves more than simply having a presence in different physical and digital spaces; it's the coordinated interplay between the two. To illustrate, the lack of experiential information and physical interaction with the product is one of the main barriers to buying fashion online (Blazquez, 2014). This is where smart products can play a critical linking role. As paths to purchase become more connected and sophisticated, the one constant controlled by the brand in an evolving and fluid media system is the product. A smarter product can adapt its role, narrative, and service to the context of use and provide a coherent, individualized brand experience at key stages in the shopping journey, from browsing to buying and owning.

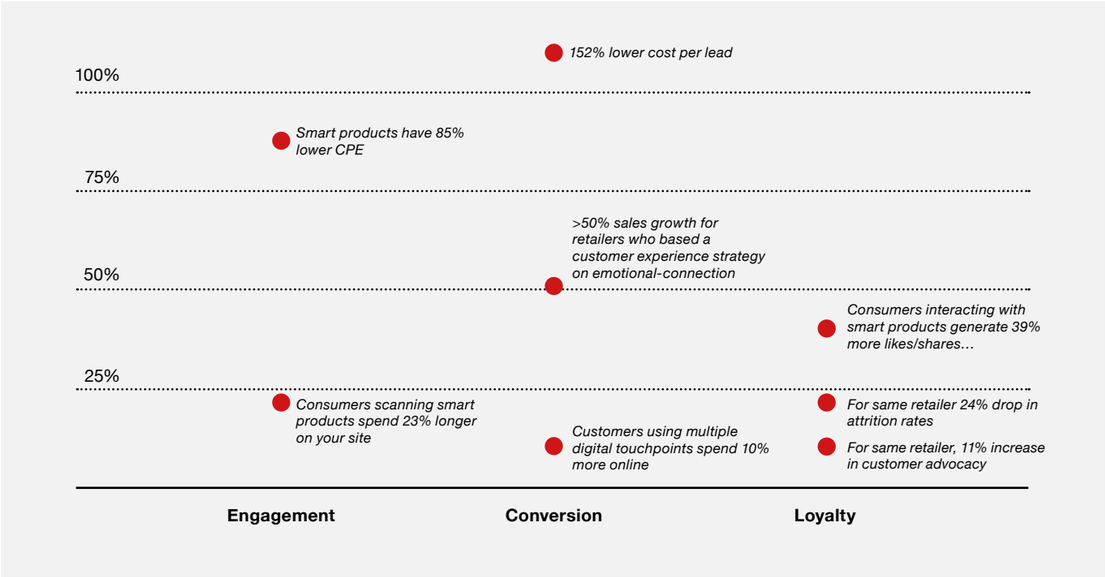
As the product's "cloud half" records a history of interaction (such as user registration information, personalization preferences, purchase receipts and warranties, locations, times, and frequency of product engagement) and uses this to deliver a more intelligent and relevant service experience, customers will begin to gain confidence and trust in the product that go beyond its core function. Research shows that this increased digital interaction leads to an increased strength of brand relationship (Hudson et al., 2014), and the product itself becomes more empowering and rewarding for customers.

"PERFORMANCE ON END-TO-END CONSUMER JOURNEYS IS 30–40 PERCENT MORE STRONGLY CORRELATED WITH CUSTOMER SATISFACTION THAN PERFORMANCE ON AN INDIVIDUAL TOUCH POINT IS."

Harvard Business Review
The Truth about Customer Experience

15. The smell of commerce: How companies use scents to sell their products; The Independent (2011)

Fig 11—ROI Model Data Points



Source: Harvard Business Review; EVRYTHNG

"MOBILE, DATA, SENSORS AND LOCATION-BASED TECHNOLOGY COMBINED WITH SOCIAL MEDIA FORM A NEW GENERATION OF PERSONALIZED TECHNOLOGY THAT KNOWS US BETTER THAN OUR CLOSEST FRIENDS."

Robert Scoble,
Shel Israel, "The Age of Context"

3.2 Competitive Advantages

There are four important areas of competitive advantage for brands:

3.2.1 Brands will know you better than you know yourself

Brands with high DEQ will have the ability to know a consumer better than they know themselves. The more someone digitally engages in the connected physical world through devices and smart products, and the more varied the contexts of interaction, the more data will be generated and collected. This enables the brand to forecast consumer expectations by applying predictive algorithms to real-time and historical data. Responding with appropriately personalized content and messaging "in the moment" can elevate the product experience and enhance the consumer's perception that the brand "cares" for them by tapping into primal bonding and care-giving emotions (compassion and affinity). This kind of "brand love" is experienced more like a personal friendship than a commercial relationship (Langer et al, 2015). Fashion brands, perhaps, have a natural opportunity to redefine the meaning of "care" labels by making them smarter and more "caring" with the delivery of contextual content and personalized digital services.

3.2.2 Brands become trusted personal advisors

We know that consumers form a greater emotional bond with personalized products than with non-personalized ones (Mugge et al., 2009), but smart products can take personalization even further. They can combine data from the in-store "consideration" phase of the shopper journey, with transactional data at point-of-sale, combined with post-purchase data about how the product is actually used, and eventually (one hopes) responsibly disposed of. This kind of behavioral evidence provides a rare window into the real-world rather than digital-only behaviors of customers and the relationship they have with the products in their lives. Over time, the gathering of this digital product and other connected data allows companies to communicate in an intimate and individualized way, and use DEQ to humanize their brand. This leads to greater attachment with customers who don't just trust the brand, but actively seek out its recommendations.

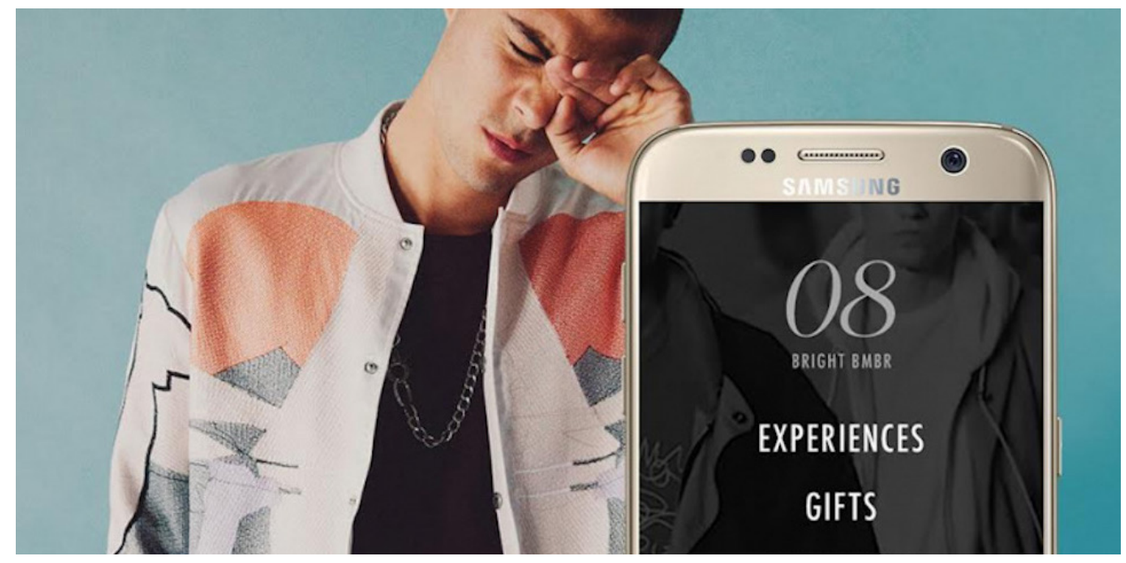
3.2.3 Brands can use products to personalize at scale

