

Print ISSN: 1738-3110 / Online ISSN 2093-7717
<http://dx.doi.org/10.15722/jds.14.6.201606.5>

Trends in the Home Meal Replacement Market*

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Received: April 7, 2016. Revised: May 12, 2016. Accepted: June 15, 2016.

Abstract

Purpose – The continuously fluctuating consumer who desires simplicity and convenience has had much influence on the food industry. This trend has led to a new food market sector known as HMR (Home Meal Replacement). This study aims to understand the status of the HMR market in United States.

Research Design, Data, and Methodology – In order to research the status of the HMR market, quantitative analysis and secondary research were carried out. By using data from Euromonitor, Agriculture and Agri-Food Canada, we have estimated food segment sales contributions to the HMR market in United States.

Results – HMR products are being sold in various channels such as traditional stores, convenience stores, and even farmers' markets. Some restrictions on the HMR products exist for food safety.

Conclusions – HMR industry in United States has expanded continuously. To keep pace with the growth of the HMR market, the United States government has focused on food and safety regulations with regards to the products used in HMR. Finally, this study discusses the implications for Korean HMR market.

Keywords: HMR(Home Meal Replacement), Convenience Food, Regulations, Distribution Channels, United States.

JEL Classifications: M31, L66, Q13.

1. Introduction

The term “home meal replacement,” or HMR, was coined in response to the trend away from the kitchen and towards a more efficient means of consumption. The phenomenon of time poverty, spurred by a time-is-money mindset, has been a significant driver in raising the opportunity cost of home cooked meals. American consumers find themselves increasingly less willing to cook from scratch, creating a need for convenient alternatives. The proliferation of home meal replacement in recent years, simply, has come as a reaction to this growing demographic of time-pressed individuals, with restaurants and retailers swooping in to take advantage of the rising market. HMR sales have experienced steady growth since the 1960s, but the revolutions in food production caused HMR to garner lots of attention just before the turn of the century, with industry experts Technomic and McKinsey predicting an 8-10% annual growth rate starting in the year 2000 (Cassano, 1999). In addition to the enormous growth, the projected gross margins for HMR over standard meal ingredients, for a variety of factors, ranged from 60 to 120 percent. Home meal replacement is a “win-win” scenario in food industry: the consumers demand it at increasing volumes, and it is a very profitable segment for retail and restaurants alike.

Since the millennium, HMR has been used interchangeably with the terms such as “convenience food,” “ready meals,” “meal solutions,” “prepared food,” “ready-to-eat,” and “takeout” (Knapp, 2000). Misleadingly, each of these terms fails to capture the full breadth of HMR offerings with the vague descriptors “convenience food”, and “ready meals” is coming closest to characterizing HMR. The term “meal solutions,” sometimes erroneously used in place of HMR, has actually a broader category encompassing any food purchase by a consumer who lacks the ability or desire to cook a main meal at home. Meal solutions, then, include not only HMR, but also meals consumed in foodservice venues, including restaurants, hotels, catering, and institutional cafeterias, including corporate, university, and healthcare settings.

Several definitions of HMR have been proposed and are presented below in order to show the general consensus of how HMR is defined.

1998: “Fully- or partially-prepared foods [that] solve growing

* This study is supported by Korea Rural Economic Institute and the authors would like to thank Rachel Schoening for her research assistance.

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consumer needs: lack of time, lack of skill, and lack of desire to prepare food" (Larson, 1998).

- 1999: "Ready to eat, ready to heat, or ready to assemble hot or cold meals or entrees prepared or packaged outside the home which are brought or delivered to the home" (Cassano, 1999)
- 2001: "Main courses or pre-assembled main course components of a meal—a protein (animal or plant), a carbohydrate (starch) and a vegetable source—, in single or multiple portion containers, designed to fully and speedily replace, at home, the main course of a home-made main meal" (Costa et al., 2001).
- 2005: "The business of providing convenient, home style-quality meals that consumers would prepare for themselves if they had the time, energy, or know-how" (Hoogenkamp, 2005).
- 2008: "Preparing foods, customized to a client's taste and nutritional needs, that the client heats later" (Wallace & Forte, 2008).
- 2008: "Meals that [are] precooked, partially cooked, or ready-to-eat (R-T-E), and sold from restaurant and grocery outlets" (Beckley et al., 2008).
- 2010: "Foods [that] mostly just require reheating in the microwave (for example, TV dinners; complete pasta, rice and noodle dishes; pizzas; lasagne)" (Walsh & Walsh, 2010).
- 2013: "[Products] promoting good health to those whose goals include eating nutritious great tasting food...with the convenience of eliminating the need for shopping, cooking, and cleaning" (Hiduke & Ryan, 2013).
- 2015: "An alternative to existing fast food choices and a way to have a meal close in quality to what [consumers] could have at home without the time and effort of doing it themselves after a long day at work" (Jurkiewicz, 2015).

The definition of HMR has fluctuated with evolving consumer demand, but the core notion of what a home meal replacement is remained relatively stable. The consensus is that HMR is a meal alternative prepared away from home that offers convenience on one or more counts. Throughout all the various definitions, four characteristics are routinely emphasized: convenience, ease of preparation, time savings, and quality. The HMR consumer base is comprised of individuals seeking one or more of these factors to meet their consumption needs.

