

Endgame in the Internet Era¹

by

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Endgame in the Post-Internet Era

ABSTRACT

Strategies for coping with businesses that face the declining demand of late life-cycle products are revisited in light of the enhanced competitive capabilities made possible by access to the World Wide Web and connectivity to the Internet. Presumably endgame competitors may draw upon a wider variety of implementation options on both the demand and supply sides when serving the highly-connected markets reached via Internet access. Results are posited to be mixed since supply-chain activities enhanced by Internet access could extend the long tail of distribution concerning how long demand for obsolete or unfashionable products may endure. Economic exit barriers that prevent competitors from rationalizing excess capacity are reduced, so risk should be lower too. But the Internet milieu makes new entry easier for marginal competitors from lower-wage venues who could use price-cutting tactics to erode the accumulated value of extant firms' brand equity and otherwise negate past investments in product differentiation in ways that will collapse the high profit margins typically enjoyed within well-managed endgame industries. Accordingly, managerial responses for coping with declining demand will differ during the post-Internet era from how firms competed in the pre-Internet era.

Declining demand is a management challenge that is distinct from that of declining organizations (McKinley, 1993; McKinley, Latham and Braun, 2014) or poor financial performance (Koh, Durand, and Dai, *et al*, 2015). Performance problems that contribute to firms' declining profitability, such as the need for financial restructuring, can occur regardless of a business' demand outlook. Declining demand arises when industrywide changes in the aggregate number of units sold become negative due to changes in demographic, technological, cultural, political and economic environments, among others. When demand is not expected to revive, it forces industries, businesses or products into the arena of endgame competition.

Managers used endgame strategies when firms coped with conditions of declining demand—especially in the face of excess capacity (Harrigan and Porter, 1983). Although managers may not notice the onset of endgame for their firms' products when average industrywide revenues have been rising due to successful price increases, the reduction in overall unit sales will eventually require appropriate action.² Harrigan (1980c) noted that when business

² In this essay, the term, “declining-demand products,” refers to declining demand for products as well as services—such as one-way paging, landline telephonic communications or commercial radio-broadcast services, among others.

performance problems became evident because supply exceeded demand, some managers initiated short-term actions, *e.g.*, price-cutting, that undermined longer-term, industrywide profitability in the hopes of revitalizing demand that—for exogenous reasons—would not easily resuscitate. In these types of contexts, endgame strategies should be initiated earlier rather than later and astute competitors must guide the actions of maladjusted rivals in order to prevent them from destroying profitability potential for the rest of the remaining firms.

During the pre-Internet era, which endgame strategy options firms pursued was influenced by (a) customer demand traits, (b) the overall attractiveness of the industry impacted by declining demand, and (c) firms' relative competitive strengths and historical market position within such industries (Harrigan, 1980c). Which endgame strategies will be most appropriate to pursue within post-Internet economies will be influenced by the differing structural constraints that the Internet imposes or obliterates on the phenomenon of declining demand within various types of industries and how firms might best cope with their late life-cycle businesses within a boundaryless world.

In this essay, we will explain how the rise of the Internet and World Wide Web has affected both (a) the attractiveness of products facing declining demand and (b) the relative ease with which firms can adjust their potentially-redundant asset investments (where such assets were previously used to provide declining-demand products). We argue that effects from the Internet's existence are countervailing because the extended market reach offered by the World Wide Web extends the timing of how long declining-demand products might profitably be offered to customers—potentially by extending the life expectancy of demand.

We also argue that the connectedness of the Internet reduces the relative height of economic exit barriers that firms may face while adjusting resources used to execute their endgame strategies, thereby reducing the riskiness of certain strategic postures. But the higher profit margins that were typically enjoyed within pre-Internet endgame industries are not guaranteed for firms who remain invested therein during the post-Internet era. Entry is easier for marginal competitors from lower-wage venues who could use price-cutting to erode the accumulated value of brand equity and otherwise destroy product differentiation efforts in ways that collapse the duration of an extended period of potential profitability. Thus the net effects of the Internet's more-broadly connected arena increases *both* the potential demand for late life-

cycle products and the riskiness of competing therein. Endgame competition will be more difficult for those firms that cannot adapt to the differences that the World Wide Web introduces.

THE PRE-INTERNET ENDGAME STRATEGIES

The endgame strategies discussed herein emerged from research concerning why firms might invest further resources in businesses that were at the apparent end of their life cycles (Harrigan, 1979). All life-cycle models posit an endgame-like stage that features decline. In marketing studies, the product life-cycle paradigm considered how market conditions changed as demand became saturated, stagnant, and ultimately declined (Wasson, 1974). Subsequent studies of brand revitalization and relaunch reflected managers' efforts to counter declining demand.

Evolutionary economics frameworks, such as Porter's (1980) typology of structural changes within industry environments (*i.e.*, embryonic, emerging, established, and endgame) or Klepper's (1996) view of technological evolution, suggested how industry structures evolved when firms mobilized their resources to satisfy different types of demand. Subsequent studies regarding how the irreversibility of firms' endogenous investments affected industrywide profitability were useful for strategy research since supply-side studies of competition informed questions regarding strategic group differences, mobility barriers, exit barriers and asset redeployment, among others. Findings from studies of industry structural evolution suggested when competitors might best enter and exit, whether there will be niches of inelastic product demand, what uses are made of supplier-buyer coordination over time, how patterns of pricing behaviors affected resource deployments, and what timing firms embraced for their diverse implementation initiatives. These and other studies of dynamic structural attributes were useful for addressing the challenges of endgame competition during the pre-Internet era.

Evolutionary frameworks have implicitly called for managers to make prompt competitive responses to declining demand in order to mitigate the potentially-adverse environments that followed. Managers were urged to anticipate structural and behavioral issues that could limit their firm's strategic flexibility when coping with the problem of endgame (Harrigan, 1985a). But when the challenge of declining demand was considered within a competitive strategy context such as hypercompetition, evolutionary frameworks addressing the shortening duration of a product's technological half-life suggested self-cannibalization as an appropriate response to accelerating technological progress (D'Aveni, 1994).

Abandonment in that context may be suboptimal since exiting prematurely to satisfy shifting demand for some customers sacrifices an opportunity to collect rents from remaining customers. Early abandonment of customers leaves money on the table that astute surviving firms can appropriate; good cash flows and high returns on invested capital can be attained within declining businesses through skillful management (Harrigan, 1980c). Therefore multi-business firms need to consider frameworks that allow them to collect rents on their sunk investments while also chasing the next wave of innovation.

Endgame Industries

During the 1970s, when post-industrial economies were the premier sites of affiliated manufacturing activities, firms' endgame strategies were largely concerned with maintaining price levels by adjusting productive capacity in order to keep supply in line with declining demand. To maximize returns from late life-cycle businesses, endgame strategies were launched by leading competitors when industrywide growth in demand first slowed, plateaued, and/ or declined with no indication that future demand would revitalize. Thus endgame strategies embodied responses to the inflection point in a typical "S-curve" industry growth model. Pursuit of endgame strategies may be shorter in duration and subject to dynamic evolution while they are being implemented because they reflect differences in (a) the wants and needs of those market segments that still consume the declining-demand products, as well as in (b) the ease of redeploying associated assets to other uses (or recovering the value of past investments) which may be impaired due to economic exit barriers—which were an important consideration where maladapted competitors had to be eased out of the industry. Figure 1 depicts the endgame strategies that were used (Harrigan, 1980c).