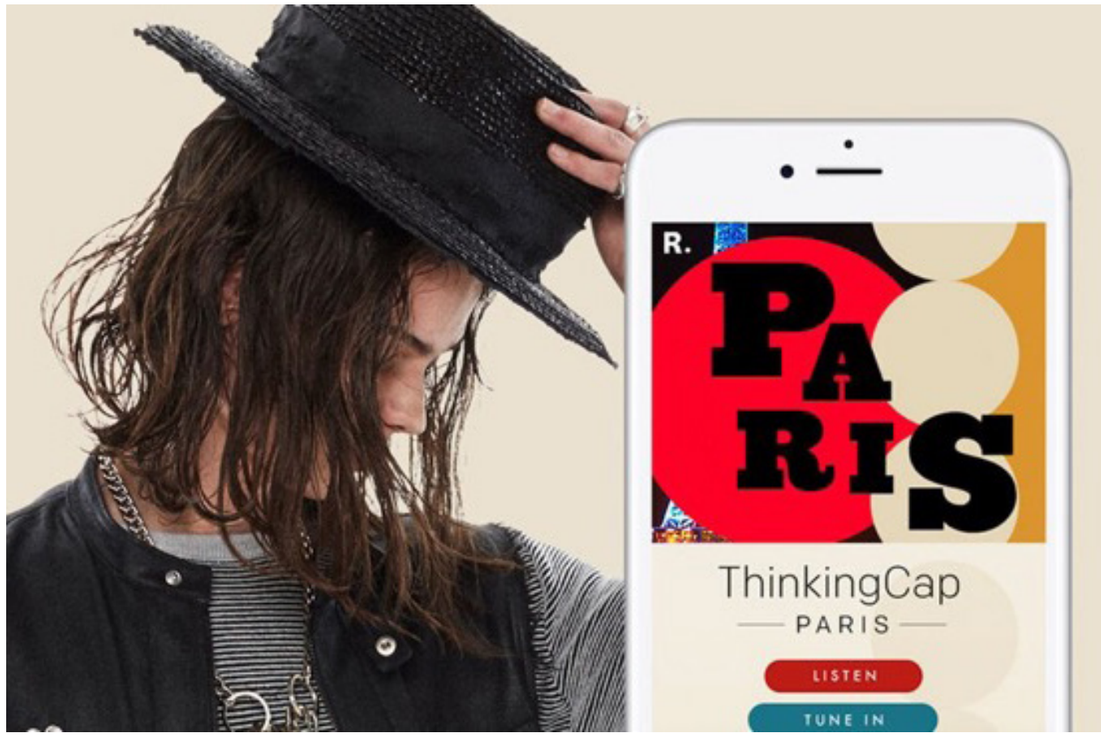
Mass personalization of everything from communications and digital services to physical products means treating the planet as ten billion segments of one for direct, ongoing digital relationships. Consumers are embracing the ability to make things their own, from sneakers to headphones, jewelry to kitchen knives, and according to one research report, 66% of millennials are more likely to visit a store if it offers an interactive experience to select or customize a product.[16]

"MARKETING ON THE WEB IS GOING TO BE A LOT MORE HUMANE THAN MARKETING IN TRADITIONAL MASS MEDIA BECAUSE IT'S POSSIBLE TO TREAT PEOPLE INDIVIDUALLY."

Tim Berners-Lee,
Inventor of the World Wide Web

16. Luxe Pack New York; J Walter Thompson Intelligence (2016)





WITH CONSUMER DEMAND FOR CUSTOMIZED PRODUCTS AND EXPERIENCES ON THE RISE, PERSONALIZED ENGAGEMENT IS A KEY WAY TO DIFFERENTIATE BRANDS IN A COMPETITIVE MARKET.

With consumer demand for customized products and experiences on the rise, personalized engagement is a key way to differentiate brands in a competitive market. DEQ can help to power this new personalization imperative with data collected from smart product interactions, plus connected devices and environments. The data is activated and automated using rules-based software and machine learning in the cloud to trigger emotions that drive behavior and influence future purchases. Therefore, the greater the personalization, the greater the emotional connection.

3.2.4 Brands achieve a Return on Emotional Investment

Research across hundreds of brands in multiple sectors has shown that fulfilling deep-rooted (often undeclared) emotional needs is a key driver of customer engagement, conversion, and loyalty (see Fig. 12). Harvard Business Review cited a retailer that implemented a customer experience strategy based on emotional connection and saw a 23.8% drop in attrition rates, a 10.8% increase in customer advocacy, a 15% increase in the volume of active customers, and same-store sales growth of more than 50%.[17]

17. Emotional Connection Matters More than Customer Satisfaction; Harvard Business Review (2016)

In terms of Digital Emotion, we know that better personalization is fundamental to emotional brand connection. Personalized content, services, and experiences are necessary for more meaningful consumer attention (Malheiros, 2012), more effective brand recognition/recall (Koster et al., 2015), and a stronger impact on consumer behaviors, leading to higher engagement rates and producing higher sales (Bragge et al., 2013).

Furthermore, smart personalization engines used to recognize customer intent, say Gartner analysts, will enable digital businesses to increase their profits by up to 15% by 2020. Suffice to say, the data from smart products and hyperconnected people and places that powers greater digital personalization leads to a more profound emotional connection, which contributes directly to commercial performance.[18]

18. Gartner Symposiums (2016)
19. The New Science of Customer Emotions; Harvard Business Review (2015)

Fig. 12—Emotional Motivators That Drive Customer Value[19]

I am Inspired by a desire to:	Brands can leverage this motivator by helping customers:
Stand out from the crowd	Project a unique social identity; be seen as special
Have confidence in the future	Perceive the future as better than the past; have a positive mental picture of what's to come
Enjoy a sense of well-being	Feel that life measures up to expectations and that balance has been achieved; seek a stress-free state without conflicts or threats
Feel a sense of freedom	Act independently, without obligations or restrictions
Feel a sense of thrill	Experience visceral, overwhelming pleasure and excitement; participate in exciting, fun events
Feel a sense of belonging	Have an affiliation with people they relate to or aspire to be like; feel part of a group
Protect the environment	Sustain the belief that the environment is sacred; take action to improve their surroundings
Be the person I want to be	Fulfil a desire for ongoing self-improvement; live up to their ideal self-image
Feel secure	Believe that what they have today will be there tomorrow; pursue goals and dreams without worry
Succeed in life	Feel that they lead meaningful lives; find worth that goes beyond financial or socioeconomic measures

D—E—Q MODELING

4.0

THE MODEL TRIANGULATES INPUTS FROM PEOPLE, PLACE AND PRODUCT TO IDENTIFY ACTIONABLE DIGITAL "MOMENTS OF EMOTIONAL TRUTH".