HMR covers a wide array of subgenres, an efficient delineation of which has been proposed by Costa et al. (2001). The first means of classification is distribution; HMR includes home delivery, takeaway, and retail. HMR is often introduced as an extension within an existing retail or restaurant space upon the identification of a demand for convenience-driven meal alternatives. For these very reasons, grocery stores might begin to offer convenient meal options and prepared foods, expanding the traditional deli to offer a variety of ready-made products. Restaurants have adapted as well, with many now offering streamlined takeaway services, such as Applebee's "Carside To

Go" or "Curbside Take-Away" at Outback Steakhouse. Still many others have partnered with a third party to expedite food service. GrubHub, an online and app-based company, currently hosts delivery and takeout from over 30,000 restaurants in the United States and London, with a valuation of \$3.2 billion as of June 2015 (Kharpal, 2015). The recent frenzy of food tech startups has expanded the reach of the HMR market and should be expected to play a continual role in its development.

The second classification system to be employed herein is convenience class. Extrapolating upon an existing convenience scale for food supplies, Costa et al. (2001) have sorted HMR into four classes based on convenience and preparation time. Ordered from most to least convenient, the classes are: ready-to-eat, ready-to-heat, ready-to-end-cook, and ready-to-cook (detailed classification scheme in <Table 1>). Since the perception of convenience plays a significant role in food choice, especially for the HMR consumer, these classifications should be duly considered (Rappoport et al., 1993). While convenience is a significant factor in HMR offerings, there are some logistical factors to consider as well. While ready-to-eat and ready-to-heat HMR offer quick convenience and are an easy extension for restaurants, their inherently shorter shelf life makes them a riskier option for retail outlets. On the other hand, ready-to-end-cook and ready-to-cook HMR require more participation from the consumer, thereby reducing the convenience factor, but are more sustainable for retail outlets given their longer shelf life. In addition, consumers who desire to buy in bulk quantities might be better off purchasing a more semi-prepared version of HMR, ready-to-end-cook or ready-to-cook, to avoid spoilage and waste with the more convenient but highly perishable options.

<Table 1> Four convenience classes for an HMR classification system

Convenience Class	Description
Ready to eat	HMR consumed as purchased, requiring no prior preparation
Ready to heat	HMR requiring only mild heating before consumption
Ready to end-cook	HMR requiring sufficient heating to finalize cooking before consumption
Ready to cook	HMR that has been minimally prepared for cooking but still requires full cooking of some or all of its components

Source: (Costa et al., 2001)

Kamata (2010) analyzed the Japanese HMR market status when the food service industry was booming in Japan. He concluded that the HMR market increase coincided with the growth of the food service industry and the increase rice demand. Similarly, in Korea, changes in the population structure was the main driver of raising food products demand (Kim et al., 2014; Kim, Lee, & Yang, 2014; Choi et al., 2014). Moreover, they scrutinized agricultural markets and brand in South Korea by surveying consumers of agricultural products.

Unlike previous studies, this research focuses on the U.S. HMR market in comparison to the Korean HMR market. This

allows us to compare their different market forces as well as government interventions and distribution channels. This allows the Korean government to think about how to regulate the emerging HMR market.

2. HMR Market Status

According to estimates by the US Department of Agriculture, the average American consumer spends 6.4% of their disposable income on food, down from 10.9% in 1996 and 13.8% in 1976 (Mahapatra, 2014; Larson, 1998). Despite this drop in overall food spending, incidence of food purchases away from home grew relative to food purchases that require home preparation, suggesting a heightened reliance on HMR. According to Euromonitor, retail sales of packaged food, which accounts for the greater portion of HMR sales as a whole, stood at \$360 billion in 2013 (Agriculture & Agri-Food Canada, 2014). This segment is expected to grow to \$433 billion by 2018. Total foodservice sales, which contribute to HMR largely through takeout and home delivery, amounted to \$466 billion in 2012. The foodservice segment is predicted to experience significant 5-year growth, projected at \$585 billion by 2017.

In recent years, the definition of meal replacement has been narrowed to only include energy bars and drinks. By that measure, in 2011, Mintel (2011) estimated the market at \$2.3 billion, which seems like a suspiciously low value. Given our understanding of the variety of home meal replacement offered commercially, we have identified sales figures for segments of the food industry that contribute to the HMR market, either wholly and partially. For food categories that would include HMR sales, but cannot be expected to be purchased exclusively as HMR, we have estimated the percentage contributions. These figures, which outline a wider, behavioral-based measure of the market, are detailed in <Table 2>.

Of the \$826 billion in annual sales from foodservice and retail, we estimate that about \$145 billion comes from HMR purchase (Agriculture & Agri-Food Canada, 2014). This estimate is compiled from the definition of HMR. This includes fresh ready meals, frozen ready meals, home delivery/takeaway, and liquid meal replacement, food categories that include HMR as well as traditional ingredients (dried processed food, chilled processed food, frozen processed food, dairy) and lastly, foods that are likely to be purchased with the intention of consuming them as HMR (snack bars and sweet & savory snacks).

