

“Paying attention to spend time: a cognitive and temporal model for digital consumption”

AUTHORS	Eric Vincent Carter
ARTICLE INFO	Eric Vincent Carter (2011). Paying attention to spend time: a cognitive and temporal model for digital consumption. <i>Innovative Marketing</i> , 7(3)
RELEASED ON	Thursday, 27 October 2011
JOURNAL	"Innovative Marketing "
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”



NUMBER OF REFERENCES

0



NUMBER OF FIGURES

0



NUMBER OF TABLES

0

© The author(s) 2026. This publication is an open access article.

E. Vincent Carter (USA)

Paying attention to spend time: a cognitive and temporal model for digital consumption

Abstract

This paper advances initial propositions towards a renewed emphasis on the role of cognitive and temporal resources for analyzing digital market consumption. Marketing scholars and strategists are aware of the digital market's unique properties, but require planning frameworks with conceptual validity and commercial value. The proposed *mind/time sharing model* combines seminal consumer resource exchange theory, pioneering information science and media studies, classic examinations of societal transformation, as well as literature chronicling the emergence of digital market consumption during the World Wide Web's inception. The resulting model contributes a sound theoretical template which can be applied by digital consumer market providers for systematic strategic planning.

Keywords: mind/time, sharing model, digital media, digital market consumption.

Introduction

The fundamental shift driving present and future digital markets is the transition from technology services that enables cognition by supporting decision-making to technology services that extend cognition by simulating decision-making. This paper chronicles that trend and advances a cognitive consumer paradigm to improve strategic planning in an environment where digital markets mirror dimensions of the mind. To establish a firm market premise, digital media are examined within a broader context of societal transformation, wherein development traverses through agricultural, industrial, services and information economies.

Focusing on information economy drivers, an emphasis is placed on the time period and technologies associated with the diffusion of Internet access, the rise of the World Wide Web, and the expansion of "dot.com" business models in consumer markets. An inflection point in digital market trends occurring around the year 2000 amplified the substitution of physical consumption determinants with cognitive consumption dimensions. Consequently, a conceptual foundation is developed based on these cognitive dimensions of digital market consumption, that were vividly depicted in the academic literature during that time frame.

The wide array of digital devices and services in the global marketplace signals a shift from physical to cognitive exchange. As the U.S. economy evolved from primarily goods production into a marketplace dominated by service and information exchanges, consumer behavior moved from an essentially material reality to a transactional context unbound by space and time (McKenna, 1997; Sheth and Sisodia, 1997). Even the so-called digital marketplace has shifted dramatically from hardware products to software applications and devices linked to web interactions. This pattern is

also reflected in the emergence of so called "software as a service" (SAAS) designs for sales force automation systems like salesforce.com and redhat.com. Clearly, the customer decision process changes when traditional extrinsic physical transactions morph into digital intrinsic cognitive dialogues.

After the dot.com shake out, consolidation in the online consumer space left a few major players providing vital cognitive consumption functions associated with consumer decision process stages. Marketing scholars have framed this consumer decision process as early as the 1960s (Engel et al., 1968), and it is a standard concept in contemporary marketing textbooks (Blackwell et al., 2006).

Namely, social media facilitation of need/problem recognition through Facebook, Twitter, or Groupon.com, a search function addressed by Google and to a lesser degree Yahoo, a shopping and evaluation function addressed most dominantly by Amazon.com, and niche participants like Priceline.com, a purchase function addressed by Pay Pal, and a post-purchase function addressed by online auction services like eBay. These surviving dot.com online business models and recent social media variants have proven to be profitable with an expanding market base and application portfolio. Still, the significance of cognitive consumption drivers continues to evade many marketing scholars and strategists.

Most recently, the convergence of smart mobile device applications led by Apple, Google, and Motorola with social media networks popularized by Facebook and Twitter has spurred another cycle of digital engagement with consumer cognition. This latest round engages the social dimension as well as the individual dimension of consumer identity. Cognitive digital interaction for social mobile media mirrors what the seminal social psychology scholars William James (1890) and George Herbert Mead (1934) termed the "I and Me" dimensions of the social self. With an expanding spectrum of content providers for data,

documents, music, maps, images, video, and virtual worlds, consumers are now capable of processing externalized imagination by engaging in digital cognitive interaction.

1. Literature review: cognitive and collective

An important research stream in the marketing literature examines digital consumption by profiling electronic content and channels (Sheth and Sisodia, 1997). Digital markets substitute physical content with cognitive content and physical channels with temporal channels (Tapscott, 2000; 1995; Venkatesh, 1998; Evans and Wurster, 1999). As a result, cognitive and temporal currency supplants physical currency in digital transactions. This shared mind and time perspective underlies the experience marketing literature (Schmitt, 1999; Pine and Gilmore, 1999; Neelameghan and Jain, 1999).

Eventually, digital consumption must be understood as a fusion of new media patterns, realigned mental modes, and a more information intensive social/market environment. Hoffman and Novak (1996) establish the precedence for this intersection of media/communication studies, cognitive psychology, and social/market analysis. They distinguish digital from traditional markets based on the higher proportion of computer-mediated interactions and cognitive “flow”, compared to physical human/institutional contact. Later research articulates commercial scenarios for digital market opportunity and web-based business models (Hoffman and Novak, 2005; Hoffman et al., 1996)

In his definitive analysis of media structure, McLuhan (1964) identifies the character, or “message”, of the digital market infrastructure with which

consumers interact. By contrasting the structural pattern of digital market media/modes with traditional market media/modes, McLuhan’s (1989) media matrix makes the case for a new model of digital consumption behavior.