MODELING

We have visualized a simple framework to help brands evolve their marketing strategies by understanding and applying DEQ (Figs. 13, 14, & 15). The model triangulates inputs from connected personal data (People), environmental data (Place), and physical object engagement data (Product) to identify actionable digital "Moments of Emotional Truth".

Fig. 13—DEQ Model

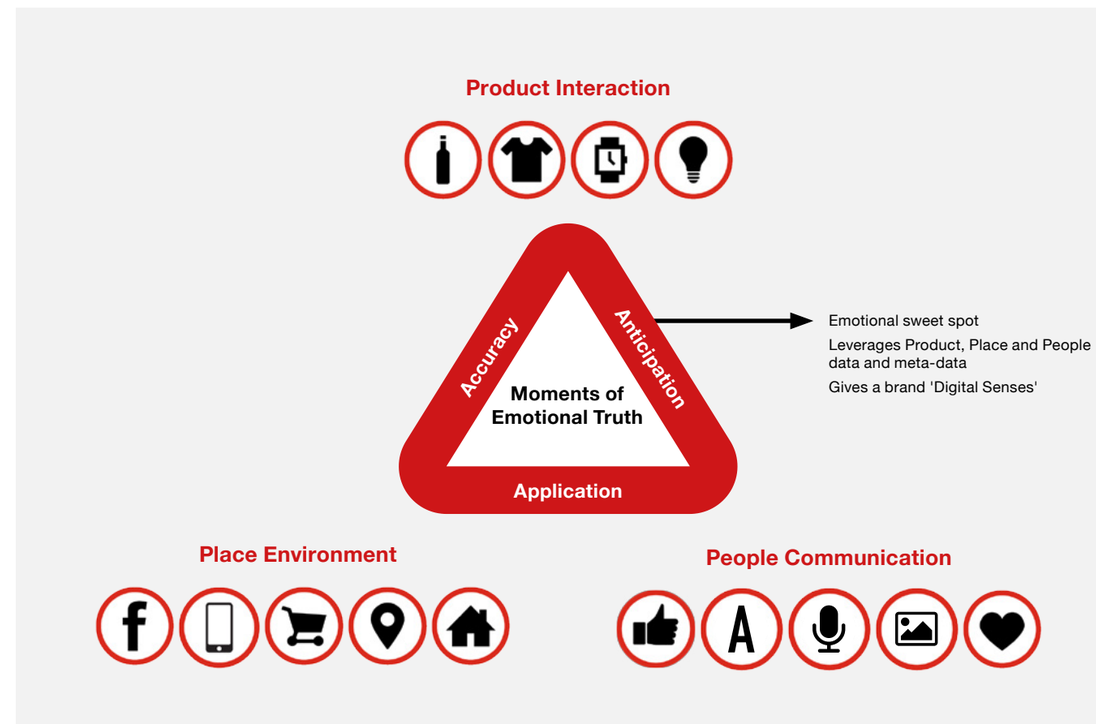


Fig. 14—"Digital Senses" From Smart Products

PEOPLE

- Personal details (gender, age, name, demographics)[20]
- Level of engagement and social influence
- Visual data (e.g. photos, Emojis)
- Group of people (friends and family)
- Textual and voice communications
- Wearable biometrics, personality and sentiment profiling

PLACE

- Physical and digital spaces (web, social, mixed-reality)
- Geographic location of interaction
- Number and frequency of location visits
- Event and experience
- Nearest retailer
- Holistic user journey and experience

PRODUCT

- Brand
- Product type
- Physical product description (color, size, spec, material)
- Digital product information (sustainable and ethical provenance, authenticity, how-to's, relevant content, and personalized services, e.g. style advice, loyalty rewards)
- Style and collection
- Combination of products and brands

20. With the users' opted-in permission and based on the information they are willing to share

Fig. 15—The Ins & Outs of DEQ

INPUTS

Multi-channel (physical and digital) connected data, generated and gathered in real-time, before, during and after purchase

INTERFACE

Janela™-enabled products with serialized, smart labels connected to the EVRYTHNG cloud platform for consumers to scan with smartphones, plus RFID tags for other in-store digital experiences (e.g. smart mirrors)

OUTPUTS

Digitally personalized, contextually relevant communications and service delivery

OUTCOME

"In the moment" personalized and empathetic digital customer connections lead to ROI from:

PRODUCT ENGAGEMENT → PRODUCT PURCHASE → BRAND LOYALTY/ADVOCACY

5.0

CONCLUSION

Connectivity, digitalization, and data flowing through every part of our societies and economies is disrupting industries by creating new innovation, value, and business models. Consider that 90% of the top 100 CPG firms lost market share in 2015, and 62% experienced declining sales.[21] These traditional brands are being overtaken by agile, digitally native players such as Amazon, which use new technologies such as the Internet of Things as competitive differentiators. Businesses that are able to mine rich, new seams of data to improve their knowledge of and relationship with customers, underpinned by logistical excellence will dominate.

Manufacturers and retailers in industries such as Apparel and CPG are able to regain competitive advantage by working with partners like Avery Dennison and EVRYTHNG to digitize and network their core physical assets on a cloud platform. By connecting physical products and retail environments to the Web, brands can unlock valuable new sources of data to process, learn from, and act on; this enables them to transform how they interact with their customers (not to mention with their employees, partners, and supply chains).

A STRATEGIC MODEL SUCH AS DEQ IS A SPECIFIC WAY OF APPLYING NEW, CONNECTED DATA FLOWING FROM DIGITIZED PHYSICAL PRODUCTS AND PLACES TO CREATE MORE POWERFUL CUSTOMER CONNECTIONS.