With growing demand for HMR, retail and commercial sectors alike are continually evolving. The buzzword era of home meal replacement, the mid-to late 1990s, saw drastic changes in commercial and retail offerings. Restaurants and supermarkets took due notice of the rising trend; a 1998 survey by the Food Marketing Institute (FMI) found that 84% of restaurant operations and 92% of supermarkets offered ready prepared meals, salads, and sides. Freshly prepared foods constitute 52% percent of deli sales, and will continue to expand with evolving demand (Agriculture & Agri-Food Canada, 2014). Going to the

supermarket to purchase a fresh meal option, previously an uncommon practice, was becoming fairly mainstream. In 1997, supermarket food service sales was estimated at \$14.82 billion, more than triple estimates for 1990. A survey conducted the same year found that, consumers making foodservice purchases did so from fast food outlets 41% of the time, supermarkets 22% of the time, and full service restaurants 21% of the time. In 2012, NPD Group forecasted that sales of prepared foods from retail suppliers would increase 10% over the next 10 years, compared to a 4% increase for sales from restaurants over the same period (NPD, 2013). Today, retail purchase of HMR becomes increasingly prevalent with each passing year. Mintel's 2012 report found that household usage of frozen and refrigerated meals was nearly universal—94% among U.S. households (Mintel, 2012).

<Table 2> Food Segment Sales Contributions to the Home Meal Replacement Market

Food Segment	Annual Segment Sales (billions)	Contributions to HMR Sales	Source
Fresh Ready Meals	\$24.4	100%	Euromonitor, 2013
Frozen Ready Meals	\$9.0	100%	Euromonitor, 2013
Home Delivery/ Takeaway	\$18.6	100%	Euromonitor, 2012
Liquid Meal Replacement	\$3.7	100%	Euromonitor, 2013
Dried Processed Food	\$11.6	[~50%]	Euromonitor, 2013
Chilled Processed Food	\$30.3	[~50%]	Euromonitor, 2013
Frozen Processed Food	\$37.4	[~75%]	Euromonitor, 2013
Dairy	\$55.7	[~10%]	Euromonitor, 2013
Snack Bars	\$6.6	[~50%]	Euromonitor, 2013
Sweet & Savory Snacks	\$124	[~25%]	Nielsen, 2014
Total	[24.4(1) + 9(1) + 18.6(1) + 3.7(1) + 11.6(.5) + 30.3(.5) + 37.4(.75) + 55.7(.1) + 6.6(.5) + 124(.25)]		= ~\$145 billion

HMR have not only captured a share of the market from restaurants, but also from snack sales. Despite the difficulty of determining the precise percentage of snack sales that qualify as home meal replacement, HMR has been observed to have a significant and growing presence in the snack market, which brings in \$124 billion a year in North America alone (Vending Market Watch, 2014). We estimated the contribution of total snack sales to the HMR market at a modest 25%. This estimate is largely influenced by the Nielsen Global Survey of Snacking, a 2014 poll of 30,000 consumers worldwide. Globally, 45% of respondents reported regularly consuming snacks as a meal alternative, with 52% noting that breakfast was their typical meal for snack-as-meal replacement (Nielsen, 2014). Millennials have adopted snack-as-meal replacement nearly twice as much

as any other generation, and will therefore have a great influence in shaping the snack market in the years to come.

American consumers have not only grown more fluid in terms of defining their daily meals, with snack-as-meal replacement, for example, but have also become more health-conscious, partly due to increased awareness invoked by the obesity epidemic (NY Times, 2015). The Nielsen survey also found that, although sweets and confections still have the greatest dollar share of the snack market, the savory snack category is experiencing the greatest growth. The vast majority of respondents in the Nielsen poll felt that all natural ingredients were either very important (45%) or moderately important (32%), and more than one-third of the population surveyed said that they believed ingredients should be sustainably sourced (35%) and organic (34%) (Nielsen, 2014). Reports from Mintel confirm the growing demand for healthful snack options, but still found continued demand for the occasional indulgence (Topper, 2014). This suggests that fresh fruit, vegetables, and animal products, even those coming at a higher cost to the consumer, may be coming into vogue once again, both by themselves and as a part of HMR meals.

Tellingly, recent years have seen a plateau of frozen ready meal sales, currently a \$9 billion business, with many Americans developing a preference for fresh meal alternatives (Ferdman, 2014). Industry experts have interpreted the decline in the frozen ready meal segment as a call for innovation, projecting continued growth for fresh prepared food. Analysts expect the quickly growing Millennial generation, who will have a 29% dollar share by 2020, to accelerate demand for fresh and convenient meal alternatives (Ferdman, 2014; Ouimet et al., 2013). More so than other generations, partly due to their status as “digital natives,” Millennials’ purchase behaviors are highly influenced by pop culture. The culinary culture of the contemporary age, driven in part by the new phenomenon of the celebrity chef, has placed great emphasis on fresh ingredients. Therefore, many young people who lack the knowledge to cook will seek out meal alternatives that offer healthy, whole foods in convenient fashion. Recent years have revealed a shift in the consumer mindset: health and environmental concerns are becoming increasingly influential in food purchase decisions, calling for innovation in the snack food segment and the food industry at large. Susan Dunn, executive vice president of Global Professional Services at Nielsen, emphasizes the vast opportunity presented by the current climate when she said that US consumers want easy to eat meal alternatives that they can consume on the go (Nielsen, 2014). In particular, this is a segment of the market that snack manufacturers could fill.