FIGURE 1 ABOUT HERE

The vertical axis of Figure 1 indicates whether an industry's structure was favorable and the demand outlook was conducive to justify pursuit of the more-aggressive endgame strategies. Demand within the most-attractive endgames declined very slowly in predictable patterns—sometimes for over a century like demand for cigars or whiskey. Demand within the least-attractive endgame environments declined rapidly and erratically in highly uncertain patterns. While there were stable pockets of demand where price premiums could be sustained in the

most-attractive industries, there were no niches of loyal customers and pricing was volatile (at levels that were frequently below cost) in the inhospitable industries.

Outlays to differentiate products were more effective in the attractive endgame settings due to brand name loyalty or corporate name recognition. Customer switching cost barriers were high in the attractive industries, but long-term contracts did not lock in customers so strategic repositioning was feasible for those firms wishing to disinvest. Customer bargaining power was higher within the less-attractive industries because products had become commoditylike to them and customers sometimes enforced long-term purchase agreements. Supplying firms complied because abandonment endangered the viability of suppliers' other businesses which also served those same intractable customers (Harrigan, 1980b).

The least-attractive industry structures in endgame required high levels of reinvestment in highly-specific capital assets that were frequently mandatory. Diseconomies of scale created significant penalties if facilities were not utilized at break-even levels and excess capacity was rampant in the least-attractive industry settings. By contrast the more-attractive industry structures used assets that were well-depreciated, did not require frequent outlays for maintenance and could be redeployed (when appropriate) to other uses—making firms' exit barriers easier to manage (Harrigan, 1980a and 1980b).

The assessment that attractive demand would endure and that an industry would remain hospitable for continued investments opened up a wider range of feasible strategy options, as shown in Figure 1, depending upon a firm's ability to implement them successfully. By contrast, Figure 1 suggests that an assessment that price-insensitive demand would not endure or that an industry was not hospitable for further investments limited a firm's range of strategy options to asset repositionings and disinvestments (Harrigan, 1980d).

The horizontal axis of Figure 1 contrasts the relative strengths of various competitors to serve attractive customer niches within endgame. The strongest firms were best-suited to compete in the endgame. A dominant competitor typically assumed the role of a "last iceman" to serve laggard demand (Willoughby, 1987). Weaker competitors sometimes needed help to enable them to exit.

Harrigan (1980c) found substantial evidence to suggest that firms with weak strategic postures within unattractive industries tended to hold on to their declining demand businesses for

too long. Timing mattered. Firms that exited before industrywide decline became widely recognized frequently enjoyed above-average recovery of their investments. Asset recoveries were more difficult over time when salvage values fell and late-exiting firms who could not redeploy their assets to other internal uses faced losses. Remaining firms picked up abandoned customer demand after the weaker firms removed their capacity from the affected industry.

Figure 1 indicates a gradation of strategies that were used to cope with the endgame. A firm could increase its investment level to dominate the industry or get a better competitive position if it sought to be the “last iceman” who served as vendor of last resort (but there was only one “last iceman” within the most profitable endgames). Increased commitment of assets required a favorable prognosis of industry conditions. Maintaining only routine investments was appropriate if the industry’s outlook seemed to be attractive but there were uncertainties to resolve before a firm committed more aggressively to endgame competition (or backed off). Astute firms typically maintained a holding pattern temporarily—only until they had clarified the intent of competitors. Most frequently, firms shrank their investments to focus upon the most enduring pockets of demand where industry attributes were hospitable for prolonged competition. They invested further resources into endgame competition only to improve their relative positions vis-à-vis targeted customers.

Where industry outlooks were not promising for a profitable endgame, astute firms disposed of their assets as advantageously as possible. Maladapted competitors who were slow to attempt strategic exits were frequently reduced to milking their investments within the endgame industry—without regard for future market share or resulting competitive posture—in order to recover cash. Since favorable endgame environments kept productive supply in line with declining customer demand, surviving firms helped lesser competitors to exit (Harrigan, 1980c).

PRE-INTERNET PATTERNS OF DECLINING DEMAND

In the past, managers who interpreted the environment of declining demand correctly and timed their strategy decisions astutely could prosper in endgame, while managers who did not adjust their strategic responses to declining demand quickly enough damaged their firms’ profits (Harrigan, 1980c). Successes within endgame required managers to understand the implications of falling demand correctly, assess their firms’ capabilities relative to known competitors, and adjust their firms’ exposed assets according to their relative bullishness concerning demand

revitalization. It also depended upon correctly anticipating how competitors were likely to respond since declining demand was usually insufficient to support many economically-sized plants. One careless competitor could ruin the profitability potential for all remaining firms.

The endgame gestalt of strategy considerations assumed that national boundaries were finite—so the amount of excess capacity to be contained was known. The post-Internet era broadened the range of international players that could potentially interact to serve declining demand for late life-cycle products within a particular national context. Broadly-considered, national differences such as attitudes regarding fashion, technological obsolescence, and government intervention explained why declining demand might revive within diverse exogenous contexts at different times (Vernon, 1966). Some nations had developed infrastructures that made them more hospitable for continued operations than others. The post-Internet era eroded the national constraints that may have been due to infrastructural differences.

The causes of declining demand provided clues regarding whether industrywide consumption volumes could revitalize or whether demand for products had largely ended. Expectations concerning future demand drove the range of asset repositioning decisions that managers undertook. In the pre-Internet era, an attractive endgame enjoyed orderly exits by competitors. Typically, the strongest firms had the widest range of strategy alternatives to choose from and they remained invested in the endgame for the longest duration to shape how competitive events unfolded (Harrigan, 1980d). Weaker competitors typically sought the highest asset recovery possible by making an early exit.

Harrigan (1980c) posited three sources of declining demand: fashion, technological, and political. Fashion-based sources of decline arose from changes in individual consumers' tastes and lifestyle choices that were reflected in social trends or arose from cultural differences. Technological sources of decline reflected inventive progress that offered consumers choices regarding the speed with which substitute products were adopted. Political sources of declining demand reflected society's institutionalized choices—manifested in regulations and laws that sometimes affected ongoing operations adversely.

Predictable politically-induced declining demand enabled producers to ease out of their investments in irreversible assets when an end to their use was mandated. The adverse effects of decline due to technological obsolescence were mitigated by influencing substitution rates

Fashion- or lifestyle-related declines in demand were most risky to predict because their potential for eventual revitalization reduced firms' willingness to disinvest.