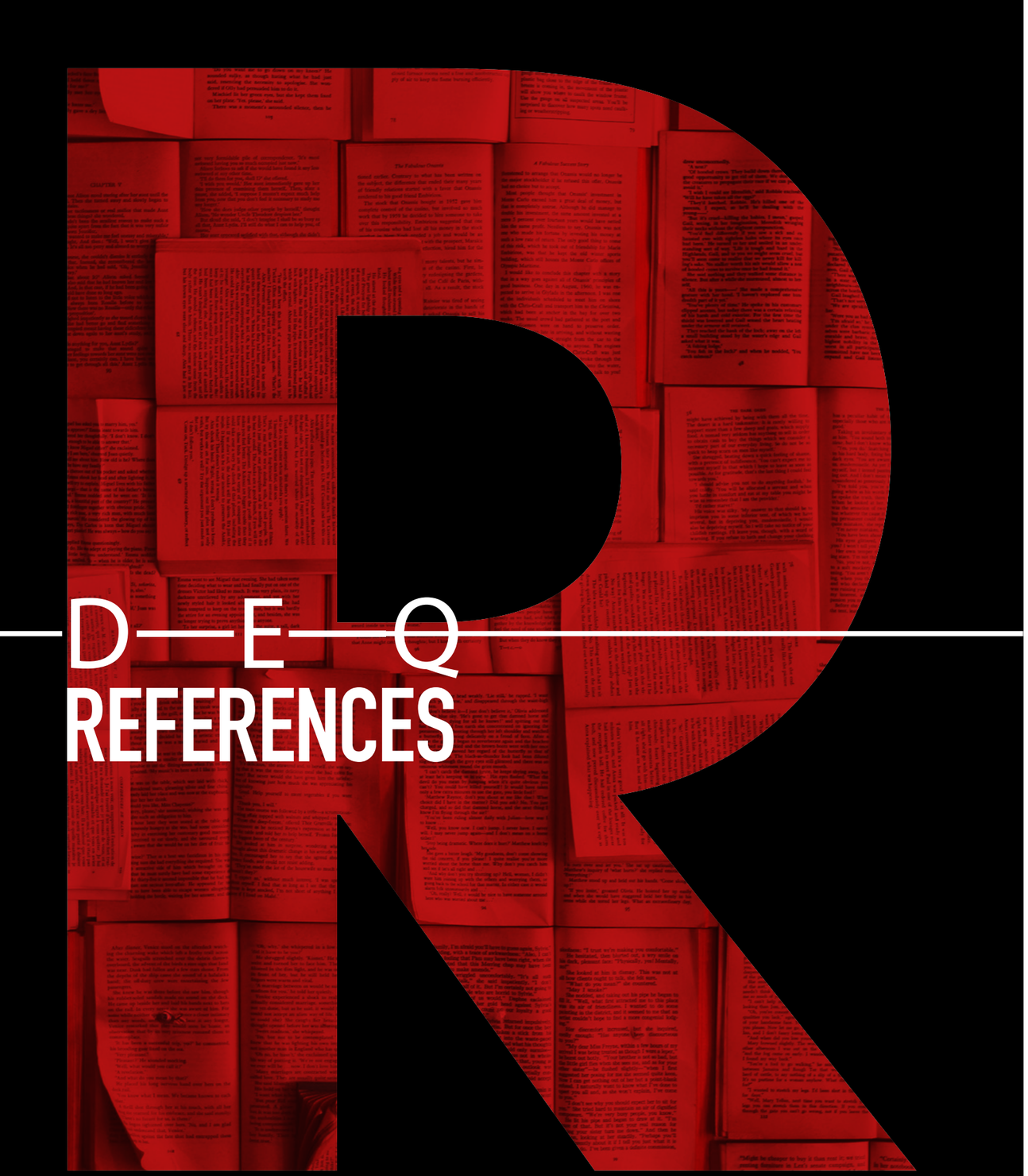
21. AdAge (2015)

A strategic model such as DEQ is a specific way of applying new, connected data flowing from digitized physical products and places, to create more powerful customer connections that drive engagement, sales, and loyalty. Once products are transformed from passive, unconnected physical objects into data-generating, interactive assets, they can speak directly with consumers and brands. These interactions and insights can be used by companies to connect more personally with customers by influencing and anticipating their emotions more effectively.

COMMUNICATIONS AND CUSTOMER EXPERIENCES CAN BE MORE INDIVIDUALIZED AND EMOTIONALLY RESONANT, WHICH DRIVES GREATER ENGAGEMENT, SALES, AND LOYALTY.

Smart, digital products are the cornerstone of this strategy, partly because of the sheer volume of consumer products in market, and partly because (especially in the case of fashion) they are closer to the consumer and more present in their digital lives than anything else a brand has to play with. Unlocking contextual data from physical product interactions, and using a cloud platform to apply real-time intelligence to it (and combine it with data streams from people and places), allows brands to segment and engage their consumers more dynamically and intimately. This means that communications and customer experiences can be more individualized and emotionally resonant, which drives greater engagement, sales, and loyalty.

No matter how limitless the connected world, our physical world has many of the same constraints. There are still only so many hours in the day, and while DEQ can't give us back more time in our lives, it can make the time we invest in brand relationships much more personal, memorable, and emotionally rewarding.



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REFERENCES

Achar, C., So, J., Agrawal, N., & Duhachek, A. (2016). What we feel and why we buy: The influence of emotions on consumer decision-making. Current Opinion in Psychology, 10, 166–70. doi:10.1016/j.copsyc.2016.01.009

Adam, H., & Galinsky, A.D. (2012). Enclothed cognition. Journal of Experimental Social Psychology, 48, 918–25. doi:10.1016/j.jesp.2012.02.008

Ambadar, Z., Schooler, J.W., & Cohn, J.F. (2005). Deciphering the enigmatic face: The importance of facial dynamics in interpreting subtle facial expressions. Psychological Science, 16, 403–10. doi:10.1111/j.0956-7976.2005.01548.x

Anderson, K.C., Knight, D.K., Pookulangara, S., & Josiam, B.M. (2014). Influence of hedonic and utilitarian motivations on retailer loyalty and purchase intention: A Facebook perspective. Journal of Retailing and Consumer Services, 21, 773–79. doi:10.1016/j.retconser.2014.05.007

Aviezer, H., Trope, Y., & Todorov, A. (2012). Holistic person processing: Faces with bodies tell the whole story. Journal of Personality and Social Psychology, 103, 20–37. doi:10.1037/a0027411

Bagozzi, R.P., Belanche, D., Casalo, L.V., & Flavian, C. (2016). The role of anticipated emotions in purchase intentions. Psychology & Marketing, 33, 629–45. doi:10.1002/mar.20905

Bakhtiyari, K., Ziegler, J., & Husain, H. (2017). The effect of presentation in online advertising on perceived intrusiveness and annoyance in different emotional states. In N.T. Nguyen et al. (eds.). Intelligent Information and Database Systems (pp. 140–49). doi:10.1007/978-3-642-20042-7

Bargh, J.A., McKenna, K.Y.A., & Fitzsimons, G.M. (2002). Can you see the real me? Activation and expression of the “true self” on the internet. Journal of Social Issues, 58, 33–48. doi:10.1111/1540-4560.00247

Barrett, L.F., & Kensinger, E.A. (2010). Context is routinely encoded during emotion perception. Psychological Science, 21, 595–99. doi:10.1177/0956797610363547

Barrett, L.F., Mesquita, B., & Gendron, M. (2011). Context in emotion perception. Current Directions in Psychological Science, 20, 286–90. doi:10.1177/0963721411422522

Beeland, Jr., W.D. (2002). Student engagement, visual learning and technology: Can interactive whiteboards help? At: http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.135.3542

Berger, J., & Iyengar, R. (2012). Communication channels and word of mouth: How the medium shapes the message. Journal of Consumer Research, 40, 567–79. doi:10.1086/671345.

Bilgicer, T., Jedidi, K., Lehmann, D.R., & Neslin, S.A. (2015). The long-term effect of multichannel usage on sales. Customer Needs and Solutions, 2, 41–56. doi:10.1007/s40547-014-0031-y.