Growing demand for organic, fresh fare suggests that retailers and restaurants should evolve accordingly. In order to tap into this burgeoning market, retail and restaurant businesses alike might look directly to the source: farmers and ranchers committed to producing high-quality goods while keeping their environmental impact in check. Since HMR tends to be additive within existing food spaces, for example—when takeout is introduced at a restaurant or a prepared meals buffet is added

to a grocery store—offering nutritious, portable, and easy-to-eat options with sustainable practice in mind can be as easy as changing the supplier. In a 2015 report, Mintel suggested that the typically higher cost of organic food leaves consumers hard pressed to justify the extra expense (Roberts, 2015).

Even so, consumers who abide by the adage “an ounce of prevention is worth a pound of cure” will likely be willing to pay a premium for healthful and environmentally conscious meal alternatives. This trend is confirmed by analyses from the Organic Trade Association, which found that organic food sales continue to rise and totaled \$35.9 billion in 2013, more than triple the previous year’s estimate of \$11.3 billion. The organic ready meal segment alone brought in \$1.8 billion in sales in 2012, led by Amy’s Kitchen Inc. and Earthbound Farm, with shares of 15% and 11.5% respectively (Roberts, 2015; Agriculture & Agri-Food Canada, 2013).

In addition to the rising trends of snack-as-meal replacement and increased demand for healthy, sustainable meal alternatives, traditional segments of the HMR market are also experiencing steady growth. The ready meals category, defined by Euromonitor as ready-to-eat or ready-to-heat options, was estimated at \$24.4 billion in 2013 (Agriculture & Agri-Food Canada, 2013). Ready meal sales are expected to amount to \$30.1 billion by 2018. In the same report, Euromonitor estimated that home delivery and takeaway from restaurants contributed \$18.6 billion to total foodservice sales in 2012 and should bring in \$23.5 billion in the year 2017 (Agriculture & Agri-Food Canada, 2014). The demand for home meal replacement continues to grow, and is becoming increasingly integrated into retail and commercial spaces. The greatest challenge of the industry is to meet the ever-evolving needs of the American consumer.

Another trend that is popping up, not just in the United States, but around the world is the willingness of consumers to pay more for sustainable and ethically sourced food. The HMR market is no exception. A variety of new product such as Amy’s Kitchen go to great lengths to show that they are both healthy for you and are the ethical choice to purchase. As such, their websites and marketing go into great detail about the ingredients that it uses all the way to the fact that their containers are made of recyclable cardboard. This is feeding a consumer need for information about what they are eating both in the HMR market and beyond.

The HMR market is also expanding laterally. What was once was the domain of TV dinners and sandwiches has now expanded more broadly. In particular, the US has seen a trend in the number of HMRS that market themselves as organic, chef-inspired/gourmet and ethnic. While the organic movement has been discussed previously, the gourmet movement has been an outgrowth of higher income for Americans and their search for a fusion of both convenience and taste. In many cases, products marketed as gourmet may not necessarily be healthier but, once they have a famous chef on the box or a gourmet sounding recipe, that product may see their sales increase. With the increasing globalization of the world economy, Americans are also becoming exposed to food and

flavors from around the world and, as such, there is more demand for these flavors in a more convenient form. Both gourmet and ethnic HMRs are a trend that is likely going to continue to grow.

3. Distribution Channels

Traditionally distinct distribution channels have experienced “channel blurring” in recent years, as can be understood by the broad qualification of HMR outlined herein, and confirmed in a 2014 report from Information Resources Inc (Storelli, 2014). As retail formats converge and product offerings become increasingly similar, meal replacement is becoming widely available across channels and increasingly difficult to parse out from traditional foods and ingredients in industry analyses. Grocery stores still claim the largest share of total food purchases, at 45%, followed by supercenters (e.g., Wal-Mart) and club stores (e.g., Costco) coming in at 31% and 33% respectively. Traditional grocery sales rang in at \$522.8 billion in 2013, while supermarkets brought in another \$44.2 billion.

The past two decades have been a rise in grocery stores offering restaurant-like products, nicknamed “grocerants.” Largely driven by Millennials, these new stores in the retail space specialize in ready-made meals and cater to the growing demand for fresh, convenient meal alternatives (Howe, 2014; Quinlan-Sacksteder, 2014). In a 2013 survey, 78% of Millennials reported having bought home prepared food in the last 30 days, compared to 68% of Gen X, 60% of Boomers, and 57% of Silents. One such grocerant that has seen resounding success is Eataly, a 60,000 square foot food emporium with current locations in Chicago and New York but is in the process of expanding based on its popularity (Heller, 2013). Eataly’s concept is to combine an expansive market with a host of mini-restaurants with specialty food bars, while encouraging shoppers to sample food and drink as they shop. Eataly has smartly capitalized on pop culture’s heightened interest in food, offering a wide range of in-house and community events: sharing culinary expertise in cooking classes and wine tastings, showcasing seasonal goods, and emphasizing the farm-to-table lineage of their products.

