

## An Assessment of Government Regulation on Adaptive Capability and Managerial Strategy in U.S. Healthcare

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**[Abstract]** As long-term care facilities strive to improve performance in the US healthcare industry, most research studies on long-term care have focused on quality improvement and reduced deficiencies. This present study provides a different view of how external pressure affects adaptive capability at the firm level. Moreover, a firm's ability to utilize various adaptive strategies benefits employee learning, which affects job satisfaction, operational efficiency, and supply chain relationships of the providers. Our findings reveal that government regulation has an important influence on the capabilities of skilled nursing facilities, which further enhances the firm's operational performance while improving supply chain collaboration.

**[Keywords]** health care; institutional theory; adaptive capability; job satisfaction; operational efficiency

### Introduction

As one of the world's largest industries, the size of the U.S. healthcare market continues to grow annually. According to Centers for Medicare & Medicaid Services (CMS), the Affordable Care Act (ACA) provides health care coverage expansions and premium subsidies to U.S. citizens. Federal, state, and local governments are expected to fund 47 percent of national health spending by 2024. Moreover, the Centers for Disease Control and Prevention (CDC) 2016 report indicates that the estimated annual amount of spending on long-term care services reached \$317.1 billion in 2014. Recently, approximately 15,600 regulated skilled nursing facility (SNF) providers offer a total of 1,663,300 certified beds; these nursing homes employed about one million full-time equivalents nurses and served approximately 1,369,700 residents in nursing homes in 2014 (CDC, 2016).

The nursing home sector strives to improve its performance as a large and costly segment of the US health-care industry. According to the CDC 2016 report, over 95% of all U.S. nursing homes are Medicaid-certified providers. Medicaid contributes the highest percentage (62.9%) of income to U.S. long-term care providers (O'Shaughnessy, 2014). State government agencies play an enormous part in regulating the nursing home industry, such as by conducting quality inspections, determining the number of beds, and disbursing the Medicaid Funds (Lenard & Shimshak, 2009). However, the average reimbursement shortfall for Medicaid nursing home was estimated to be \$19.55 per Medicaid patient day in 2011 (AHCA, 2011). In light of mandatory regulations from Federal and state governments regarding reimbursement and quality standards, we apply institutional theory (government regulation) and adaptive capability (environment uncertainty), which comprise major elements in the decision-making process for the long-term care providers. DiMaggio and Powell (1983) discussed how Weber's theory of institutional principle in bureaucratic settings results in competition among capitalist firms and state-run agencies in the marketplace. Due to current health care reform in the U.S., the healthcare industry has encountered the uncertainty of ever-changing governmental policies. Therefore, SNF managers should prepare effective strategies for firms as a form of adaptive capability in environmental uncertainty while still meeting the performance requirements of government regulations.

According to CMS, at least 69.8% of nursing homes are for-profit, and 55.7% are chain-affiliated. The majority of SNFs served between 26 and 100 residents daily. Depending on facility sizes, the providers are required to employ at least one Registered Nurse (RN) along with other Licensed Vocational Nurses (LVNs) and Licensed Practical Nurses (LPNs). As private equity or investment groups seek to generate net income, an effective strategy would be cutting costs, including caretakers. Therefore, most facilities are hiring numerous part-time aides instead of LVNs and LPNs to reduce facility expenses. This results in a higher

turnover rate and lower employee satisfaction to the facilities (Donoghue & Castle, 2009). Furthermore, high turnover rates lead to lower quality care performance for residents. Hence, improving the employee job satisfaction is a crucial element in lowering the turnover rate, thereby reducing the expenses of training new employees.

Strategic planning to generate revenue in the external and internal environment while fulfilling governmental quality performance requirements is a challenge for both non-profit and for-profit nursing homes. Since long-term care facilities are in a highly regulated industry, funding sources are subject to Medicare and Medicaid reimbursement. As mentioned earlier, cutting expenses is a way to generate more revenue. Therefore, seeking to improve operational efficiency may be an ideal managerial strategy for U.S. skilled nursing facilities. Appropriate business processes can promote the efficient use of resources when a firm utilizes the same resources to build value to improve working processes (Marley et al., 2004). Moreover, any improved processes increase operational efficiency, which reduces employees' time required to complete given tasks.