Blazquez, M. (2014). Fashion shopping in multichannel retail: The role of technology in enhancing the customer experience. International Journal of Electronic Commerce, 18, 97–116. doi:10.2753/JEC1086-4415180404

van Boven, L. (2009). Immediacy bias in emotion perception: Current emotions seem more intense than previous emotions. Journal of Experimental Psychology: General, 138, 368–82. doi:10.1037/a0016074

Bragge, J., Sunikka, A., & Kallio, H. (2013). An exploratory study on customer responses to personalized banner messages in the online banking context. Journal of Information Technology Theory and Application, 13. At: http://aisel.aisnet.org/jitta/vol13/iss3/2

Brakus, J.J., Schmitt, B.H., & Zarantonello, L. (2009). Brand experience: What is it? How is it measured? Does it affect loyalty? Journal of Marketing, 73, 52–68. doi:10.1509/jmkg.73.3.52

Bridges, E., & Florsheim, R. (2008). Hedonic and utilitarian shopping goals: The online experience. Journal of Business Research, 61, 309–14. doi:10.1016/j.jbusres.2007.06.017

Bui, M., & Kemp, E. (2013). E-tail emotion regulation: Examining online hedonic product purchases. International Journal of Retail & Distribution Management, 41, 155–70. doi:10.1108/09590551311304338

Castella, V., Abad, A., Alonso, F., & Silla, J. (2000). The influence of familiarity among group members, group atmosphere and assertiveness on uninhibited behavior through three different communication media. Computers in Human Behavior, 16, 141–59. doi:10.1016/S0747-5632(00)00012-1

Chitturi, R., Raghunathan, & R., Mahajan, V. (2008). Delight by design: The role of hedonic versus utilitarian benefits. Journal of Marketing, 72, 48–63. doi:10.1509/jmkg.72.3.48

Church, A.T., Katigbak, M.S., Reyes, J.A.S., Salanga, M.G.C., Miramontes, L.A., & Adams, N.B. (2008). Prediction and cross-situational consistency of daily behavior across cultures: Testing trait and cultural psychology perspectives. Journal of Research in Personality, 42, 1199–215. doi:10.1016/j.jrp.2008.03.007

Coviello, L., Sohn, Y., Kramer, A.D.I., Marlow, C., Franceschetti, M., Christakis, N.A., & Fowler, J.H. (2014). Detecting emotional contagion in massive social networks. PLoS ONE. doi:10.1371/journal.pone.0090315

Cryder, C.E., Lerner, J.S., Gross, J.J., & Dahl, R.E. (2008). Misery is not miserly: Sad and self-focused individuals spend more. Psychological Science, 19, 525–30. doi:10.1111/j.1467-9280.2008.02118.x

Cupach, W.R., & Spitzberg, B.H. (1983). Trait versus state: A comparison of dispositional and situational measures of interpersonal communication competence. Western Journal of Speech Communication, 47, 364–79. doi:10.1080/10570318309374131

Darics, E. (2010). Relational work in synchronous text-based CMC of virtual teams. In R. Taiwo (ed.). Handbook of research on discourse behavior and digital communication: Language structures and social interaction (pp. 830–51). IGI Global.

Dennis, C., Morgan, A., Wright, L.T., & Jayawardhena, C. (2010). The influences of social e-shopping in enhancing young women's online shopping behaviour. Journal of Customer Behaviour, 9, 151–74. doi:10.1362/147539210X511353

Derks, D., Bos, A.E., & von Grumbkow, J. (2008). Emoticons in computer-mediated communication: Social motives and social context. Cyberpsychology & Behavior, 11, 99–101. doi:10.1089/cpb.2007.9926.

Dhar, R., & Wertenbroch, K. (2000). Consumer choice between hedonic and utilitarian goods. Journal of Marketing Research, 37, 60–71. doi:10.1509/jmkr.37.1.60.18718

Dhar, V. (2013). Data science and prediction. Communications of the ACM, 56, 64–73. doi:10.1145/2500499.

Drolet, A., Williams, P., & Lau-Gesk, L. (2007). Age-related differences in responses to affective vs. rational ads for hedonic vs. utilitarian products. Marketing Letters, 18, 211–21. doi:10.1007/s11002-007-9016-z

Ekman, P., & Cordaro, D. (2011). What is meant by calling emotions basic. Emotion Review, 3, 364–70. doi:10.1177/1754073911410740

Epstein, S. (1983). Aggregation and beyond: Some basic issues on the prediction of behavior. Journal of Personality, 51, 360–92. doi:10.1111/j.1467-6494.1983.tb00338.x

Esch, F., Moll, T., Schmitt, B., Elger, C.E., Neuhaus, C., & Weber, B. (2012). Brands on the brain: Do consumers use declarative information or experienced emotions to evaluate brands? Journal of Consumer Psychology, 22, 75–85. doi:10.1016/j.jcps.2010.08.004

Ferrara, E., & Yang, Z. (2015). Measuring emotional contagion in social media. PLoS ONE. doi:10.1371/journal.pone.0142390

Flath, C., Nicolay, D., Conte, T., van Dinther, C., & Filipova-Neumann, L. (2012). Cluster analysis of smart metering data. Business & Information Systems Engineering, 4, 31–39. doi:10.1007/s12599-011-0201-5

Fox, A.B., Bukatko, D., Hallahan, M., & Crawford, M. (2007). The medium makes a difference: Gender similarities and differences in instant messaging. Journal of Language and Social Psychology, 26, 389–97. doi:10.1177/0261927X07306982

Gacey, H., Moore, L., & Gallo, J. (2013). Some SCIENCE behind the smiley … Emoticons and their possible impact on the workplace. HR Florida Review. At: http://www.hrfloridareview.org/item/266-some-science-behind-the-smiley-emoticons-and-their-possible-impact-on-the-workplace

Gao, Y., Bianchi-Berthouze, N., & Meng, H. (2012). What does touch tell us about emotions in touchscreen-based gameplay? ACM Transactions on Computer-Human Interaction (TOCHI), 19, 31. doi:10.1145/2395131.2395138

Geers, A.L., & Lassiter, G.D. (1999). Affective expectations and information gain: Evidence for assimilation and contrast effects in affective experience. Journal of Experimental Social Psychology, 35, 394–413. doi:jesp.1999.1377

Geiser, C., Keller, B.T., Lockhart, G., Eid, M., Cole, D.A., & Koch, T. (2015). Distinguishing state variability from trait change in longitudinal data: The role of measurement (non)invariance in latent state-trait analyses. Behavior Research Methods, 47, 172-203. doi:10.3758/s13428-014-0457-z

Gopinath, S., Thomas, J.S., & Krishnamurthi, L. (2014). Investigating the relationship between the content of online word of mouth, advertising, and brand performance. Marketing Science, 33, 241–58. doi:10.1287/mksc.2013.0820

Govers, P.C.M., & Mugge, R. (2004). "I love my jeep, because it's tough like me." The effect of product-personality congruence on product attachment. Proceedings of the Fourth International Conference on Design and Emotion, ed. Aren Kurtgozu, Ankara, Turkey

Hancock, J.T. (2004). Verbal irony use in face-to-face and computer-mediated conversations. Journal of Language and Social Psychology, 23, 447–63. doi:10.1177/0261927X04269587

Hancock, J.T., Gee, K., Ciaccio, K., & Lin, J.M. (2008). I'm sad you're sad: Emotional contagion in CMC. Proceedings of the 2008 ACM Conference on Computer Supported Cooperative Work, CSCW 2008, San Diego, CA, USA. doi:10.1145/1460563.1460611

Harris, R.B., & Paradice, D. (2007). An investigation of the computer-mediated communication of emotions. Journal of Applied Sciences Research, 3, 2081–90

Hess, U., & Fischer, A. (2014). Emotional mimicry: Why and when we mimic emotions. Social and Personality Psychology Compass, 8/2, 45–57. doi:10.1111/spc3.12083

Hibbeln, M., Jenkins, J.L., Schneider, C., Valacich, J.S., & Weinmann, M. (2017). How is your user feeling? Inferring emotion through human-computer interaction devices. Management Information Systems Quarterly, 41, 1–21.