With some seeking food as an entertainment or a hobby, others are simply looking for meals at greater convenience. Although grocery delivery has yet to become widespread, services such as Stop & Shop’s “Peapod”, Whole Foods Market’s “Instacart”, AmazonFresh are hoping to change the way American does their grocery shopping. These services act as an extension of the real local grocery store, allowing shoppers to add items to a virtual cart to later be delivered directly to their home or business. In this many, supermarkets are also expanding into services which allow customers to preselect their orders, have it picked by store employees, and then pick it up quickly at the supermarket at a later point in time. As consumers become increasingly more reliant on technology for their shopping needs, online grocery shopping services, in

general, are poised to gain a share of the market. The more established Schwan’s Home Delivery, which lacks a physical store counterpart like the other services, operates by way of freezer trucks that stock a general inventory in addition to special orders. Schwan’s comes directly to the customer’s home at regular intervals throughout the month, offering busy or home-based consumers a highly convenient way to purchase meals. Other companies, like Fresh Direct, are also entering this new delivery space as well.

Still other companies hope to reengage Americans in the lost art of cooking. For example, Blue Apron offers weekly delivery of pre-measured, fresh ingredients along with recipes, giving time-pressed consumers a way to make fresh and exciting meals in 35 minutes or less. Along the same vein, Vestro, a California-based grocery delivery startup, aims to provide customers with healthy ingredients and ready meals, cutting down traditional meal prep from 2 hours to 15 minutes (Crawford, 2015). This market is growing across the United States with many competitors, including businesses like Plated and Hello Fresh that have entered high-density urban environments across the country.

Traditional fresh-format stores, such as delis and markets, saw 10.4% growth from 2012 to 2013, relative to 1% growth for the grocery channel over the same period (Storelli, 2014). Although these channels have experienced growth, it should be noted that supermarkets still dominate fresh-format stores for distribution within the organic sector, bringing in 72% of sales and led by Wal-Mart and Whole Foods Market (Agriculture & Agri-Food Canada, 2013).

When it comes to more spontaneous purchases, convenience outlets such as drug stores, gas stations, and micromarkets reign. Smaller and more salient than supermarkets and grocery stores, convenience stores draw consumers in with their reputation for simple in-and-out shopping. For quick-trip shopping experiences, drug stores claimed 54% of sales, compared to 25% for the grocery channel (Watson, 2014). Some outlets, in addition to promising speed, allow customers to multi-task, for example, offering gas-pumping services while customers shop, or even offering a drive-thru window to expedite purchase. Although convenience stores would seem to be in hot competition with grocery stores and markets, research suggests that frequent convenience store shoppers tend to be frequent shoppers in general, with 80% of convenience store shoppers also being frequent supermarket shoppers (Larson, 1998). Recent years have seen pushback from supermarkets, many of which now sell gasoline to attract customers.

The last of the convenience stores, micromarkets, offer healthy meal and snack alternatives quickly and easily by nature of their convenient location. A fairly new trend, these unstaffed, self-checkout stores offer a fresh alternative to vending machines, and are gaining a loyal following in the corporate and hospitality worlds. Heralded as one of the Top Ten new franchises by Entrepreneur Magazine, Fresh Healthy Vending International offers healthy meals options in its micromarkets, ranging from salads and sandwiches to fresh juices and perishable snack items. HUMAN, short for Helping Unite

Mankind and Nutrition, promotes their version of micromarkets as a made-for-office concept, suggesting better employee health and productivity to be gained through implementation of one of their healthy markets. Positioned as a fresh alternative to vending machines, we can expect micromarkets to remain on the HMR radar in the years to come.

Farmer's markets, the most widely known direct-to-consumer channel, have experienced a rise in popularity in recent years due to growing interest in farm-fresh products. In 2013, there were 8,144 farmers markets listed in the USDA National Farmer's Market Directory, a 3.6% increase from 2012, and nearly double the number of farmers markets in 2008. Total annual sales from U.S. farmers markets are estimated at \$1 billion (Koren, 2014). There are no clear data on what percentage of farmers market sales are bought as HMR, but given the general trend of the food industry at large, we should expect the nation's foodgrowers to tap into this demand as well. However, we assume that most of the demand from farmers may be for their food as components in an HMR from businesses rather than from consumers as part of an HMR.

4. Intervention

By nature of the broad definition and segmentation of the home meal replacement market, a great variety of interventions apply to HMR, but are difficult to separate from the noise of other food types. In general, interventions involve a number of governing bodies working collaboratively to promote honest and sustainable practice in the food industry, including the United States Congress, the Food and Drug Administration (FDA), the U.S. Department of Agriculture (USDA), the U.S. Department of Health and Human Services (HHS), the Food Safety and Inspection Service (FSIS), the Centers for Disease Control and Prevention (CDC), and the Federal Trade Committee (FTC). Food industry regulation is a hugely cooperative effort, with more than 3,000 state, local, territorial, and tribal agencies shouldering the collective responsibility for inspection and oversight of agri-food operations.