Fashion-Related Demand

Demographics and lifestyles changes accounted for adverse changes in baby food consumption during the 1960s. Fewer babies were born per thousand fertile women due to the introduction of birth control pills, household needs for two bread-winners, and improved career opportunities for women (Harrigan, 1980c). Demand for baby-related products increased (after a lag) in the 1970s due to immigration and baby boomers' desires at last to start families. A new ethnographic mix of consumers arrived that favored different types of baby products than did the generations before them. But some purveyors of baby foods were forced to exit before demand for baby-related products revived to its previous levels. Similarly, firms selling many consumer-oriented children's products experienced the temporary effects of declining demand due to the smaller generation of children born during the "credit freeze birth dearth" years of 2009 to 2011.

Fashion-related declines in consumption offered hope for eventual revitalization since demographic changes were often temporary and social opinion evolved over time; sometimes demand for a fashion item revived (as in the example of acetate rayon fabrics or shoulder pads) or new types of consumers rediscovered the previously out-of-fashion product and temporarily purchased it again, albeit in smaller volumes (Harrigan, 1980b).

The fundamental reasons for demand to decline with little hope of revitalization—fashion, technological, and political—persist in the post-Internet era. In the 2020s, lifestyle changes explained greater consumer preference for healthy, non-alcoholic beverages. (Perhaps younger consumers avoided beer, wine and liquor products because it slowed their reaction speeds while playing online games or engaging in other types of Internet-related transactions.) Wearing fur and leather was politically incorrect within some social circles during the 2010s. Although drive-in movies waned in popularity in the 1960s, the need for social distancing during the coronavirus pandemic brought them back into viability in 2020. Presumably demand for liquor, the skins of mammals, close-proximity entertainments, and other shunned products could return when consumers mature, social opinion changes, and public safety was not threatened.

The challenge in coping with decline that was driven by consumer tastes was forecasting the timing with which fashions or cultural values will change vis-à-vis demand for a particular

eschewed product. Fashion influencers, *e.g.*, celebrities and popular films, offered clues regarding future consumption patterns, but deploying assets based upon expectations regarding the speed with which preferences change within various market segments was risky. Firms that were affected by fashion-based sources of demand could bide their time (if they enjoyed sufficiently diversified sources of cash flow) and adjust their productive capacity downward until their products were back in fashion. Demand for lifestyle products such as cigars and brown liquor, for example, was declining but continued to attract new generations of consumers reaching middle age, albeit temporarily (Harrigan, 1980c). While demand for carbonated beverages was down, soft drink companies had to maintain the flexibility of later reactivating the bottling assets used to provide fizzy drinks, just as producers of fermented alcoholic beverages were sometimes obliged to age them in their barrels for longer than planned

Technological Change and Demand

Rapid technological progress and faster clockspeeds—enabled by compressed technology cycles and accelerated by knowledge-sharing routines such as crowdsourcing—shortened products’ life cycles, forcing firms of all varieties to run the race against technological obsolescence by adapting or exiting. Electric vehicles made internal combustion engines less desirable to buyers. Stores operated by bricks-and-mortar retailers went out of business as shoppers went online. Railroads were avoided in favor of other, more-flexible means of transport (Harrigan, 1980b). Sometimes firms using novel assets that incumbents lacked provided innovative substitutes to customers that hastened an older product’s decline, as in the example of movies being streamed on demand rather than viewed in motion picture theaters at scheduled times.

There were two types of technological obsolescence that affected the profitability potential of endgame competition—continuous technological change embodied in incremental upgrades and discontinuous technological change where the substitute required a physical infrastructure that was markedly different from the late life-cycle product, as in the examples of vacuum receiving tubes, instant photography, the Sony *Walkman*, videotaped entertainment and DVDs, among others.

Purchasing patterns for residential consumers differed from those of industrial customers using late life-cycle, technologically obsolete products. For example, when obsolescence became

evident, industrial purchases of obsolete items typically spiked upward. Industrial customers acquired an ample supply of replacement parts for those obsolete products that they expected would soon be discontinued (Harrigan, 1980c).

High returns could be earned from these last-gasp sales of late life-cycle, industrial products (and their related replacement parts) as industrial demand was relatively inelastic and premium prices could be charged for them until demand ended. Realizing that profitability would soar—albeit briefly—upon the technological obsolescence of such products, originating firms were particularly attentive to how they might best extricate their capital assets from use during subsequent endgame competition—particularly if their brand equity could be endangered. Some firms offered customers lifetime buyout deals to liquidate all of their inventory while others continued to make replacement parts (and the late life-cycle product itself) for a prolonged duration to satisfy the typical flat-tailed distribution of demand.

Industrial managers were challenged by technological change if their existing knowledge bases or business models were rendered obsolete (Agarwal, 1996). For example, vacuum tube managers quashed their firms' in-house development of transistors and new industry leaders emerged instead with next-generation products (Harrigan, 1980c). Instead of being displaced by new entrants when demand declined due to technological obsolescence, however, some industrial firms offering well-regarded, late life-cycle products became attractive as takeover candidates since their knowledge of how best to serve their loyal industrial customers was vast. Acquiring firms anticipated flipping technologically-laggard customers to the use of their substitute products when it became most economic to do so. It was a lost windfall to discontinue the older products prematurely because some technological replacements co-existed profitably with incumbents, as in the examples of carbon paper and treated paper for purchase receipts (Harrigan, 1980b).

Emotionally-vested consumers who enjoyed technologically-obsolete products frequently used both configurations—substituting whichever technological standard was most-appropriate to perform a particular task. Nokelainen and Dedehayir (2015) noted that users of post-dominance technologies shared more key characteristics in common with the earliest adopters of technologies than with later-stage adopters who were more likely to migrate to whatever newer

technologies followed. Early adopters proved to be the best customers during endgame and firms known for their formerly dominant technologies were best suited to provide them.

Incumbent firms prospered from being the strongest endgame competitors because they already had entrée to customers and were more experienced at serving them than were inexperienced competitors offering replacement technologies (Bergek, Berggren, and Magnusson, *et al*, 2013). Benner (2008) found that analysts and investors valued incumbent firms for the cash flows that they generated from existing businesses and technologies—even in the face of increasing certainty about oncoming technological obsolescence—because their past expertise created value in satisfying demand.

Formerly-dominant technologies did not always disappear after being displaced by new ones. Technological standards coexisted if customers were emotionally vested in them. Older products were supported by communities that valued their aesthetic attributes. For example, film schools touted the beauties of using motion-picture film (Antoniuzzi, 2020; Keinan, Eckhardt, and Beverland, 2018). Aficionados of high-fidelity sound (obtained using vacuum tubes as active electronic components) and vinyl LP records boasted a fervent, but small, group of laggard devotees who clung to such obsolete technologies longer than other consumers did (Harrigan, 1980c). Instant photography enjoyed a revival in consumer demand, supported by Fuji (the last iceman of photographic film) when the Polaroid photography technology was combined with features of the substitutes that made it obsolete. The commercialization of color television technology delayed the abandonment of vacuum tubes by several years (Harrigan, 1980c). Therefore, it seemed prudent that one of the technological incumbents should keep the option of reintroducing aspects of their late life-cycle products later when it seemed advantageous to do so.