Holtzman, S., DeClerck, D., Turcotte, K., & Woodworth, M. (2017). Emotional support during times of stress: Can text messaging compete with in-person interactions? Computers in Human Behavior, 71, 130–39. doi:10.1016/j.chb.2017.01.043

Huang, R., Lee, S., Kim, H., & Evans, L. (2015). The impact of brand experiences on brand resonance in multi-channel fashion retailing. Journal of Research in Interactive Marketing, 9, 129–47. doi:10.1108/JRIM-06-2014-0042

Hudlicka, E. (2002). This time with feeling: Integrated model of trait and state effects on cognition and behavior. Applied Artificial Intelligence, 16, 1–31. doi:10.1080/08339510290030417

Hudson, S., Roth, M.S., Madden, T.J., & Hudson, R. (2015). The effects of social media on emotions, brand relationship quality, and word of mouth: An empirical study of music festival attendees. Tourism Management, 47, 68–76. doi:10.1016/j.tourman.2014.09.001

Jones, M.A., Reynolds, K.E., & Arnold, M.J. (2006). Hedonic and utilitarian shopping value: Investigating differential effects on retail outcomes. Journal of Business Research, 59, 974–81. doi:10.1016/j.jbusres.2006.03.006

Kang, E., Liu, J., & Park, E. (2014). Effects of shopping value, positive emotion and urge to buy impulsively on e-impulse buying for apparel products. Journal of the Korean Society of Clothing and Textiles, 38, 87–96. doi:10.5850/JKSCT.2014.38.1.87

Kaye, L.K., Wall, H.J., & Malone, S.A. (2016). "Turn that frown upside-down": A contextual account of emoticon usage on different virtual platforms. Computers in Human Behavior, 60, 463–67. doi:10.1016/j.chb.2016.02.088

Kim, H., & Hanssens, D.M. (2017). Advertising and word-of-mouth effects on pre-launch consumer interest and initial sales of experience products. Journal of Interactive Marketing, 37, 57–74. doi:10.1016/j.intmar.2016.08.001

Kim, H.-S., & Hong, H. (2011). Fashion leadership and hedonic shopping motivations of female consumers. Clothing and Textiles Research Journal, 29, 314–30. doi:10.1177/0887302X11422819

Kim, S., & Eastin, M.S. (2011). Hedonic tendencies and the online consumer: An investigation of the online shopping process. Journal of Internet Commerce, 10, 68–90. doi:10.1080/15332861.2011.558458

Kim, S., & Shin, D.-H. (2017). The effects of ambient scent on hedonic experience on online shopping. Proceedings of the 11th International Conference on Ubiquitous Information Management and Communication, Japan. doi:10.1145/3022227.3022231

Koster, M., Ruth, M., Hamborg, K.-C., & Kaspar, K. (2015). Effects of personalized banner ads on visual attention and recognition memory. Applied Cognitive Psychology, 29, 181–92. doi:10.1002/acp.3080

Kramer, A.D.I., Guillory, J.E., & Hancock, J.T. (2014). Experimental evidence of massive-scale emotional contagion through social networks. Proceedings of the National Academy of Sciences, 111, 8788–90. doi:10.1073/pnas.1320040111

Kronrod, A., & Danziger, S. (2013). "Wii will rock you!" The use and effect of figurative language in consumer reviews of hedonic and utilitarian consumption. Journal of Consumer Research, 40, 726–39. doi:10.1086/671998

Kruger, J., Epley, N., Parker, J., & Ng, Z.-W. (2005). Egocentrism over e-mail: Can we communicate as well as we think? Journal of Personality and Social Psychology, 89, 925–36. doi:10.1037/0022-3514.89.6.925

Kumar, V., & Venkatesan, R. (2005). Who are the multichannel shoppers and how do they perform?: Correlates of multichannel shopping behavior. Journal of Interactive Marketing, 19, 44–62. doi:10.1002/dir.20034

Kwon, E.S., & Sung, Y. (2011). Follow me! Global marketers' twitter use. Journal of Interactive Advertising, 12, 4–16. doi:10.1080/15252019.2011.10722187

Kwon, K., & Jain, D. (2009). Multichannel shopping through non-traditional retail formats: Variety-seeking behavior with hedonic and utilitarian motivations. Journal of Marketing Channels, 16, 149–68. doi:10.1080/10466690802477418

Landers, V.M., Beatty, S.E., Wang, S., & Mothersbaugh, D.L. (2015). The effect of online versus offline retailer-brand image incongruity on the flow experience. Journal of Marketing Theory and Practice, 23, 370–87. doi:10.1080/10696679.2015.1049681

Langner, T., Schmidt, J., & Fischer, A. (2015). Is it really love? A comparative investigation of the emotional nature of brand and interpersonal love. Psychology & Marketing, 32, 624–34. doi:10.1002/mar.20805

Last, M., Tosas, O., Cassarino, T.G., Kozlakidis, Z., & Edgeworth, J. (2016). Evolving classification of intensive care patients from event data. Artificial Intelligence in Medicine, 69, 22–32. doi:10.1016/j.artmed.2016.04.001

Lee, H., Choi, Y.S., Lee, S., & Park, I.P. (2012). Towards unobtrusive emotion recognition for affective social communication. The 9th Annual IEEE Consumer Communications and Networking Conference—Special Session Affective Computing for Future Consumer Electronics. doi:10.1109/CCNC.2012.6181098

Liao, C., Lin, H.-N., Luo, M.M., & Chea, S. (2016). Factors influencing online shoppers' repurchase intentions: The roles of satisfaction and regret. Information & Management, in press. doi:10.1016/j.im.2016.12.005

Lima, M., & Fernandes, T. (2015). Relationship bonds and customer loyalty: A study across different service contexts. In H. Novoa & M. Dragoicea (eds.). Exploring Services Science. IESS 2015. Lecture Notes in Business Information Processing, vol. 201. Springer, Cham

Liu, B., Govindan, R., & Uzzi, B. (2016). Do emotions expressed online correlate with actual changes in decision-making?: The case of stock day traders. PLoS ONE, 11, e0144945. doi:10.1371/journal.pone.0144945

Loewenstein, G., O'Donoghue, T., & Rabin, M. (2003). Projection bias in predicting future utility. Quarterly Journal of Economics, 118, 1209–48. doi:10.1162/003355303322552784