In addition to maintaining quality across the food industry, these organizations also strive to eliminate intentionally manipulative and harmful marketing behaviors. One notable example comes from liquid meal replacements, including ready-to-drink and powdered products. While not defined by Food and Drug Administration (FDA) regulations, liquid HMR are generally treated as an extension of the functional foods segment. Proponents tout the nutritional benefits of liquid meal replacement, especially relative to fast food and "empty calorie" alternatives. Others worry that liquid meal replacement formulas will not provide consumers with adequate nutrition, and discourage people from relying on liquid HMR except on an occasional basis (Krasny, 2004). Furthermore, industry professionals have raised concern at consumers using liquid meal replacement as their sole source of nutrition, suspecting it could lead to nutritional deficiencies.

The Federal Trade Commission (FTC) steps in to regulate the way these certain foods are marketed, challenging labeling or advertisements that use deception to influence consumer purchase decisions. In 1997, Abbot Laboratories found itself in trouble for its marketing of Ensure, a meal replacement drink with 80% share of the complete nutrition products market, as being doctor-recommended. After the case was settled, the Director of the FTC Bureau of Consumer Protection issued the following statement: Nutritional beverage products like Ensure may provide a benefit if you have a medical condition making it difficult to eat or if you are using them in place of an occasional skipped meal. Abbott went too far, however, when it suggested that doctors recommend Ensure for healthy, active people, like those pictured in the ads, in order to stay active and healthy. Before consumers spend their money to use such products as a regular supplement to their diet, they should check with a doctor or nutritionist.

In general, the advice the FTC gives to food marketers comes in three parts (Fair, 2012): companies need reliable scientific evidence to support their health claims; companies should consider the overall impression conveyed by their advertising and acknowledge that disclaimers such as "results will vary" are both insufficient and misleading; and companies should know that the FTC is serious about enforcing these regulations. More recently, Jason Pharmaceuticals, which sells low-calorie meal substitutes with the promise of weight loss, was ordered to pay \$3.7 million in civil penalty fees to the Federal Trade Commission for its misleading advertisements. These examples demonstrate how food marketing using false or unsubstantiated health claims to lure in customers, without reliable scientific evidence, will not be tolerated.

In addition to labeling regulations such as these, regular inspections are routinely conducted at foodservice and retail operations. With particular regard to ready-to-eat processed foods, the USDA uses a tool from the Farm Service Agency (FSA) to perform a hazard analysis to identify noncompliance or vulnerability of food products before they reach the point of sale. The tool surveys production, processing, packing, distribution, transportation, storage and preparation processes in an effort to make sound judgments regarding the ability of an establishment to produce safe, wholesome, and unadulterated products. Many inspections are conducted by way of sampling, which offers regulators a way to estimate the probability of acceptance of the entire lot based on the Poisson Probability Distribution (Paiva, 2013). The Good Manufacturing Practices (GMP) program, adopted by the World Health Organization (WHO), and the Food and Drug Administration, outlines the criteria for sanitary food production, including strict rules for cleanliness for both employees and production facilities. The GMP program, along with many other regulatory bodies, aim to enact preventative measures so as to avoid problems later on.

Even with regular inspections, there remains an element of inherent risk within the food industry. Since HMR tend to include a variety of ingredients—a frozen pizza, for example, might include animal proteins, wheat, dairy products, and vegetables—we can infer that the risk factor for contamination

would be even greater than for standalone ingredients. Despite comprehensive surveillance, reporting, and investigations conducted by the Centers for Disease Control and Prevention, recent estimates found that, each year in the United States, foodborne disease leads to 76 million cases of illness, 325,000 hospitalizations, and 5,000 deaths (Gurudasani & Sheth, 2009).

Acknowledging that these numbers were unacceptable by an industrialized public health standard, the U.S. government drafted new legislation aimed at *preventing food contamination*, rather than responding to it after the fact (Taylor, 2015). The FDA Food Safety Modernization Act (FSMA), signed into law by President Barack Obama in 2011, is the most sweeping reform of U.S. food safety laws in the last 75 years. For the first time, the FDA has a government-ordered mandate to conduct comprehensive and prevention-based regulations nationwide. The core elements of the FSMA are transforming the FDA's approach as one of reaction to one of prevention, establishing science-based standards for harvesting and food production, and keeping companies accountable for preventing contamination. In the interest of public health, the FDA was also granted recall authority over all food products. Importantly, FSMA emphasizes the need for communication and collaboration amongst state, local, territorial, and tribal programs to improve food safety in the years to come.