Finally, firms within post-industrial economies embraced the downside of technological obsolescence because their societies valued investment in innovation (Frankel, 1955). Fishman, Gandall, and Shy (1993) noted that planned obsolescence was a necessary condition for the achievement of nations' technological progress. Arguably, a pattern of rapidly-deteriorating demand for products and fast innovation was preferred over an environment of long-lasting products and slower rates of innovation. Governmental interventions sometimes incentivized

development of disruptive technologies; they also cushioned the fall of competitors within sunset industries who could not adapt (Harrigan, 1983).

Politically-Induced Decline

The Prohibition years (1920 to 1933) represent an extreme example of politically induced declining demand since a constitutional ban was enacted against selling alcoholic beverages. Prohibitionists had previously tried to end the production and sale of liquor during the 19th century but lacked sufficient political backing to regulate their preferences (Harrigan, 1980c). Political sources of declining demand reversed more slowly than fashion-motivated ones (since it took time to change public policy), but such changes in sentiment could be foreseen (and asset exposure could be adjusted) within many industries where politics affected the risk of continued operations.

Governments have underwritten sponsorship of alternative energy initiatives, like wind power or biomass, thereby temporarily depressing demand for traditional energy sources (Nemet, 2009). Firms responded with the temporary mothballing of refineries used to supply fossil-fuel energy products. Government support was withdrawn when the economics of alternative energy sources, such as coal gasification, became unfavorable relative to the price of substitutes (Harrigan, 1985b). When financial support for alternative projects, such as solar power, was withdrawn and consumers returned to consuming traditional energy sources, the fossil fuel firms that kept their options intact and pivoted back to supplying substitute products enjoyed life-cycle extensions in demand (Harrigan, 1983).

Firms studied public policy astutely in order to thrive. Natural disasters, such as the Puerto Rican hurricanes or the Fukushima Daiichi nuclear meltdown, halted demand for energy products (Huang and Min, 2002). Suppliers evaluated the speed and likelihood of government-funded cleanups that could restore demand for their products. But in evaluating whether clean-up represented an investment opportunity for them, energy firms recognized that new regulations or operating restrictions that curtailed profits were frequently enacted following such disasters—making revitalized demand less profitable to serve. Because competitors were allowed to die when political opinion of their activities grew adverse, as in the example of chemical products and processes like leather tanning, synthetic soda ash synthesis, asbestos fabrication, and other businesses that were deemed too toxic, too polluting or otherwise undesirable to pursue, firms

were cautious before reinvesting in arenas where political guarantees could be eradicated (Harrigan, 1980c).

Although politically-imposed constraints, such as pollution controls, forced the physical relocation of some domestic activities to geographic venues with laxer operating standards, assets used to produce some declining-demand products were revived for local use when political need was great enough (Harrigan, 1985b). The speed with which consumption switched to politically-palatable substitutes was affected by the willingness of governments to underwrite such investments where switching costs were not trivial. Firms have learned to negotiate with policymakers regarding regulations that shortened the life expectancy of substances, like Teflon[®] or Freon[®], to gain greater certainty regarding when plant shutdowns must occur.

In these cited examples of declining demand, prediction concerning the duration of demand (and likelihood of its revitalization) set expectations for firms' asset-repositioning activities. Harrigan's (1980b) field study found returns in excess of 180 percent returns on invested capital within pre-Internet endgames where rates of declining demand could be anticipated well in advance. Firms having differing capabilities to weather endgame competition within such predictable settings made orderly exits well in advance of any government-mandated deadlines to keep profits high for all. But price competition instigated by costly, unretired excess capacity undermined profitability most adversely within industries affected by lifestyle changes or fashion because hope created the highest exit barriers (Harrigan, 1980d).

PRE-INTERNET EXIT BARRIERS

Firms coped with pre-Internet declines in demand for late life-cycle businesses by maximizing their returns through early disinvestment of assets or preemptive reinvestment in strategies to absorb market share from exiting competitors. Sometimes bullish managers purchased assets from exiting competitors (or otherwise helped redundant firms to exit). If managers could not remove salient competitors from the endgame, their second-best resource redeployment choice was divestiture (Feldman and McGrath, 2016), and the timing of disinvestment was affected by the height of their exit barriers.

Porter (1976) identified exit barriers as being economic, strategic and/ or emotional factors that kept companies competing in businesses even though they were earning low or even negative returns on investment. Some firms shunned exit to avoid recognizing nonfinancial

barriers (Caves and Porter, 1976). Exit barriers acted as a deterrent to taking timely action in all of the endgame strategy alternatives that firms considered. High exit barriers contributed to an adverse industry structure whereby excess capacity could not be easily retired in endgame—so price cutting became the norm. When exit barriers were high, distressed firms did not exit and technological progress was impeded as old-fashioned technologies did not give way to newer ones (Harrigan, 1980a).

Economic exit barriers were associated with irreversible assets (*e.g.*, specialized equipment for making paper) that could not be easily converted to other uses or sold to competitors, except at scrap-metal salvage values (Collis, 1991; Hozl, 2005; Rosenbaum & Lamort, 1992; Shaanan, 1994). If operational downsizing would negatively affect firms' reported performance, managers sometimes procrastinated in disinvesting instead of shrinking their firms' excess capacity in a timely fashion (Muñoz-Bullon and Sanchez-Bueno, 2010).

Economic exit barriers were also “legacy costs” (*e.g.*, pension and healthcare obligations that were owed to retirees, but unfunded-- as in the examples of the steel, petrochemical and automotive industries). They were also “remedial costs” (*e.g.*, clean-up costs mandated by environmental regulations associated with plant closings, as in the metals- or chemicals-processing industries). “Redundancy costs” were exit barriers associated with downsizing operations, like the job-bank programs created for unionized automotive workers during layoffs. Even where strategic exit seemed appropriate, firms seeking a means to downsize investment levels or leave distressed industries during the pre-Internet era were often unable to fund them (Lieberman, 1990).

Exit barriers created a major risk that the traditional balance between demand and supply could not be maintained during pre-Internet endgame competition. Firms that persisted too long in pursuing their old business strategies due to economic exit barriers missed opportunities to earn higher returns elsewhere because they became strategically inflexible. They also destroyed the profitability potential of endgame for those firms who were best-suited to compete therein.

The post-Internet era affected the nature of economic exit barriers faced by late life-cycle businesses most profoundly.

THE WORLD WIDE WEB AND COMPETITIVE VIABILITY IN ENDGAME

The preceding section has reviewed the endgame strategies and their use within the pre-Internet environment for coping with late life-cycle businesses in terms of declining demand traits and ease of resource redeployment. The next section postulates how the worldwide connectivity of the Internet (and new attributes made possible by it) modify the profitability potential of competing within future endgame competitions. This section discusses how the capabilities of the Internet changed the ability of managers to cope with declining demand within late life-cycle businesses. It offers propositions pertaining to firms' performance vis-à-vis endgame competition, as well as to how the Internet may affect the matching of demand for and supply of late life-cycle products.