Loureiro, S., & Roschk, H. (2014). Differential effects of atmospheric cues on emotions and loyalty intention with respect to age under online/offline environment. Journal of Retailing and Consumer Services, 21, 211–19. doi:10.1016/j.jretconser.2013.09.001

Lyddy, F., Farina, F., Hanney, J., Farrell, L., & O'Neill, N.K. (2014). An analysis of language in university students' text messages. Journal of Computer-mediated Communication, 19, 546–61. doi:10.1111/jcc4.12045

Ma, J., Gao, J., Scott, N., & Ding, P. (2013b). Customer delight from theme park experiences: The antecedents of delight based on cognitive appraisal theory. Annals of Tourism Research, 42, 359–81. doi:10.1016/j.annals.2013.02.018

Ma, X. (2015). Age differences in the choice of utilitarian vs. hedonic features: Which choice will you be happier with? Gerontologist, 55 (Suppl_2), 214. doi:10.1093/geront/gnv557.16

Ma, X., Wu, Y.-J., Wang, Y., Chen, F., & Liu, J. (2013). Mining smart card data for transit riders' travel patterns. Transportation Research Part C: Emerging Technologies, 36, 1–12. doi:10.1016/j.trc.2013.07.010

Malheiros, M., Jennett, C., Patel, S., Brostoff, S., & Sasse, M.A. (2012). Too close for comfort: A study of the effectiveness and acceptability of rich-media personalized advertising. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (pp. 579–88). doi:10.1145/2207676.2207758

Masuda, T., Ellsworth, P.C., Mesquita, B., Leu, J., Tanida, S., & de Veerdonk, E.V. (2008). Placing the face in context: Cultural differences in the perception of facial emotion. Journal of Personality and Social Psychology, 94, 365–81. doi:10.1037/0022-3514.94.3.365

McAfee, A., & Brynjolfsson, E. (2012). Big data: The management revolution. Harvard Business Review. https://hbr.org/2012/10/big-data-the-management-revolution

McDool, E., Powell, P., Roberts, J., & Taylor, K. (2016). Social media use and children's wellbeing. IZA Discussion Paper No. 10412

McLoughlin, F., Duffy, A., & Conlon, M. (2015). A clustering approach to domestic electricity load profile characterisation using smart metering data. Applied Energy, 141, 190–99. doi:10.1016/j.apenergy.2014.12.039

Moors, A., Ellsworth, P.C., Scherer, K., & Frijda, N.H. (2013). Appraisal theories of emotion: State of the art and future development. Emotion Review, 5, 119–24. doi:10.1177/1754073912468165

Moss, G.A., Gunn, R., & Heller, J. (2006). Some men like it black, some women like it pink: Consumer implications of differences in male and female website design. Journal of Consumer Behavior, 5, 328–41. doi:10.1002/cb.184

Mugge, R., Schoormans, J.P.L., & Schifferstein, H.N.J. (2009). Emotional bonding with personalised products. Journal of Engineering Design, 20, 467–76. doi:10.1080/09544820802698550

Njeri, E., Kimani, S., & Kimwele, M. (2014). Textual emotion recognition for enhancing social presence in online communications. At: http://journals.jkuat.ac.ke/index.php/jscp/article/view/1076

Normark, C.J., & Mankila, J.P. (2013). Personalisable in-vehicle systems, technology acceptance and product attachment. International Journal of Human Factors and Ergonomics, 2, 262–80. doi:10.1504/IJHFE.2013.059373

O'Donnell, K., & Cramer, H. (2015). People's perceptions of personalized ads. In WWW '15 Companion Proceedings of the 24th International Conference on World Wide Web (pp. 1293–98). doi:10.1145/2740908.2742003

Overby, J.W., & Lee, E. (2006). The effects of utilitarian and hedonic online shopping value on consumer preference and intentions. Journal of Business Research, 59, 1160–66. doi:10.1016/j.jbusres.2006.03.008

Parish, A. (2016). Using immersion as a teaching method to develop an understanding, appreciation and empathy for special needs populations. Strategies, 29, 45–47. doi:10.1080/08924562.2016.1160472

Park, J. (2017). Negative emotion and purchase behavior following social exclusion. Journal of Global Scholars of Marketing Science, 27, 111–22. doi:10.1080/21639159.2016.1265319

Penz, E., & Hogg, M.K. (2011). The role of mixed emotions in consumer behaviour: Investigating ambivalence in consumers' experiences of approach-avoidance conflicts in online and offline settings. European Journal of Marketing, 45, 104–32. doi:10.1108/03090561111095612

Posner, J., Russell, J.A., & Peterson, B.S. (2005). The circumplex model of affect: An integrative approach to affective neuroscience, cognitive development, and psychopathology. Developmental Psychopathology, 17, 715–34. doi:10.1017/S0954579405050340

Powell, P.A., & Roberts, J. (2017). Situational determinants of cognitive, affective, and compassionate empathy in naturalistic digital interactions. Computers in Human Behavior, 68, 137–48. doi:10.1016/j.chb.2016.11.024

Pradana, G.A., Zhang, E.Y., Cheok, A.D., & Morisawa, Y. (2015). Delivering haptic sensations in mobile marketing. In ACE '15 Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology. doi:10.1145/2832932.2856223

Proksch, M., Orth, U.R., Cornwell, T.B. (2015). Competence enhancement and anticipated emotion as motivational drivers of brand attachment. Psychology & Marketing, 32, 934–49. doi:10.1002/mar.20828

Rezvani, Z., & Jansson, J. (2016). Cause I'll feel good! The influence of anticipated emotions on consumer pro-environmental behavior. In L. Petruzzellis & R. Winer (eds.). Rediscovering the Essentiality of Marketing (pp. 117–25). doi:10.1007/978-3-319-29877-1_27

Riordan, M.A., & Trichtinger, L.A. (2017). Overconfidence at the keyboard: Confidence and accuracy in interpreting affect in e-mail exchanges. Human Communication Research, 43, 1–24. doi:10.1111/hcre.12093

Safdar, S., Friedlmeier, W., Matsumoto, D., Yoo, S.H., Kwantes, C.T., Kakai, H., & Shigemasu, E. (2009). Variations of emotional display rules within and across cultures: A comparison between Canada, USA, and Japan. Canadian Journal of Behavioural Science, 41, 1–10. doi:10.1037/a0014387

Sarkar, A. (2011). Impact of utilitarian and hedonic shopping values on individual's perceived benefits and risks in online shopping. International Management Review, 7, 58–95

Sawang, S., O'Connor, P., & Ali, M. (2017). Using technology to enhance students' engagement in a large classroom. Journal of Learning Design, 10, 11–19

Scherer, K.R. (2001). Appraisal considered as a process of multi-level sequential checking. In K.R. Scherer, A. Schorr, & T. Johnstone (eds.). Appraisal Processes in Emotion: Theory, Methods, Research (pp. 92–120). New York and Oxford: Oxford University Press

Sela, A., Wheeler, S.C., & Sarial-Abi, G. (2012). We are not the same as you and I: Causal effects of minor language variations on consumers' attitudes toward brands. Journal of Consumer Research, 39, 644–61. doi:10.1086/664972