Good practice and awareness at the individual level, it should be noted, is essential to food safety and public health in the United States. Cross-contamination, among other harmful food handling practices, happen occasionally in foodservice establishments, but all too regularly in the homes of consumers. Although processed food might seem to be a safer, more regulated choice, increased reliance on convenience foods and HMR actually gives consumers less control over the foods they consume. Making matters even more difficult, some industry professionals have admitted to being unsure of certain research conclusions, and thereby not knowing what recommendations to issue to consumers regarding food choice. One topic of particular debate revolves around the safety differences of organic products and their non-organic counterparts. The current data suggests that the difference between the two is not as significant as was once believed: pesticide residues are present on both organic and non-organic products, in addition to microbiological contaminants such as *E. coli*, toxic metals, and synthetic fertilizers (Solomon, 2013). To ensure confident purchase of HMR and related food items, retail and commercial foodservice operations need to build trust through regimented food safety practices, and to strive for transparency and direct communication.

A recent survey found that, shockingly, more than half of American consumers fail to wash their hands after handling eggs, a notorious carrier of *Salmonella* (Kosa, 2015). Even simple behavior change potential like this can make a difference for health and wellness, and it follows that we are in need of better food safety education nationwide. FoodSafety.gov, which encourages site visitors with the headline "YOU can help solve foodborne disease outbreaks," provides guidelines for safe food practice, information on recalls and food poisoning, and a direct

contact line for reporting food safety issues to aid outbreak investigations. The USDA Food Safety and Inspection Service (FSIS), whose aim is to educate consumers about the significance of safe food handling and reduce the risk of foodborne illness, has adopted Twitter as a platform to share food safety insights. The FSIS Twitter account has gained more than 770,000 followers since 2009.

Educating Americans through platforms that the American public regularly engages with, with Twitter and Facebook as leading examples, is critical to the success of FSMA and other regulatory programs. In his FDLI lecture, Michael Taylor emphasized the changing role of the FDA from being strictly a regulator, to being both a regulator and an influencer. Transforming the culture of food safety, and increasing public awareness of safe food practices, has become just as important a goal as transforming the basic processes involved in safe food production. As the FDA and other governing bodies work to solve these dynamic challenges, many food industry professionals think that, through the combined passage of the FSMA and the evolving role the FDA plays in consumer choice, we have an unprecedented opportunity to create lasting change.

Departing from food safety, another long-standing difficulty in the industry revolves around nutritional awareness. Between 1978 and 2008, consumers have food away from home increased about 14% of total calories. Since away-from-home food is denser in calories and nutrients that Americans tend to overconsume, such as saturated fats, the rising popularity of away-from-home meal alternatives presents a challenge for many Americans. The Economic Research Service (ERS) has found positive correlations between dietary patterns and body weight, and has found a positive effect of eating out on daily caloric intake, which has contributed to obesity rates on a national scale (Todd & Mancino, 2010).

Dining away from home, given the tendency for overindulgence and underestimation in American food culture, can seem like treacherous territory for many health-oriented consumers. To make matters worse, much of the food-away-from-home sector is exempt from nutrition labeling laws, presenting consumers with greater difficulty in making healthful choices. Organizations such as the American Public Health Association and American Heart Association think consumers should be able to make more informed choices in food choice, and have voiced support for menu labeling that supplies calorie information at point-of-purchase. Although there are logistical and financial costs to be incurred through mandatory labeling, advocates say that reducing calorie and nutrition uncertainty in foodservice is necessary from both a reformative and preventive point of view. The New York City Board of Health implemented a regulation that required all restaurant chains with 15 or more menu items to provide a calorie listing for their products.

The "Nutrition Facts" panel found on packaged goods, the outcome of the 1990 Federal Nutrition Labeling and Education Act (NLEA), stands as a successful example of the way labeling can positively influence purchase decisions (Variyam, 2005). However, NLEA regulations exempt food prepared for immediate

consumption—including restaurant meals, ready-to-eat meals prepared by restaurants and caterers, meals prepared by institutional kitchens (e.g., hospitals), and meals prepared by foodservice vendors such as food trucks. We see that these exemptions affect much of the HMR category. The only case in which these exemptions are revoked is when retailers make nutrition or health claims without solid evidence, for example, that their food is “low fat” or “heart healthy.”

Following years of debate, the U.S. Food and Drug Administration devised new regulations for menu-labeling. These new stipulations require chain restaurants with 20 or more locations, whether fast-food or full-service, to display calorie content of their menu items by December 1, 2015 (Stewart & Morrison, 2015). Even with increasing transparency in food labeling, FDA regulations do not extend to independent restaurant, smaller, chains, or other places where nutrition information might be influential in food choice. Furthermore, a person's declared willingness to use nutrition information, or the Healthy Eating Index (HEI), presents yet another difficulty in shaping consumer behavior towards more health-conscious lifestyles. The Economic Research Service recommends recipe adjustments as another way to encourage positive dietary change. When restaurants or foodservice retailers reformulate their meal options to be lower in calories, for example, through sautéing an entrée rather than frying it, they can yield a benefit for all consumers. Introducing lighter options of traditional products and increasing transparency in nutrition labeling, could make the away-from-home food segment—including home meal replacement—a more reliable source for healthy meal alternatives in the years to come.