After invention of the World Wide Web in 1989, firms' strategies were increasingly concerned with managing consumers' perceptions of their brands and overall corporate reputation (and less concerned with managing exit barriers). Accordingly, competition within the Internet era changed in ways that have affected the range of feasible activities that companies might embrace in order to cope with waning demand for currently out-of-fashion consumer products like men's tailored suits, as well as for technologically-obsolete products like mainframe computers, video-rental stores, photographic film, face-to-face educational degree programs, and many others.

As we explain herein, endgame strategies changed because the Internet has modified several aspects of endgame competition and the industry structures wherein it occurred. Most importantly among these changes is the fact that information flows faster due to the connectivity of the Internet—suggesting that more firms from around the globe can be aware of the reasons for declining demand within a particular geography and enter the ecosystems that extract rents in those locations by providing declining-demand products. The era when demand declined at dissimilar rates within different locations around the globe was eliminated by the Internet.

Where previously, internationally-configured firms could sell their products into venues where life-cycles declined unevenly to extend their duration of demand (Vernon, 1966), faster post-Internet information flows now facilitates the formation of outsourcing partnerships within

an internationally-configured network of potential partners. International endgame participation is especially likely as domestic firms have gained comfort with establishing alliances beyond their national borders. Firms seeking to exit incrementally from endgame competition may use licensing and other partnership arrangements to avoid reputational damage to customer service when they permit the use of their brands and logos by affiliates. Because new types of competitors are increasingly likely to enter endgames during the post-Internet era, changes in the profitability inherent from participating in such competition will also be inevitable.

Table 1 summarizes key propositions concerning competition and industry structure differences of the pre- and post-Internet economies as they affected firms' abilities to cope with declining demand. Environmental context affects endgame strategy. Briefly, Table 1 suggests that traditional competitive behaviors were less effective in the post-Internet economy than they were within the pre-Internet economy, but strategic flexibility has increased for all firms.

TABLE 1 ABOUT HERE

During the pre-Internet era, pressures to discontinue sales of declining-demand products were strong since the operating costs associated with promoting such products were typically high relative to the small sales volumes in question. The Internet extended the duration of demand and eased the capital costs of continuing to supply products, so the pressure to exit was reduced. Pre-Internet, the duration of remaining demand had depended, in part, upon the effectiveness of past investments in product differentiation that might engender buyer loyalty even in the face of viable substitutes. Profitability was higher if product differentiation was effective since the market segments that were loyal to the declining-demand product evinced a higher willingness to pay. Post-Internet, the effectiveness of product differentiation is attenuated as the variety of viable substitutes increased. Briefly, viable substitutes were limited in the pre-Internet economy because it was largely closed beyond the domestic arena; exiting firms had semi-strong power to extract pricing premiums from laggard customers who lacked alternative sources to satisfy their withering demand. Their pricing power was eroded when the Internet vastly expanded the scope of competition and new substitutes became available.

The network effects and search capabilities of the Internet affected both the *duration* of product demand and the *ease* with which asset configurations were adjusted as the endgame played out. With the help of the Internet, demand for otherwise-eschewed goods and services

was satisfied for laggard consumers for as long as it was profitable to do so. Within a well-managed endgame, demand could revitalize—albeit at a lower level than existed in the past (e.g. cigars, cigarettes or men’s tailored suits). Good returns could be earned on unfashionable declining-demand products after managers stopped chasing market share and concentrated instead upon increasing related cash flows (Harrigan, 1980b). By exploiting the Internet’s attributes, the “long tail” of demand that was generated by post-dominance technology-affinity groups was sustained for longer than was previously the case.

Viability of Demand for Declining Products

Internet retailing extended the duration of demand for late life-cycle products so long as inventorying costs were acceptably low. It was possible to keep technologically-obsolete and unfashionable products in stock somewhere in the world because—on the Internet—virtual shelf space was infinite and consumers could easily search through innumerable options to find exactly what they desired.

Proposition 1: Access to the World Wide Web increased the availability of declining-demand products for those laggard consumers and aficionados who populated the “longer tailed” distribution of declining demand—thereby extending the duration of time when technologically obsolete and unfashionable products could be demanded—with the effect of extending their respective life cycles. The endgame became more profitable for firms whose product differentiation was effective because branding investments conveyed a halo effect over product for a longer duration of time due to the Internet .

Search costs became minor when surfing the World Wide Web and the varieties of inventory that could be offered increased because shelf space became virtual. Anderson (2006) believed that the scarce shelf space which had limited bricks-and-mortar retailers from carrying broad product selections also caused them to concentrate upon offering only the most popular products. Removing the constraint of shelf space, he argued, should give infrequently-sold or under-distributed merchandise more value to retailers while satisfying the highly discerning consumers that were guided to niche products by online search and product recommendation tools. Such products were also expected to be more highly valued by consumers with niche tastes—an effect that Anderson (2006) termed “fatter tails.”

The argument that the availability of niche products would lure sales away from high-volume items proved to be incorrect—due to the exacerbating importance of social media on the Internet. Describing Internet retailing as a “winner take all” environment wherein consumers’ tastes and buying habits converged and “taste leaders” greatly influenced “followers” (Frank and Cook, 1993; Rosen, 1981), Elberse (2008) demonstrated that blockbuster products did *not* lose market share to niche offerings when the latter items became more-widely available. Consumers who valued niche products *also* consumed currently-popular blockbuster types of products—resulting in greater overall expenditures by them.

The distribution tail of demand became much longer due to the Internet’s attributes, but it became flatter (*not* fatter). Consumers of niche products would not necessarily pay premium prices to obtain older-generation products since the same customers who were knowledgeable of obscure products were also more skeptical—due to McPhee’s (1963) double jeopardy theory of exposure. Given that marketing competition moved from shelf space placements to a battle for eyeballs, Elberse (2008) noted that Internet retailers felt compelled to offer access to broader arrays of products, but they did not reap premium returns for doing so.

Online retailers desiring to serve the types of customers who made many online purchases stocked more of the older and unfashionable products in order to provide targeted consumers with the desired wider assortment of merchandise. Sometimes they even commissioned OEM suppliers to provide own-branded versions of the older-generation products in order to appeal to laggard demand. Online entertainment-streaming services offered older titles bundled within media plans to induce customers to choose the more-expensive subscription plans needed to access them. It became easier for volunteers and aficionados of technologically-obsolete or unfashionable products to create communities, adapt information, and maintain websites for promoting older products in order to keep excitement high and demand alive for products that they favored. Laggard customers even gained strength from their membership in such online affinity groups because the Internet allowed them to resist pressures to convert to using substitute products prematurely.