Shahzadeh, A., Khosravi, A., & Nahavandi, S. (2015). Improving load forecast accuracy by clustering consumers using smart meter data. In 2015 International Joint Conference on Neural Networks (IJCNN). doi:10.1109/IJCNN.2015.7280393

Sharifi, S.S. (2014). Impacts of the trilogy of emotion on future purchase intentions in products of high involvement under the mediating role of brand awareness. European Business Review, 26, 43–63. doi:10.1108/EBR-12-2012-0072

Sherman, L.E., Michikyan, M., & Greenfield, P.M. (2013). The effects of text, audio, video, and in-person communication on bonding between friends. Cyberpsychology: Journal of Psychosocial Research on Cyberspace, 7, article 3. doi:10.5817/CP2013-2-3

Siamagka, N.T., Christodoulides, G., & Michaelidou, N. (2015). The impact of comparative affective states on online brand perceptions: A five-country study. International Marketing Review, 32, 438–54. doi:10.1108/IMR-10-2013-0237

Sorensen, J. (2016). Understanding how culture influences emotions in consumer decision making. In Finding Solutions to the Challenges of Internationalisation (pp. 123–36). Aalborg Universitetsforlag

Spake, D.F., Beatty, S.E., Brockman, B.K., & Crutchfield, T.N. (2003). Consumer comfort in service relationships: Measurement and importance. Journal of Service Research, 5, 316–32. doi:10.1177/1094670503005004004

Stanforth, N. (1995). Fashion innovators, sensation seekers, and clothing individualists. Perceptual and Motor Skills, 81, 1203–10

Studak, C.M., & Workman, J.E. (2004). Fashion groups, gender, and boredom proneness. International Journal of Consumer Studies, 28, 66–74. doi:10.1111/j.1470-6431.2004.00335.x*

Taylor, S.A., Ishida, C., & Donovan, L.A.N. (2016). Considering the role of affect and anticipated emotions in the formation of consumer loyalty intentions. Psychology & Marketing, 33, 814–29. doi:10.1002/mar.20919

Teller, C., Reutterer, T., & Schnedlitz, P. (2008). Hedonic and utilitarian shopper types in evolved and created retail agglomerations. International Review of Retail, Distribution and Consumer Research, 18, 283–309. doi:10.1080/09593960802113877

Thompson, E.R., & Prendergast, G.P. (2015). The influence of trait effect and the five-factor personality model on impulse buying. Personality and Individual Differences, 76, 216–21. doi:10.1016/j.paid.2014.12.025

Tidwell, L.C., & Walther, J.B. (2002). Computer-mediated communication effects on disclosure, impressions, and interpersonal evaluations: Getting to know one another a bit at a time. Human Communication Research, 28, 317–48. doi:10.1111/j.1468-2958.2002.tb00811.x

Tossell, C.C., Kortum, P., Shepard, C., Barg-Walkow, L.H., Rahmati, A., & Zhong, L. (2012). A longitudinal study of emoticon use in text messaging from smartphones. Computers in Human Behavior, 28, 659–63. doi:10.1016/j.chb.2011.11.012

Tracy, J.L., & Matsumoto, D. (2008). The spontaneous expression of pride and shame: Evidence for biologically innate nonverbal displays. Proceedings of the National Academy of Sciences, 105, 20044–45. doi:10.1073/pnas.0802686105

Tucker, C.E. (2014). Social networks, personalized advertising, and privacy controls. Journal of Marketing Research, 51, 546–62. doi:10.1509/jmr.10.0355.

Vaish, A., Grossmann, T., & Woodward, A. (2008). Not all emotions are created equal: The negativity bias in social-emotional development. Psychological Bulletin, 134, 383–403. doi:10.1037/0033-2909.134.3.383

Vandergriff, I. (2013). Emotive communication online: A contextual analysis of computer-mediated communication (CMC) cues. Journal of Pragmatics, 51, 1–12. doi:10.1016/j.pragma.2013.02.008

van Erp, J.B.F., & Toet, A. (2015). Social touch in human-computer interaction. Frontiers in Digital Humanities, 2, doi:10.3389/fdigh.2015.00002

Voss, K.E., Spangenberg, E.R., & Grohmann, B. (2003). Measuring the hedonic and utilitarian dimensions of consumer attitude. Journal of Marketing Research, 40, 310–20. doi:10.1509/jmkr.40.3.310.19238

Walther, J.B. (1992). Interpersonal effects in computer-mediated interaction: A relational perspective. Communication Research, 19, 52–90. doi:10.1177/009365092019001003

Walther, J.B. (1996). Computer-mediated communication: Impersonal, interpersonal, and hyperpersonal interaction. Communication Research, 23, 3–43. doi:10.1177/009365096023001001

Walther, J.B., & D'Addario, K.P. (2001). The impacts of emoticons on message interpretation in computer-mediated communication. Social Science Computer Review, 19, 324–47. doi:10.1177/089443930101900307

Walther, J.B., Loh, T., & Granka, L. (2005). Let me count the ways: The interchange of verbal and nonverbal cues in computer-mediated and face-to-face affinity. Journal of Language and Social Psychology, 24, 36–65. doi:10.1177/0261927X04273036

Walther, J.B., & Parks, M.R. (2002). Cues filtered out, cues filtered in: Computer-mediated communication and relationships. In M.L. Knapp, & J.A. Daly (eds.). Handbook of Interpersonal Communication (3rd ed., pp. 529–63). Thousand Oaks, CA: Sage.

Walther, J.B., & Tidwell, L.C. (1995). Nonverbal cues in computer-mediated communication, and the effect of chronemics on relational communication. Journal of Organizational Computing, 5, 355–78. doi:10.1080/10919399509540258

Watson, L., & Spence, M.T. (2007). Causes and consequences of emotions on consumer behaviour: A review and integrative cognitive appraisal theory. European Journal of Marketing, 41, 487–511. doi:10.1108/03090560710737570

Wells, J.D., Parboteeah, V., & Valacich, J.S. (2011). Online impulse buying: Understanding the interplay between consumer impulsiveness and website quality. Journal of the Association for Information Systems, 12, 32–56. At: http://aisel.aisnet.org/jais/vol12/iss1/3

Wilson, T.D., & Gilbert, D.T. (2003). Affective forecasting. In M.P. Zanna (ed.). Advances in Experimental Social Psychology. Vol. 35 (pp. 345–411). San Diego, CA: Academic Press

Wu, L., & Brynjolfsson, E. (2015). The future of prediction: How Google searches foreshadow housing prices and sales. In A. Goldfarb, S.M. Greenstein, & C.E. Tucker (eds.), Economic Analysis of the Digital Economy (pp. 89–118). University of Chicago Press

Yim, M.Y.C., Yoo, S.C., Sauer, P.L., & Seo, J.H. (2014). Hedonic shopping motivation and co-shopper influence on utilitarian grocery shopping in superstores. Journal of the Academy of Marketing Science, 42, 528–44. doi:10.1007/s11747-013-0357-2

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