Consumer behavior research complements the deconstruction of media messages by delineating consumers’ mental modes. The mental modes directing digital consumption are defined based on the methods used by consumers to process cognitive, temporal, and economic resources (Blackwell et al., 2006; Sheth, Mittal, Newman, 1999; Engel et al., 1995).

The rising significance of cognitive and temporal resources in a more information intensive and faster paced marketplace justifies extending consumer behavior theory more purposefully into the digital environment. In particular, the proposed mind/time sharing model embeds consumer behavior theory with elements of psychology, anthropology, information science, and social media into to capture the cognitive and temporal dimensions of digital consumption.

1.1. Digital media and cognitive market time. Marshall McLuhan’s (1964, 1989) novel method of structural analysis reveals the transformational patterns that define both *traditional* and *digital media/modes*. The resulting profile, in turn, indicates which sensory dimensions each market medium/mode relies upon to facilitate customer interaction (see Table 1). For example, digital media rely heavily on *computers and computer networks* to codify cognitive patterns and compress time. These codified mind patterns can be analyzed in compressed time periods to market digital applications towards targeted genetic, demographic, and even virtual profiles.

Table 1. Structural analysis of traditional and digital media

Media	Control locus	Spatial transform	Temporal transform
Digital	<ul style="list-style-type: none"> ◆ Open ◆ Decentralized ◆ Flexible 	<ul style="list-style-type: none"> ◆ Codify [“cognitize”] ◆ Store [“memorize”] ◆ Process [“catalyze”] 	<ul style="list-style-type: none"> ◆ Compression [“time-shrink”] ◆ Compartmentalize [“time-slice”] ◆ Collaboration [“time-share”]
Traditional	<ul style="list-style-type: none"> ◆ Contracted ◆ Centralized ◆ Firm 	<ul style="list-style-type: none"> ◆ Enclose/rent [“privatize”] ◆ Trade [“merchandize”] 	<ul style="list-style-type: none"> ◆ Constriction [“time-stall”] ◆ Chronology [“time-strait”]

Source: Adapted from Marshall McLuhan and Bruce Powers (1989), *The Global Village*.

Digital media transform the temporal element as well. Through codification, memory, and processing, the duration and period of market processes are compressed (e.g., “time-shrink”). In addition, codification of time events permits them to be compartmentalized and those “time-slices” can be recomposed into more customized and convenient episodes. Further, through digital networks, collaboration among individuals or organizations enables richer “time-sharing” experiences.

“Abstract time became a new milieu, a new framework of existence. Today the human being is dissociated from the (physical) essence of life. Instead of living time, his/her life is split up and parceled out by it” (Ellul, 1964, p. 329).

That structural analysis of digital media can be contrasted with the structural patterns of traditional media/modes. For instance, *retail outlet market-places* enclose/rent (i.e., privatize) physical

space. That spatially bound hoarding pattern underlies traditional terms of trade. Traditional market media/modes also tend to constrict time through the imposition of spatial protocols that “stall” market flows and chronological patterns that force “time-strait” linearity on polychronic activities (Kaufman et al., 1991). Also, traditional *printed media* privatize authorship to forge mass produced uniformity and constrain the speed of spreading messages.

Further, the structural pattern of digital media reinforces open exchange, autonomy, and innovation. By contrast, traditional market media/modes operate according to contracted exchange, hierarchy, and standardization. Whereas the new *digital media/modes* parallel *cognitive* (i.e., codified and symbolic) and *temporal* (i.e., sequential, simultaneous, and interactive) consumer profiles, *traditional market media/modes* are more closely aligned with *physical* (i.e., visual and tactile) and *spatial* (i.e., geometric and geographic) attributes.

1.2. Money, time, cognition – digital currency.

The consumer behavior literature has long held that consumer market interaction involves both economic and non-economic resources. Engel et al. (1995) divides the consumer resources that make markets into three categories: (1) economic; (2) temporal; and (3) cognitive (ability to process and use information)” (p. 295). Economic resources pertain to material and monetary denominations of currency, such as barter, income, wealth, credit, and confidence in the acquisition of future economic resources. Economic resources can also be discussed in terms of consumption lifestyles, wherein money is allocated towards physical products and activities.

Time is a multifaceted concept (McGrath, 1988; Orstein, 1969) anchored in the social anthropology (Hall, 1959) literature. Temporal resources refer to consumer “time budgets” categorized as “paid time”, “obligated time”, and “discretionary time” (Engel, et al., 1995) – as well as “income-producing time,” “committed time”, and “uncommitted time” (Lane and Lindquist, 1988). In addition, temporal resources incorporate notions of “time styles” (Usunier and Valette-Florence, 1994, 1991), “time allocation” (Feldman and Hornik, 1981), and “polychronic” (simultaneous) versus “mono-chronic” (singular) consumption (Kaufman et al., 1991).