In summary, the Internet extended the *duration* of consumer demand that technologically-obsolete and unfashionable, late life-cycle products enjoyed due to their continued availability from vendors who merchandised them via the Internet. However, the

longer-tailed distribution of demand for technologically-obsolete or unfashionable products was *not* fatter because of their greater availability via the Internet. Producers of late life-cycle products found that premium prices were more difficult to sustain for consumer products in the twenty-first century than they had been in the past—perhaps due to the market power of online providers whose own-branded product selections undermined the attractiveness of others’ branded products. Although the shorter tail of industrial demand persisted when products were obsolesced in the post-Internet era, having the World Wide Web gave industrial laggards a way to buy replacement parts for obsolete products for as long as they were offered by some vendor somewhere on the Internet.

Newly Flexible Asset Configurations

In the past—before information that was conveyed rapidly via the Internet created widespread and rapid recognition of declining-demand conditions—early exit provided some firms with a timing advantage that gave them the highest likelihood of extracting higher salvage values for their redundant assets. Able competitors exited early to maximize the value of resources that could be recovered because of the relative certainty that certain types of declining demand would be short-lived. (Harrigan, 1980d; 1988).

The Internet’s quasi-perfect information about endgame conditions created a sword that cut both ways. Although it was increasingly evident to observers that there would be insufficient demand to utilize all of the productive assets in place within some declining industries (thereby reducing the likelihood of finding a robust market to dispose of exiting firms’ redundant assets), the Internet decreased certainty concerning when demand would disappear since the distribution tail of projected demand was longer and flatter.

In a relatively novel development, the Internet brought together value-chain partners who cooperated in finding better solutions for coping with declining demand. Their collaborations facilitated greater use of outsourcing or other arrangements that shared viability risks, thereby allowing new competitors to enter or replace departing originators of late life-cycle products. This phenomenon was called the *hollowing out* of their industrial base because departing firms maintained a marketing presence while production of late life-cycle products moved abroad (Jonas, 1986).

Proposition 2: When the physical assets used to provide declining-demand products were redeployed or retired, access to the World Wide Web reduced economic exit barriers for originator firms and increased the ease of redeploying their resources. Lower exit barriers decreased the risk of continuing to offer late life-cycle products as demand declined because partnerships supplemented firms' control over productive assets.

Firms thrived during endgame competition by keeping the costs associated with providing technologically-obsolete or unfashionable products as low as possible. Cost reduction was necessary since relatively fewer units of late life-cycle products were sold and smaller production runs were often less economic. Firms like Linear Technology Corp., custom-designer of power-conserving analog chips maker that were used in the 1960s, scoured flea markets and junk shops in search of inexpensive used voltmeters, oscilloscopes and other used equipment to test the electrical performance of their chip designs. With such a low capital investment base, Linear Technology's profit margin approached 40 percent for its declining-demand products. The existence of a low-cost provider for such analog chips extended the time period when industrial customers persisted in using them.

Firms varied in the asset intensity of their production models. Sony's Walkman (created in 1979) failed to remain competitive not only because Apple's iPod had developed a novel method to download music on the Internet, but also because Sony could not compete on price. Sony was obsessed with product perfection, so it followed the more-costly practice of manufacturing all of its parts and components in-house. Reliance upon its more-costly use of labor created the double-whammy of declining demand for a product whose pricing could not be lowered in order to prolong the flattening tail of demand. Similarly, Sharp Electronics clung to making its own active electronic components while on the precipice of financial ruin until it was forced into the arms of Hon Hai Precision Industry (trading as Foxconn Technology Group). By contrast, Apple used a virtual production model; it hired a worldwide network of outside contractors to make the hardware that Apple had designed. Outsourcing increased Apple's strategic flexibility vis-à-vis how long to offer products experiencing declining demand.

Productive assets tended to be lumpy and difficult to repurpose, but not always. When General Electric (GE) made small home appliances, it operated a flexible manufacturing plant whereby the specific jigs and dies needed to make waffle irons or percolator coffee makers could

be stored when not in use and rolled out as needed. After producing a year's supply of the estimated amount of small home-appliance products that would be demanded, GE rolled the salient manufacturing assets back into storage and set up for its next production run (Harrigan, 1980c.) Its early experience with such flexibility in managing inventories suggests why GE pioneered additive manufacturing models in conjunction with its *Predix Platform* software suite. When additive manufacturing technologies were perfected, the economic cost of small production runs became low (D'Aveni, 2018). The Internet enhanced the network formation needed to exploit such additive manufacturing systems.

When strategically-flexible production models gained popularity and factories embraced additive manufacturing via connectivity through the Internet (Bartezzaghi, 1999; Cagliano, Acur, and Boer, 2005), the World Wide Web allowed participating firms to form an extended ecosystem that could perform necessary production tasks under outsourcing arrangements. These collaborations created value-adding networks that functioned effectively at smaller throughput volumes. This change was particularly important for determining how firms might configure their internal activities during endgame. The increased flexibility made it feasible to provide certain late life-cycle products longer because the viability of doing so could be more easily maintained.

As flexible manufacturing became more important as a means of keeping smaller production run items on their product lists, firms looked to their value-chain partners (and sometimes to their competitors) for help in outsourcing certain steps and combining requirements for making smaller-volume components. Additive manufacturing systems made it easier to create the replacement parts needed for valuable industrial products in order to avoid premature shut downs. The rise of additive manufacturing extended the duration of time when endgame assets were cost-justified to retain.

Finally, some producers of declining-demand products maintained their market presence through earn-out arrangements with their supply chain partners (Parmigiani and Mitchell, 2010). They recovered the value of their products' brand equity incrementally (instead of selling their productive assets outright) through a version of the fade-out joint venture that left their former suppliers owning their late life-cycle businesses when their alliance ended (Harrigan, 1985b). Thus connection to the Internet greatly expanded the universe of potential partners who could

earn their way into ownership positions by helping originator firms to exit over time. This network was both positive and negative for profitability potential within endgame competition, depending upon which strategy firms wished to pursue.

COUNTERVAILING FORCES OF INTERNET AFFECTING ENDGAME VIABILITY

Since adverse changes in demand could be reasonably forecast and a means of overcoming economic exit barriers existed, endgame competition should have been profitable within the post-Internet economy, as it had been in the pre-Internet era. In several cases, however, these new attributes of doing business online introduced countervailing effects that impaired the profitability potential of endgame competition.

Proposition 3. Fewer original competitors increased their investment levels or commitment to serving laggard customers during post-Internet endgame competition because of entry by less-disciplined firms.

Despite the extended duration of customer demand, ability to form outsourcing partnerships to supply demand longer, and the reduced risk of recovering asset values upon strategic exit from late life-cycle businesses, fewer originator firms will persist as endgame competitors because the Internet reduces entry barriers as well as exit barriers for affected firms. New industry entrants using price competition to sell late life-cycle product inventories off their virtual shelves faster (or using highly depreciated assets to create shabby imitations that confused consumers and eroded the value of originators' product differentiation investments) destroyed the potential attractiveness of late life-cycle businesses for originators who may have stayed to serve customers longer.