According to the CDC 2016 report, 97.4% of nursing homes provided a pharmacy or pharmacist services. Overall, the U.S. pharmaceuticals industry has increased quickly with retail sales of approximately \$409 billion in 2010 (USA: Healthcare, 2009). Administrative costs comprise 30 to 40 percent of healthcare costs within supply chains (Chen & Prater, 2013). Thus, when nursing home administrators understand the importance of building relationships with their pharmaceutical suppliers, the strategic implications of supply chain collaboration will enhance business performance. The various forms of supply chain collaboration could include supplier, purchasing, information, logistics, and distribution integration, as well as customer/market integration (Narasimhan & Das, 2001).

The research objective of this present study is to examine the relationships among healthcare facilities' external pressures and adaptive capability, and the impact of these relationships on overall employee satisfaction, operational efficiency, and supply chain collaboration. Due to the uncertainty that SNFs face with regard to government policies, leading firms can implement business processes and knowledge in order to more efficiently and effectively achieve organizational objectives and improve facility performance.

## Literature Review

### *Institutional Theory*

Institutional theory emphasizes social encounters rather than the economic impact of a firm's structure and practice. Organizational actions are often attempted in order to maintain policy expectations among major organizational stakeholders rather than offer rational efforts to ensure the firms' efficiency (Meyer & Rowan, 1977). Modern institutional frameworks have been defined as involving an association between organizational engagements and the organizational environment, including comprehensive consideration of human participation (Powell & DiMaggio, 1991). The perspective of institutional theory is that successful organizations maintain social advantages regarding norms of rational behavior (Scott, 1987). Therefore, individuals or firms maintain the potential to develop and react to wider environmental, social, and political pressures when adjusting their institutional behaviors. For example, due to environmental uncertainty, firms tend to imitate the successful strategic processes of competing organizations. Moreover, government regulatory restrictions may force firms to adapt and behave similarly in decision-making processes. This process often benefits less successful firms by improving efficiency (Scott, 1987). Meanwhile, the major payers of healthcare costs under the Medicare and Medicaid programs in the U.S. are federal and state governments (Meyer & Rowan, 1977); as such, institutional theory influences the U.S. health care industry due to the high dependency on governmental funding.

DiMaggio and Powell (1983) stated that higher degrees of structure and interconnection indicate institutional theory, including coercive isomorphism and mimetic isomorphism. Rogers et al. (2007) state that coercive force occurs in the case of regulatory constraints, which demand that firms adapt and act in similar ways when facing external pressures. Mimetic isomorphism occurs when firms imitate the strategies of other successful firms against uncertainty to improve relative efficiency.

**Coercive isomorphism.** Coercive isomorphism involves formal or informal pressure from internal

forces and external organizations. Furthermore, such pressure can be directly associated with political or governmental mandates and regulations (DiMaggio & Powell, 1983). Firms often need to modify their structures to acquire and maintain support of the external environment. At a minimum, many organizations must provide access and information to various government sectors. Ideally, the benefits of maintaining relationships with these external connections will far outweigh the costs (Scott, 1987). Specifically, regulatory agencies assert forces which cause the organization to control resource flows while sharing and creating internal cultural expectations (D'Aunno, Succi, & Alexander, 2000). Additionally, coercive isomorphism declares that established procedures and policies will guide organizational authority to external stakeholders (Rogers et al., 2007). Such authoritative forces appear mainly from government regulations; specifically, an SNF may be pressured to implement major new regulatory programs that require transitioning from cost-based payments to prospective payments in order to be reimbursed for expenses of treating Medicaid patients (Yang et al., 2007).

**Mimetic isomorphism.** Mimetic isomorphism encourages firms or entities to imitate each other. This process typically occurs when environmental uncertainty is high or an organization's goals are unclear. Successful firms are generally emulated by competing organizations to improve efficiency (DiMaggio & Powell, 1983). Firms might directly imitate a successful competitor or hire outside consultants in order to achieve the expertise employed by competitors (Oliver, 1997). Yang et al. (2007) stated that imitations most frequently occur among competitors within similarly-sized firms. In their study, size-localization was applied to better understand the mimetic process in organizational behaviors within hospital settings. When facing uncertainty, firms attempt to replicate or imitate the successful organizations; specifically, the adoption of Total Quality Management and Continuous Quality Improvement techniques are a form of mimetic isomorphism. However, when firms duplicate one another in their tactics (product development, inventory management, quality control, or organizational structuring), the outcome is an overall reduction in structural and strategic diversity (Oliver, 1997).