Because temporal resources are limited, allocations incur “time prices” (Bryand and Wang, 1990) – based on both the actual and perceived quantity of time. The interplay between time and action in marketer’s relationships with consumers is vast and complex (Bergada, 1991).

Lastly, cognitive resources “represent the mental capacity available for undertaking various information processing activities” (Engel et al., 1995, p. 323). Cognitive capacity, or the consumer’s mental budget, is allocated through the property of “attention”. Attention, as a gatekeeper of consumers’ cognitive resources (MacKenzie, 1986), is gauged based on the dimensions of “direction” (i.e., focus) and “intensity” (i.e., magnitude). However, cognitive capacity is limited and incurs a “price” based on the quantity, format, nature, and speed of information processing (Kardes, 1999; Sternthal and Craig, 1982; Bettman, 1979). Many of these cognitive properties of digital consumption underscore the “economics of attention”:

“Nowadays the problem is not information access but information overload. The real value produced by an information provider comes in locating, filtering, and communicating what is useful to the consumer” (Shapiro and Varian, 1999, p. 6).

Simply stated, consumers must first pay cognitive attention before spending time, and spend experiential time before they exchange money for material possessions. As valid as that consumer decision heuristic is for traditional market transactions, it carries a double portion for the cognitive and temporal challenges inherent in digital market interactions.

1.3. Collective and individual market reflexivity.

Each of the three types of consumer/consumption resources (e.g., economic, temporal, cognitive) defines aggregate market activity, as well as properties of individual consumer buying power. Consumers’ individual mental modes adapt to fit the prevailing source of aggregate market value (see Table 2). This “reflexive” relationship between individual cognitive processes and the collective market is consistent with the concept of “feedback” in dynamic systems theory and cybernetics (Maturana and Verela, 1992; Bertalanffy, 1968; Ashby, 1960).

Table 2. Macro society and micro mental modes

Resource currency	Aggregate “macro” stage	Individual mental mode
Monetary/economic	◆ Agricultural ◆ Industrial	◆ Economic ◆ Material
Information/knowledge	◆ Service ◆ Post-industrial	◆ Temporal ◆ Experiential
Communication/interactive	◆ Knowledge ◆ Digital	◆ Cognitive ◆ Virtual

At a macro-societal level the consumer resource triad charts the marketplace transitions of industrial society. Pre-industrial agrarian societies assessed the value of market production and demand

in economic and material terms (Bell, 1973; Ellul, 1964) – first barter and later monetary currency and credit. The altered time and spatial context of industrial society adapted organic family structures and social rituals to the mechanized functions of industrialized commerce (Mumford, 1934). Urban migration hastened the substitution of economic and material values for more intrinsic kinship and community principles.

Eventually, with an expanded middle-class and increased leisure, time eclipsed money as the preferred utility (de Grazia, 1966). Consumers willingly traded vast sums of money for time relief – largely in the form of leisure and convenience services (Robinson and Godbey, 1997; Robinson and Nicosia, 1991; Veblen, 1899). This marked a “service economy” interlude (Shugan, 1993; Darnay, 1992; Ginzberg and Vojta, 1981) between the goods-oriented industrial society and the information-oriented post-industrial society.

Most recently, post-industrial society has witnessed the rising importance and volume of knowledge (Castells, 1996; Pool, 1984; Masuda, 1980; Porat and Rubin, 1977; Bell 1973; Ellul 1964). The current “knowledge society” (Lane, 1966) is marked by economies in which the information activities account for the dominant share of productive value. Information itself is exchanged as an economic good (Bates, 1988) and knowledge is marketed as an asset (Glazer, 1991). In turn, service transactions have continued to rise, because information comprises a large portion of the resources required to perform many services.

Further, electronic markets with “virtual value chains” evolve (Benjamin and Wigand, 1995), because physical market channels are not required to exchange information content. Ongoing deployment of electronic technology channels in a “network society” optimizes the exchange of cognitive and temporal resources (Castells, 1996). The prevalence of intelligently coded digital market channels and content led Toffler (1990) to dub this latest era the “symbol-symbolic economy”, and Negroponte (1995) to describe human market presence as “being digital”.

2. Modeling mind/time digital consumption

The proposed model aligns the cognitive (mind) and temporal (time) dimensions of digital market consumption. The fundamental premise is that online interaction value is created and enhanced when individual consumers share mental encounters and time experiences – more so than by merely exchanging material and monetary resources. This premise is manifested as a digital market in which the exchange currency is cognitive and temporal

sharing. Unlike monetary currency, the intent of mind/time sharing is to achieve meaning and moment “congruity” (Sirgy, 1986) between digital market providers and consumers – not to consummate transactions.

Conceptually, these two focal *shared value vector dimensions* are specified as:

1. *Knowledge sharing vectors – taste* (“content”) and *task* (“choice/conduct”).
2. *Temporal sharing vectors – time*, activation, motion, or “applicability”.

Using Machlup’s (1962) knowledge schema the *temporal sharing vectors* and *knowledge sharing vectors* can be further divided into: (1) practical (2) intellectual; (3) past time (small-talk); (4) spiritual; and (5) unwanted. These categories correspond to product classification typologies advanced in the marketing literature (Kotler and Armstrong, 2011; Enis and Roering, 1980; Copeland, 1923) that divide offerings into: (1) convenience; (2) shopping; (3) preference; (4) specialty; and (5) unsought/emergency products.