5. Korean HMR Market and Discussion

As mentioned above, the HMR market in the U.S. is growing and the US government is aware of this growth and is particularly concerned with making sure that food safety regulations are in place for the market's expansion. Korea is still far behind in this area. The first HMR food appeared in the domestic market was "3 minute curry" in 1981. It gradually became popular when products such as jjajang, deopbap sauce, meatballs, etc., which can go well with rice, were introduced. These products were able to attract consumers' attention for their convenience, at first. However, they could not extensively grow because of local tastes that distrusted processed foods over home cooking.

The domestic HMR market increased early 2000s, when so-called 'single tribe' and 'working couples' became larger demographics. Companies expected the demographic shift to increase HMR demand and thus increased their investments in HMR products for early market penetration. The first major HMR products were released when Amoje Co., Ltd. released its independent HMR brand, Cafe Amoje followed by Delcucina by CJ, In the Kitchen by Chosun hotel, Daily by Doosan, and others. These companies placed their products at big

department chain food stores in major cities while they emphasized the merits that restaurant food can be enjoyed as an everyday home meal. In this positioning, they targeted people in their 20s and 30s in the middle-upper class. In addition, side dish specialized stores targeting 30s and 40s housewives in addition to the elderly appeared. Also, big marts and discount stores expanded into providing more differentiated products such as processed food and food that cooks instantly. However, the market still had a ways to expand as no substitution for a full meal had been developed yet. In Korean traditional dining, a full meal required that soup be served with the meal and the meal should be warm.

That being said, the market began to expand gradually as the menu of HMR options diversified and their quality improved. In addition, products that targeted consumer well-being began to be introduced. Changes in the social structure towards single-person households as well as an increase in the elderly population expanded the market as well. The domestic HMR market moved towards becoming higher end when it started to be served at deli style stores that were already serving western style food as well as hotels and food courts of major markets.

In terms of supply, major food companies such as CJ Cheiljedang, Ottogi, Daesang, Chungjungone, and etc have led the domestic HMR market while small & medium companies has targeted niche markets based on their differentiated technology. They continuously conducted research and development on ways of improving cooking time, preservation, packaging, etc. for better quality, freshness and taste. Distribution companies have cooperated with renowned restaurants or large companies, and tried to have various product line-ups by developing private label products in the HMR space. They also introduced small portion packaging for smaller households.

HMR's domestic market size is estimated at KRW 1,822.4 billion in terms of production amount being composed of Ready to Eat's KRW 1,160.9 billion and Ready to End-Cook's KRW 585.1 billion as determined by the Ministry of Food and Drug Safety (<Table 3>). While the HMR classification was only established in 2008, the category's growth rate has remained steady at 9.7% per year and still continuously increases while it marked 91.6% growth compared to KRW 950.9 billion in 2008. When separated out, ready to eat food accounts for more than 50% while ready to cook has maintained its production level without any major change and still gradually grows.

<Table 3> HMR Production (Billion won)

Year	2008	2009	2010	2011	2012	2013	2014	Average Growth Rate
Ready to Eat	718.7	647.8	727.0	894.5	1,021.3	1,185.3	1,160.9	8.3
Ready to End-Cook	208.7	233.0	250.6	396.7	486.7	508.2	585.1	18.7
Sum	927.4	880.8	977.6	1,291.2	1,508	1,693.5	1,746	9.7

Source: Ministry of Food & Drug Safety

The HMR industry has rapidly expanded, yet no specialized laws or policies have been enacted and the laws and policies for general processed food apply to HMR. Its sanitation and safety related matters in Korea are governed by 'Criteria and Standards of Production and Process by Food Item', being proposed in Article 14 of 'Food Sanitation Act', and 'Labeling Standards for Food' by detailed types of business in the Clause 2, Article 36 of the same Act and the Article 21 of the Enforcement Decree (Ministry of Government Legislation, 2016). In addition, it is stated that the industry shall be the subject to mandatory HACCP application in accordance with 'Management Standards of Hazardous Substance' in the Article 48 of 'Food Sanitation Act' and 'Critical Control Points for Hazardous Food Substance' stipulated in the Article 33 and 34 of the Enforcement Decree of the same Act, and the Article 62 and 68 of the Enforcement Rule.

The industry in Korea, has not successfully earned enough trust from consumers due to continuous food safety related incidents, even though Ministry of Food and Drug Safety in Korea has recently enhanced management of sanitation and safety of food by expanding lists for mandatory labeling of allergens and nutrition on livestock processed products as well as food history tracking registration, tightening management of certified companies for food safety management standards, and obligating food history tracking management system. Thus, the industry needs to gain consumer's trust by enhancing food labeling standards and place-of-origin labeling on domestic HMR products.

As the consumer's interest for a healthy, sustainable diet life has increased, it is expected that the healthiness of HMR will attract more attention. Overseas, advanced countries including US and UK have continuously tried to develop healthy HMR products with reduced salt, fat, and sugar to counteract the perception that HMR products may not be healthy.

Most of the HMR products introduced in Korea are composed of general products which are served for everyday meals, while specialty purposed food are not yet available. It is shown that consumers or HMR production companies' satisfaction of the nutrition level of HMR products are not high enough to insist the HMR products are beneficial for one's body. It is expected that the domestic HMR industry will try to expand market demand by introducing products with better nutrition in the future.

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