In an environment where profit margins had previously been higher than expected (Harrigan, 1980c), the behavior of new entrants collapsed industrywide profitability among the remaining competitors during the post-Internet era. Sometimes the new entrants extended the use of a logo or brand name in ways that over-exposed it and cheapened its perceived value. Other times firms allowed an intermediary to interact with ultimate customers, thereby losing insights into why their customers bought particular products and services. Eroded product differentiation was facilitated by an increase in the variety of substitutes that became available via the Internet and by introducing new types of firms who were performing different types of tasks and having

differing types of priorities that motivated their sometimes adversarial competitive actions within the endgame.

The Internet may have made it possible to create better estimates of whether breakeven volumes were demanded for late life-cycle products by providing knowledge about consumers' buying behaviors via market research that firms gleaned via cookies, responses to click-through advertising, and other online means of gathering information, such as social media, viewing habits, and purchasing histories. Online connection via the World Wide Web may have extended the *duration* of demand for many types of consumer products, but it did not necessarily increase the profit margins available by providing the unfashionable or technologically-obsolete products to laggard consumers at premium prices. Several attributes of the post-Internet environment made it so.

The improved information available from Internet sources was used to balance demand with inventory volumes held. Competing in the shadow of the Internet lowered economic exit barriers for firms since collaboration with value-chain partners facilitated a means of liquidating firms' asset investments and shifting inventory holding costs to partners when firms determined that the lower volumes demanded might be too uneconomic to continue in-house operations. But bringing value-chain partners into the endgame created some adverse effects for others.

Post-Internet differences in national infrastructures reduced economic exit barrier heights for those firms who had developed and nurtured their endgame brands and designs in the past within a single national infrastructure—assuming that they were willing to abandon some aspects of control to third parties upon sale of their physical assets. Doing so made the competitive environment less attractive for other originator firms, however, who were not willing to give control to third parties of marques, logos and other assets that were associated with distinguishing their respective brands due to their strategic exit barriers.

If firms' logos or other distinctive identities were shared with products that were not late in their life cycles, competitors would not give up control of such intangible assets. Strategic exit barriers constrained these latter firms' willingness to jettison control to third parties if competitive activities when selling declining-demand products reflected adversely on their corporate image—for example where the bat-wing logo remained the symbol of their ongoing business units. Furthermore, strategically constrained firms were frequently unwilling to match

the pricing tactics of their new competitors, lest it undermine consumer perceptions regarding the value of their family of brands. Thus these firms were trapped in an endgame environment that was not as structurally attractive as before the World Wide Web was developed.

FIGURE 2 ABOUT HERE

Figure 2 summarizes how pursuit of the endgame strategies would likely be modified in the post-Internet era. Most notably, only the strongest originator firms would maintain a marketing presence; fulfillment of demand would likely occur via outsourcing to reduce their investment in late life-cycle businesses. The need for a “last iceman” competitor that had been documented by Harrigan (1979) was gone. Like the example of many companies extracting oil via directional drilling from the same centrally-located plat, profitability (and geopressures) would collapse faster in the post-Internet era.

In the pre-Internet endgame, a “last iceman” competitor that supplied declining demand until the bitter end always made money by providing replacement parts for obsolete products or necessary inputs or feedstocks to customers until they could adapt to using next-generation substitutes that fulfilled the same function once served by the declining demand product (Harrigan, 1980c). The “last iceman” provided excellent customer service to maintain the value of past investments in differentiation. Suppliers who acquired “last iceman” firms often transitioned their customers to new technologies after extracting maximum profits from late life-cycle products. The speed with which transition to new technologies occurred within the post-Internet environment was shorter since more competitors would likely be jockeying to convert customers to their offerings.

The benefits of participating in endgame competition were shared unevenly by firms in the post-Internet competitive environment. Because new firms could enter and devise substitutes that were technologically-compatible with the function of endgame products in order to enlarge customers’ choices among suppliers, they eroded the effectiveness of pursuing the “last iceman” strategy and undermined the future viability of outsourcing relationships that originators may have forged.

The threat of entry by disruptive new competitors negated the advantage of waiting to see whether to commit additional assets to endgame competition. Strong firms disinvested incrementally upon recognizing the onset of declining demand that would not readily revive and

positioned themselves to serve the most promising pockets of enduring demand. Even so, fewer strong originator firms stayed invested in their late life-cycle products—except where they could exploit the benefits of past investments in product differentiation.

Even competitors who tried to exit as soon as declining demand was evident were disappointed as the market for selling their physical assets was thin and salvage values were difficult to realize. The most unfortunate fate was suffered by weak competitors whose former strategic postures offered little that new entrants would need to supply laggard demand for late life-cycle products. Firms that might have milked their investments in the pre-Internet industries would continue to be a threat to profitability in the post-Internet endgame—except that in the post-Internet environment, nobody would help such firms to exit to create orderly endgame competition.

AREAS FOR FUTURE RESEARCH CONCERNING ENDGAME COMPETITION

Endgame strategies were unique within the genre of underperformance literature because they coped with the problem of reduced consumption of products and services—regardless of where they were produced. The problem of declining demand was different from other types of organizational or performance decline problems because the underlying reasons explaining why consumers stopped purchasing particular types of products sometimes prevented their eventual renewal.

Competition within mature and late life-cycle businesses matter. The topic deserves greater attention because of the magnitude of revenues involved. Products experiencing mature, stagnant or declining rates of repurchase have frequently comprised more than half of the commerce occurring within post-industrial economies. Yet there has been disproportionately little research attention given to the problems of businesses that matter greatly to ongoing firms.

Since strategy has both content and timing issues to consider, it is logical that there should be greater investigation into the fortunes of firms with businesses that were in the second halves of their respective life-cycles. Figure 1 illustrated a continuum of strategic content that

included doubling down as well as harvesting firms' extant strategic postures. In 1980 the continuum accurately predicted how firms would fare in endgame competition.

The Internet accelerated the timing of strategic changes. The presence of rapidly-collapsing opportunities therein suggested that a more-virtual strategic posture must be considered during the post-Internet era. It raises new strategy questions, such as in becoming virtual, when should extant competitors abrogate profitability potential to third parties and allow them to capture the metaphorical money left on the table because their businesses are facing slowing growth, stagnant or negative growth in demand? Where are there contexts where firms may not immediately harvest investments in their past strategic postures as soon as demand begins to decline? How do diverse nations deal with declining demand within their respective domestic industries and does it leave their firms weaker or stronger?

Underperforming Firms

Underperformance has been a much-researched management challenge—especially in cases where firms must retrench their scope of operations while attempting turnarounds in order to recover their market positions (Pearce and Robbins, 1994; Robbins and Pearce, 1992). If demand is declining, a turnaround may be required in order to operate efficiently in the face of reduced sales volumes (Barker and Mone, 1994; Barker and Duhaime, 1997; Trahms, Ndofor, and Sirman, 2013). Downsizing may reduce firms' scope of operations as well as their productive capacity (DeWitt, 1998). Firms that are least well-suited to compete will be forced to exit, lest they hemorrhage profits while being forced into court-supervised restructurings.