Having set forth the research goal and performed a literature analysis to specify theoretical antecedents, a model of digital mind/time sharing can be constructed (see Figure 1). The *digital consumption model of mind (cognitive) and time (temporal) sharing* is a framework comprised of ten *value vectors*. The model is formed by the intersection of Machlup’s (1962) five *knowledge content categories*, designated as “*knowledge types*”, and the three “*knowledge context factors*” – translated into mind sharing (taste, task) and time sharing vectors (see Figure 1). Whereas the *time sharing vectors* orchestrate the *flow* of experiences, the *mind-sharing vectors* designate experience *formats* (e.g., cognitive tastes and meanings) and *functions* (e.g., cognitive tasks and motions). Cognitive *tastes* and *tasks* comprise the *mind-sharing vectors* used to design *experience architectures*, just like *time-sharing vectors* create *experience frames*.

Descriptions of the five *mind-sharing vectors* parallel those offered by Machlup (1962), *practical knowledge* encompasses that which is “useful in a man’s work, his decisions, and actions”. *Intellectual knowledge* is used for “satisfying a man’s intellectual curiosity”. *Pastime knowledge* (i.e., small-talk) is directed towards “satisfying the non-intellectual curiosity or desire for light entertainment and emotional stimulation”. *Spiritual knowledge* is “related to religious knowledge of God” as well as moral and ethical beliefs. Lastly, *unwanted knowledge* is outside one’s interest, “usually accidentally acquired, and aimlessly retained”.

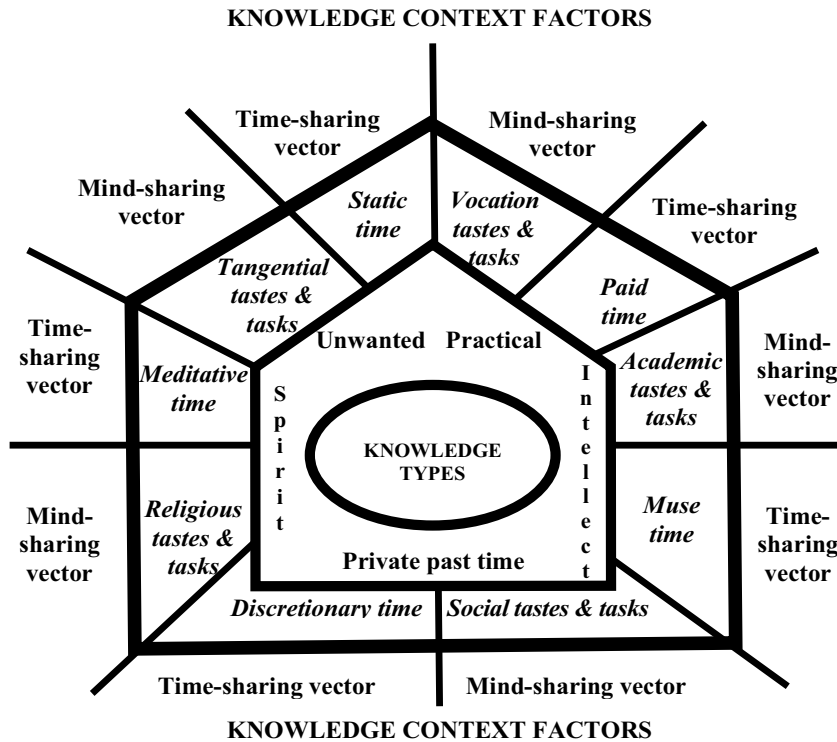


Fig. 1. Digital consumption model of mind/time sharing

Similar to the knowledge architecture for software applications, knowledge shared between the minds of marketers and consumers has compatibility *formats* and performance *functions*. *Taste* is the particular *experience architecture* formed with compatibly *formatted* knowledge content. Likewise, *task* is the relevance of how *experience architecture* performs based on that same knowledge content. Therefore, each of the five *mind-sharing vectors* described below have two corollary dimensions – one for mental meaning (*taste*) and the other for mental motion (*task*). Understanding their ability to customize and personalize knowledge for customer’s cognitive orientations is essential for digital market providers seeking to benefit from customer transactions based on mind/time connections.

Taste formats can be divided into three aspects of *compatibility*:

1. *Knowledge source* – assigns attributes: a) honesty – trust/credence; b) affinity; c) expertise; d) prestige – attractive/celebrity;
2. *Knowledge symbols* – accounts for senses: a) touch – feel/tactile; b) sight – text/data/graphic/video); c) sound – audio/oral/musical; d) smell – scent/odor/olfactory; e) taste – palate;
3. *Knowledge styles* – manner of expression on a dynamic continuum: a) standard/scientific – left brain; b) creative/artistic – right brain.

Task functions can be divided into three aspects of *performance*:

1. *Individual task knowledge* – autonomous choice/conduct (individual self).

2. *Interpersonal task knowledge* – collaborative choice/conduct (family, friends).
3. *Ideological task knowledge* – collective choice/conduct (societal, ethical).

The *temporal sharing vectors* operationalize “*applicability*” factors because they define the temporal context of when knowledge is *useful* – including the instant, optimal frequency, rate, duration, and coordination across activities (i.e., “temporal synchronicity,” “polychronic time,” “asynchronic,” or “relativity”). The *temporal sharing vectors* do not prescribe the type of knowledge shared, but rather the beat, rhythm, scale, and harmony of cognitive music. Otherwise stated, *temporal sharing vectors* modulate the *flow* of experiences and, thereby create *consumption experience frames*. Similar factors related to the manner in which time frames consumer experience and behavior have been examined by consumer behaviorists (Robinson and Nicosia, 1991; Voss and Blackwell, 1979).

These *experience frames* are typically encountered as *services* in the marketplace – both traditional and digital – because services constitute a dyadic vehicle for providers and consumers to share time and frame experience (Schmitt, 1999; Pine and Gilmore, 1999).

Practical time pertains to “paid” or “income producing time” (Bryand and Wang, 1990; Lane and Lindquist, 1988). It indicates that shared knowledge should be productive, vocational, and delivered in an efficient manner – just as a conversation is conducted in a work setting.

Intellectual time sets the tone for study, inquiry, and musing. It is situation and mood determined, and occurs during work or leisure activities. *Intellectual time* acts as a catalyst to build momentum towards both *practical time* (ideas for work) and *spiritual time* (ideas for worship). *Pastime* is a period of personal relaxation marked by autonomous pacing, determination of specific moments, as well as widely varying period lengths and patterns of harmony. *Pastime*, similar to “discretionary time” or “non-committed time” (Engel et al., 1995; Lane and Lindquest, 1988) acts as a personal “time-out” between the other four *temporal sharing vectors* – especially *unwanted time* due to the release required upon its completion.

Spiritual time is a quiescent period for deep meditation, contemplation, as well as reflection on beliefs and nature. By design it internalizes moments, calms rhythm, lengthens period perception, and permits metaphysical harmonics. *Spiritual time* reconciles *unwanted time* (troubling) and *pastime* (trivial) with more constructive *temporal sharing vectors* – *practical time* and *intellectual time*.

In contrast, *unwanted time* is distracting and possibly destructive. It is experienced like static interrupting a more intentionally tuned period. However, it may occasionally bring a refreshing change of pace. *Unwanted time* acts to pragmatically redirect *practical time*, a learning opportunity for ideas resulting from *intellectual time*, and test of faith developed through *spiritual time*. Depending on the type of customer connection forged by marketing providers, the time set comprised of *intellectual time*, *spiritual time*, and *unwanted time* oscillates between time that is obligated and discretionary (Engel et al., 1995) – alternatively classified as committed versus uncommitted time (Lane and Lindquest, 1988).

Accordingly, the ten shared-value vectors described above are assembled into a cohesive mind/time sharing context. These vectors direct the translation of traditional market parameters of material/monetary exchange are into cognitive/temporal currencies exchanged for digital market consumption. Yet, although the denominations of mind/time currency are indicated by ten separate vectors around the model’s periphery, the determination of how particular mind/time sharing situations should be mapped is initiated at the center of the diagram.

Typically, digital consumption is prompted by the need to fulfill one of the five central “knowledge types” – practical, intellectual, past time, spiritual, or unwanted. These knowledge types correspond to different digital markets. However, after these digital consumption needs are initiated, a combination of the ten mind/time sharing vectors can be provided. Depending on the customer profile and the variety of

properties used to distinguish the digital offerings provided, a digital array of both mind and time sharing experiences can be consumed. Therefore, the center of the model guides strategic digital market positioning, while the model’s circumference guides the synthesis of digital offering properties.

2.1. Strategic mind/time model market scenarios.

In order to demonstrate the strategic value of the *digital consumption mind/time sharing model* a couple of marketing scenarios are presented. These scenarios highlight how traditional material/monetary parameters are appropriately translated into mind/time sharing vectors to improve the analysis of interactive consumption in digital markets. The two markets chosen correspond to the prominent digital consumption services of online shopping (e.g., Amazon.com) and education (e.g., K-12.com, DeVry University online). Of course, the model can be applied to other leading online services for entertainment (Youtube.com, Netflix.com, and Imagine Gaming Network ign.com), healthcare (WebMD.com), or legal services (LegalZoom.com). In addition, mind/time model strategies are applicable to the complete sphere of online social and commercial experiences available in virtual world domains like Second Life.

Digital shopping markets – online shopping experiences can be divided into purchases of tangible or intangible content. Traditional physical and material/monetary parameters do not accurately account for online shopping consumption patterns, and this deficiency increases as purchases move from tangible content like clothing to intangible content like reading, music, and movies. Beginning at the center, the online shopping situation would be classified using the five “knowledge types”.

For example, leisure online purchases would trace a “past time” pattern at the bottom of the diagram. Digital market providers of online shopping should be strategically positioned for “past time” consumption value. The core cognitive currency required would be the provision of “social tastes and tasks”, such as contemporary styles and popular titles. The core temporal currency required would be the fulfillment of “discretionary time” with interesting online experiences and unique digital content. So, an online shopping provider should design websites that offer a nice look and novel feel to effectively share cognitive discovery and temporal exploration.