The endgame literature differs from other studies of declining business performance that require a turnaround. It differs from studies of declining organizations that require cultural changes or structural rehabilitation of their organizational designs (although both types of changes may become a part of the endgame strategy that ultimately must be implemented). Actions taken during such organizational and operating turnarounds will often become a part of firms' strategies to cope with underperforming assets within endgame contexts (Harrigan and

Wing, 2020). More must be known about the process of rehabilitating businesses as well as the timing of executing turnarounds in the post-Internet era.

Declining Demand in Post-Internet Era

In the decades since the first endgame field studies were undertaken, strategy theory has evolved to become increasingly skeptical about firms' abilities to retain customer patronage and reap the relationship benefits of serving customers well. While strategy scholars pondered the challenges of hypercompetition (D'Aveni, 1994) and the death of sustainable competitive advantage (McGrath, 2013), there remained the possibility of pursuing a well-managed endgame strategy that would return the cash flows that had been postponed during the years of revenue maximization to capture market share (Harrigan, 1980c). This essay has posited the notion that—in the Internet era—firms' short-sighted behaviors will destroy other firms' opportunities to harvest past investments in market share because of how business is being transacted via online commerce. Unlike the endgame competition studied in the pre-Internet era, there appear to be fewer ways of mitigating the damage incurred by firms who do not quickly harvest past investments.

As tests of this thesis, it would be informative to determine whether there are any justifications during the Internet era for increasing a firm's exposure to serving laggard customers while fashion evolves away from the consumption of particular types of products. Where technological progress is accelerating due to the Internet's traits, those businesses that fall by the wayside are especially worthy of study since their resources and employees must be absorbed by local economies. Where politically-induced decline has eliminated jobs and orphaned productive capacity, it would be useful to understand government's role in transitioning firms within endgame industries to other commercial endeavors since some post-industrial nations, like Japan, already have policies for helping "sunset industries." All of these are laudable inquiries that have largely been overlooked when considering how to improve management practice as well as assist in the attainment of economies' developmental goals. Findings from such inquiries would be potentially important for gauging the attractiveness of serving various types of market segments as well as for guiding firms' resource allocation decisions.

It is time to re-examine the old logics. It is time to question what must change. For example, in the past, it was standard policy for firms to replace computers when they were deemed technologically obsolete. But computers do not lose their effects on productivity in 2020 when they are no longer on the cutting edge of the technological frontier—especially as the efficacy of Moore’s Law is in doubt (Merritt, 2013). Consequently laptop computers may no longer be replaced immediately after a new set of logic chips is introduced—especially if the incremental improvements gained by upgrading to the next generation of computers or software is minute (Whelan, 2002). Firms need not chase after some types of technological innovation in the way that greyhounds chase mechanical rabbits.

Similar issues arise when considering how the Internet influences which types of firms are best-suited to carry on by serving customers’ declining demand after the firms that originated product categories have abandoned their innovations. It would be useful to test the proposition that the bases for competitive advantage have truly eroded so greatly that firms are primarily concerned with overcoming exit barriers and exiting from their endgame businesses instead of recovering rents by serving their hard-earned customers as they transition technologically. Do the firms that pick up the mantle of serving declining demand fare better than those that exited early? Is there an optimal timing for how long firms might participate in aspects of endgame competition within the post-Internet environment? How are success requirements different when serving customers that have been made knowledgeable of almost-infinite available options by the Internet’s broad reach? Which firms will be best-suited to interface with such customers? Which firms will thrive better by working behind the scenes as OEM suppliers during the Internet era?

The challenges of endgame competition are exacerbated by capabilities that have been facilitated by the Internet. The creation of more-discerning customers can be a boon for certain types of products while it will be a disadvantage for others. Similarly the multiplicity of ways that have been created to satisfy enduring product demand raises new competitive strategy questions that are worthy of investigation since indications are strong—although firms’ product life cycles will grow ever shorter—that laggard demand will persist and represent smaller volumes of consumption than existed at the peak of product demand. Managers, strategy scholars and public policy makers would all benefit from obtaining new insights concerning how best to cope with the competitive reality of late life-cycle competition in the shadow of the Internet. The

definitive treatise on how the Internet has changed the nature of competitive strategy has yet to be written.

Figure 1

Endgame Strategies

	Great strengths relative to competitors for serving attractive	No strengths relative to competitors for serving attractive
Favorable industry structure and demand outlook	Increase Investment or Hold Investment Level	Shrink Selectively or Milk the Investment
Unfavorable industry structure and demand outlook	Shrink Selectively or Milk the Investment	Divest Now!

Figure 2

Revised Endgame Strategies

Pre-Internet Strategies

Increase Investment: Strongest firm within an attractive endgame industry serves as “Last Iceman” by increasing investment and commitment to providing late life-cycle products—sometimes by acquiring assets of exiting competitors or otherwise helping them exit to reduce excess capacity

Hold Investment Level: Strong firms delay disinvestment until uncertainties are resolved concerning whether to increase investment or shrink back to serve attractive niches of demand

Shrink Selectively: Fewer opportunities to serve attractive pockets of demand

Changes in Endgame Attractiveness

Internet lowers entry barriers for new entry, so excess capacity cannot be contained

Internet removes contingency that increased investment might be appropriate endgame strategy even if dominant competitor exits

Internet extends duration of demand for late life-cycle products, but lowers

Post-Internet Strategies

“Last Iceman” maintains marketing presence via brand equity or corporate reputation, but Internet increases riskiness of greater asset investments; use outsourcing to reduce asset exposure during price wars

Strong firms disinvest from serving marginal customers and shrink asset position selectively since there is no advantage to waiting

Fewer strong competitors will maintain market presence; outsourcing rises

cause strongly-positioned competitors to disinvest incrementally

Milk the Investment: Weaker competitors that cannot redeploy their assets internally run late life-cycle businesses without regard for future market share or competitive position

Divest Now!: If demand and industry outlooks are not attractive, firms disinvest pre-emptively

entry barriers for new competitors wishing to serve laggard niches of demand

Internet facilitates sale of trapped firms' assets to potential buyers at salvage values (or less)

Recovery is lower for firms that cannot redeploy their assets internally since only the strongest late life-cycle businesses will be acquired by new entrants

to accommodate new entrants without disrupting pricing discipline

Activities of trapped firms whose exit barriers were not overcome destroy pricing discipline and potential profitability of participating in endgame competition

Firms that cannot redeploy assets pre-emptively suffer losses on attempted disposal

Table 1

Distinguishing Attributes of Pre- and Post-Internet Economies*		
Differences in Competitive Environment and Industry Structures		
Attributes	Pre-Internet	Post-Internet
Competitive		
Pressure to discontinue sales of declining-demand products	++	0
Effectiveness of product differentiation	++	+
Variety of technological choices available as substitutes	+	++
Industry Structure		
Height of economic exit barriers	++	0
Availability of replacement parts for obsolete products	+	++
* ++ = strong; + = semi-strong; 0 = weak.		

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