Once digital market customers are captivated to exchange “past time” mind/time currency based on online provider’s core cognitive/temporal platform, a wider circle of mind/time sharing properties would be available during the shopping experience. These prop-

erties would be drawn from the ten mind/time sharing vectors around the model's periphery. For instance, while still engaging in "past time" leisurely shopping, a customer could identify an appealing offering with "religious tastes/tasks" properties or a pleasing aspect of the website that affords "muse time". In a similar manner, a digital consumption tapestry can be woven that mixes and matches any of the cognitive and temporal vectors represented in the model.

Digital education markets – online education has become a major digital consumption experience. Both the expansion of technology platforms and the availability of low cost alternatives to traditional courses have led to online learning for K-12, college, and vocational/technical degrees. Digital education market consumption would logically begin at the center of the model on an "intellectual" path for "knowledge types". Online education providers would be strategically positioned to offer websites that engage the "academic tastes/tasks" of prospective students with course variety and viability. Likewise, online course instructors would have to be chosen with credentials and expertise that enhances the desired "academic tastes/tasks" of prospective students.

Yet, ultimately, online learning is a temporal experience that requires digital platforms and websites which cater to the appropriate "muse time" needs of students and course subjects. Mathematics courses, for instance, would need to be designed for online experiences that allow individual discernment time (e.g., problem solving) as well as collective discussion time (participatory exercises). Theater courses, on the other hand, might require greater autonomous free time for character development and collaborative shared time for plot experimentation. Clearly, an extensive spectrum of temporal learning designs would arrange the "muse time" for courses ranging from literature and science to engineering and business. However, the merits of the model are affirmed in guiding online education providers to strategically position their offerings using both cognitive and temporal dimensions of "intellectual knowledge".

Once the validity and vividness of "intellectual" mind/time sharing has been designed, the online education curricula will gain from blending the beneficial learning aspects from all ten cognitive and temporal vectors around the model's circumference. For instance, math students would necessarily need to acquire the practical skills afforded by applying "vocation tastes/tasks", as well as the improvement in mental concentration that stems from instruction that allows "meditation time". Likewise, business students would need accounting courses to understand the implications of "paid time", as well as marketing courses to analyze the consumer motivation

for "social tastes/tasks". Thus, as an instructive template for designing immersive and innovative digital learning experiences, the mind/time sharing model advances the strategic market effectiveness of online education providers.

Reflecting on the digital consumption scenarios presented above offers a strategic perspective of cognitive and temporal interaction patterns. By recognizing the inherent knowledge types associated with company markets and consumer motives, strategic analysis can connect core exchange values to knowledge context factors. Then, the kaleidoscope of mind/time sharing vectors can be aligned with the target market's cognitive tastes/tasks and time conditions. Once the mind/time sharing model is well attuned, it enables digital market providers to deliver meaningful moments of interactive consumption experience.

Conclusion

A decade after the historic birth of Internet-based electronic commerce, known as the "dot.com era", marketing scholars and strategists still analyze digital market consumption using traditional market parameters. In order to advance marketing scholarship and strategy, this conceptual study presents a framework for analyzing digital market consumption based on cognitive and temporal exchange patterns. The proposed *mind/time sharing model* combines seminal consumer resource exchange theory, pioneering information science and media studies, classic examinations of societal transformation, as well as literature chronicling the emergence of digital market consumption during the World Wide Web's inception. The resulting model contributes a sound theoretical template which can be applied by digital consumer market providers for systematic strategic planning.

Admittedly, this study has limitations. The exploratory conceptual approach constrains conclusive findings regarding the proposed model's reliability. Still, a path is charted for future empirical research within and across digital markets. As a study based on seminal, pioneering, classical, and historic sources, the research may risk contemporary relevance. A casual search of the marketing literature will reveal an almost infinite pool of digital market articles, journals, degrees/programs, and even institutions that have appeared since the time period when e-commerce was conceived. Ironically, this vast collection of digital market derivatives can cloud the critical thinking necessary to conceptualize a structurally sound and systematically scaled planning framework. Having achieved the primary goal of theory construction using foundational sources, subsequent studies can examine contemporary digital market literature.

Importantly, the mind/time sharing model guides marketing scholars and strategists in translating traditional material/monetary customer resource exchanges into digital cognitive/temporal consumption currencies. Whereas traditional market parameters are aligned with the material resource and physical space determinants of consumption value, emerging digital market patterns are driven by cognitive and temporal determinants of online consumption value. The marketing lite-

rature is advanced by framing cognitive and temporal digital market consumption patterns within an academic structure and application system. As a comprehensive framework, the proposed model spans the spectrum of digital interactions. As a continuous framework, the proposed model traces progression of digital innovations. Therefore, this study lays a foundation for analyzing the ecology of digital market consumption spawned since its dot.com inception a decade ago.

References

1. Ashby, W. Ross (1960). "Chapter 18: Amplifying Adaptation", in *Design for a Brain*. London: Chapman and Hall.
2. Bates, Benjamin J. (1988). Information as an Economic Good: sources of Individual and Social Value", in *The Political Economy of Information*, V. Mosco and J. Wasko, editors, Madison, WI: University of Wisconsin.
3. Bell, Daniel (1973). *The Coming of Post-Industrial Society: a Venture in Social Forecasting*, New York: Basic.
4. Benjamin, Robert I. and Rolf Wigand (1995). "Electronic Markets and Virtual Value Chains on the Information Superhighway", *Sloan Management Review*, 36 (Winter), pp. 62-72.
5. Bergada, Michelle (1991). "The Role of Time in the Action of the Consumer", *Journal of Consumer Research*, 17 (December), pp. 289-302.
6. Bertalanffy, Ludvig von (1968). *General Systems Theory*, New York: George Braziller.
7. Bettman, James R. (1979). *An Information Processing Theory of Consumer Choice*, Reading, MA: Addison-Wesley.
8. Blackwell, R.D., P.W. Miniard, and J.F. Engel (2006). *Consumer behavior*, 10th edition, Mason, OH: Thomson / South-Western.
9. Bryand, W. Keith and Yan Wang (1990). "American Consumption Patterns and the Price of Time: a Time-Series Analysis", *Journal of Consumer Affairs*, 24 (2), pp. 280-308.
10. Castells, Manuel (1996). *The Rise of the Network Society*, Malden, MA: Blackwell Publishers.
11. Copeland, Melvin T. (1923). The Relation of Consumers' Buying Habits to Marketing Methods", *Harvard Business Review*, 1 (April), pp. 282-289.
12. Darnay, Arsen J., editor (1992). *Service Industries USA: Industry Analyses, Statistics, and Leading Organizations*, Detroit: Gale Research Inc.
13. De Grazia, Sebastian (1962). *Of Time Work and Leisure*, New York: The Twentieth Century Fund.
14. Ellul, Jacques (1964). *The Technological Society*, New York: Vintage Books.
15. Engel, James F., Roger D. Blackwell, and Paul W. Miniard (1995). "Chapter 9: Consumer Resources", in *Consumer Behavior*, 8th edition, Forth Worth, TX: Dryden.
16. Engel, James F., Roger D. Blackwell, and Paul W. Miniard (1995). "Chapter 10: Knowledge", in *Consumer Behavior*, 8th edition, Forth Worth, TX: Dryden.
17. Engel, James F., David T. Kollat, and Roger D. Blackwell (1968). *Consumer Behavior*, New York: Holt, Rinehart and Winston, Inc.
18. Enis, Ben M. and Kenneth J. Roering (1980). "Product Classification Taxonomies: Synthesis and Consumer Implications", in *Theoretical Developments in Marketing*, Chicago: AMA, pp. 186-189.
19. Evans, Philip and Thomas S. Wurster (1999). *Blown to Bits: How the New Economics of Information Transforms Strategy*, Boston: Harvard Business School Press.
20. Feldman, Lawrence P. and Jacob Hornik (1981). The Use of Time: an Integrated Conceptual Model", *Journal of Consumer Research*, 7 (March), pp. 407-419.
21. Ginzberg, Eli and George J. Vojta (1981). "The Service Sector of the U.S. Economy", *Scientific American*, 244 (March), pp. 31-39.
22. Glazer, Rashi (1991). Marketing in an Information-Intensive Environment: Strategic Implications of Knowledge as an Asset", *Journal of Marketing*, 55 (October), pp. 1-19.
23. Hall, Edward T. (1961). *The Silent Language*, New York: Doubleday.
24. Hoffman, Donna L. and Thomas P. Novak (2005). "A Conceptual Framework for Considering Web-Based Business Models and Potential Revenue Streams", *International Journal of Marketing Education*, 1 (1), pp. 7-34.
25. Hoffman, Donna L. and Thomas P. Novak (1996). "Marketing in Hypermedia Computer-Mediated Environments: Conceptual Foundations", *Journal of Marketing*, 60 (July), pp. 50-68.
26. Hoffman, Donna L., Thomas P. Novak, and P. Chatterjee (1996). "Commercial Scenarios for the Web: Opportunities and Challenges", *Journal of Computer-Mediated Communication*, 1 (3), available at <http://www.usc.edu/dept/annenber/journal.html>.
27. James, William (1890). *The Principles of Psychology*, Vol. 2, New York: Henry Holt and Company.
28. Kardes, Frank R. (1999). *Consumer Behavior: Managerial Decision Making*, Reading, MA: Addison-Wesley.
29. Kauffman, Carol Felker, Paul M. Lane, and Jay D. Lindquist (1991). "Exploring More than 24 Hours a Day: A Preliminary Investigation of Polychronic Time Use", *Journal of Consumer Research*, 18 (December), pp. 392-401.
30. Kotler, Philip and Gary Armstrong (2011). *Principles of Marketing*, 12th edition, Upper Saddle River, NJ: Pearson – Prentice Hall.

31. James, William (1890). *The Principles of Psychology*, Boston: Henry Holt.
32. Lane, Robert E. (1966). "The Decline of Politics and Ideology in a Knowledgeable Society", *American Sociological Review*, 11 (October), pp. 645-655.
33. Lane, Paul M. and Jay D. Lindquist (1988). "Definitions for the Fourth Dimension: a Proposed Time Classification System", in K.D. Bahn, editor, *Developments in Marketing Science* 11, Blacksburg, VA: Academy of Marketing Science, pp. 38-46.
34. Machlup, Fritz (1962). *The Production and Distribution of Knowledge in the United States*, Princeton, NJ: Princeton University Press.
35. MacKenzie, Scott B. (1986). "The Role of Attention in Mediating the Effect of Advertising on Attribute Importance", *Journal of Consumer Research*, 13 (September), pp. 174-195.
36. Masuda, Yoneji (1980). *The Information Society as Post-Industrial Society*, Wash., DC: World Future Society.
37. Maturana, Humberto R. and Francisco J. Varela (1992). "Chapter 6: Behavioral Domains" and "Chapter 8: Social Phenomena", in *The Tree of Knowledge*, Boston: Shambhala.
38. McGrath, Joseph E. (1988). *The Social Psychology of Time*, Newbury Park, CA: Sage.
39. McKenna, Regis (1997). *Real Time: Preparing for the Age of the Never Satisfied Customer*, Boston: Harvard Business School Press.
40. McKenna, Regis (1991). *Relationship Marketing: Successful Strategies for the Age of the Customer*, Reading, MA: Addison-Wesley.
41. McLuhan, Marshall (1964). *Understanding Media: the Extensions of Man*, New York: Mentor Books.
42. McLuhan, Marshall and Bruce R. Powers (1989). *The Global Village: Transformations in World Life and Media in the 21st Century*, New York: Oxford Press.
43. Mead, George Herbert (1934). *Mind, Self, and Society: From the Perspective of a Social Behaviorist*, Chicago: University of Chicago Press.
44. Mumford, Lewis (1934). *Technics and Civilization*, Harcourt, Brace, and Company.
45. Neelamegham, Ramya and Dipak Jain (1999). "Consumer Choice Process for Experience Goods: an Econometric Model and Analysis", *Journal of Marketing Research*, 36 (August), pp. 373-386.
46. Negroponte, Nicholas (1995). *Being Digital*, New York: Alfred A. Knopf.
47. Ornstein, Robert E. (1969). *On the Experience of Time*, London: Penguin Science.
48. Pine, B. Joseph II and James H. Gilmore (1999). *The Experience Economy: Work is Theater and Every Business is a Stage*, Boston: Harvard Business School Press.
49. Pool, I. DeSola (1984). "Tracking the Flow of Information", *Science*, 221, pp. 609-613.
50. Porat, Marc and Michael Rubin (1977). *The Information Economy: Development and Measurement*, Washington, DC: Government Printing Office.
51. Robinson, John P. and Geoffrey Godbey (1997). *Time for Life: the Surprising Ways Americans Use Their Time*, University Park, PA: Penn State University Press.
52. Robinson, John P. and Franco M. Nicosia (1991). "Of Time, Activity, and Consumer Behavior: an Essay on Findings, Interpretations, and Needed Research", *Journal of Business Research*, 22 (3), pp. 171-186.
53. Schmitt, Bernd H. (1999). *Experiential Marketing*, New York: The Free Press.
54. Shapiro, Carl and Hal R. Varian (1999). *Information Rules: a Strategic Guide to the Network Economy*, Boston: Harvard Business School Press.
55. Sheth, Jagdish N., Banwari Mittal, and Bruce I. Newman (1999). "Chapter 14: Individual Consumer Decision Making", in *Customer Behavior: Consumer Behavior and Beyond*, Fort Worth, TX: Dryden.
56. Sheth, Jagdish A. and Rajendra S. Sisodia (1997). "Consumer Behavior in the Future", in *Electronic Marketing and the Consumer*, R.A. Peterson, editor, Newbury Park, CA: Sage, pp. 17-38.
57. Shugan, Stephen M. (1993). "Explanations for the Growth of Services", in *Service Quality: New Directions in Theory and Practice*, Roland T. Rust and Richard L. Oliver, editors, Newbury Park, CA: Sage.
58. Sirgy, M. Joseph (1986). *Self Congruity: Toward a Theory of Personality and Cybernetics*, New York: Praeger.
59. Sternthal, Brian and C. Samuel Craig (1982). *Consumer Behavior: an Information Processing Perspective*, Englewood Cliffs, NJ: Prentice-Hall.
60. Tapscott, Don (1995). *The Digital Economy: Promise and Peril in the Age of Networked Intelligence*, New York: McGraw-Hill.
61. Tapscott, Don (2000). *Digital Capital: Harnessing the Power of Business Webs*, Boston: Harvard Business School.
62. Toffler, Alvin (1990). *Power Shift: Knowledge, Wealth, & Violence at the Edge of the 21st Century*, NY: Bantam.
63. Usunier, Jean-Claude and Pierre Vallette-Florence (1991). "Construction d'une Eschelle de Perception du Temps: Resultats Preliminaires", in *Time and Consumer Behavior*, Proceedings of the VIIth John-Labatt Marketing Research Seminar, J.C. Chebat and V. Venkatesan, editors, Montreal, Canada: U.Q.A.M., pp. 259-80.
64. Veblen, Thorstein (1899). *The Theory of the Leisure Class*, New York: Heubsch.
65. Venkatesh, Alladi (1998). "Cyberculture: Consumers and Cybermarketscapes". in *Servicescapes: the Concept of Place In Contemporary Markets*. J.F. Sherry, Jr., editor, Chicago: AMA, pp. 343-375.
66. Voss, Justin and Roger Blackwell (1979). "The Role of Time Resources in Consumer Behavior", in O.C. Ferrel, Stephen Brown, and Charles Lamb, editors, *Conceptual and Theoretical Developments in Marketing*, Chicago: AMA, pp. 296-311.