### *Adaptive Capability*

Adaptive capability is defined as a firm's ability to identify and benefit from emerging market opportunities (Chakravarthy, 1982); likewise, adaptive capability can be described as firms' strategic flexibility to adapt, align and shift available resources through continual changes in products and services to respond to external opportunities (Gibson & Birkinshaw, 2004; Zhou & Li, 2010). Generally, management directs the firms' capabilities, attributes, assets, organizational processes, information, and knowledge, thereby enabling the organization to efficiently and effectively implement its goals and strategies (Barney, 1991). Public sector decision-makers depend on either resources drawn from external policy funding sources or incremental improvement of developing resources. Thus, the capability framework describes an organization that continuously adapts to external governmental changes (Pablo et al., 2007). Therefore, adaptive capability can be viewed as effective adaptation to a changing environment, such as healthcare.

Firms that are unable to pursue product-market opportunities have lower adaptive capability. As such, a lack of internal responsiveness often leads to a failure to identify external changes. On the other hand, a high level of adaptive capability and external focus may result in the ability to adapt to future market changes and benefit customers and suppliers (McKee et al., 1989). Adaptive capability can be applied to individual customers and suppliers at the micro level, as has been studied under International Marketing and Purchasing Project in European countries (Oktemgil & Greenley, 1997). Additionally, measurements of adaptive capability can be multidimensional, including the following actions: responding to external opportunities; reacting to market change; monitoring customers and competitors' behaviors, and allocating resources to market activities (Oktemgil & Greenley, 1997; Wang & Ahmed, 2007).

### *Employee Satisfaction*

Skilled nursing facilities, along with the majority of health care sectors, are strongly service-oriented organizations that require large labor forces to take care of residents and patients. Employee satisfaction regarding registered nurses (RNs) has been frequently studied (Blegen, 1993; Lu et al., 2005). A common research area for job satisfaction is the turnover rate of employees. Low job satisfaction of caregivers often

leads to higher turnover rates for nursing homes (Castle, 2005). Specifically, job satisfaction is influenced by whether the firms fairly schedule the work, provide adequate training, and offer adequate rewards (Castle & Engberg, 2008). Tucker (2004) found that about 9% of nurses' time is spent on daily work procedures affected by operational inefficiency (i.e., lack of medication), which takes them away from expected work duties. Thus, SNFs should minimize such unproductive waste in order to improve operational efficiency and enhance employees' experience.

Repetition and experimentation allow employees to achieve better performance, thereby leading to increased production. Even though individual skills are key to productivity, an organizational setting that encourages learning processes as essential for job satisfaction (Teece & Pisano, 1994). Sarkis et al. (2010) mentioned the importance of workforce management and proper training for operations in response to competitive pressures. The U.S. healthcare industry is a highly regulated business, particularly for skilled nursing facilities as compared to other senior or assisted living homes. Hence, SNFs must meet established quality requirements and environmental regulations to avoid the threat of receiving lower quality measurements. As lower quality ratings will damage an organization's community image and customer relations, organizational culture should be adopted within the firm to foster learning and increase employee knowledge. Therefore, a commitment by the management team to implement employee training is important to encourage involvement among employees. Ideally, this type of training increases morale among employees and decreases turnover rates (Coates & McDermott, 2002).

### ***Operational Efficiency***

Efficiency is defined as the maximum amount of output from a given amount of input while producing a given output with minimum input quantities (Farrell, 1957). Outputs may also be measured in units of services, which can be intangible, such as health benefits or quality of care. As an example, the inputs may be measured as work hours for physicians or nurses. Therefore, when a firm is efficient in all aspects, it operates at the lowest costs and highest revenue. Specifically, operational efficiency seeks to utilize a high degree of resources available within the firm's potential capabilities to avoid wasting of scarce and valuable health care resources (Grover & Flagle, 1990). In measuring efficiency in healthcare, the early view would be in terms of numbers of patients treated or patient flows. However, this is not an ideal to measure the healthcare output because it does not indicate whether the patients' health conditions have actually improved. A more refined view of operational efficiency involves two economic concepts: allocative efficiency and technical efficiency. Allocative efficiency in long-term care involves distributing the firm's total resources of services and facilities to achieve appropriate care with minimum costs. As for technical efficiency in health care, the focus is on utilizing available resources at institutional and clinical levels, namely, staffing, scheduling, and choosing appropriate care for the patients. Hollingsworth (2008) noted that technical and allocative efficiency comprise overall efficiency when a firm operates as a leader in containing its costs and producing revenue.

In an early study on healthcare operational efficiency, Hogan et al. (1986) described how effectiveness of nurse staffing patterns and work performance may benefit nursing home patients. Harrison and Ogniewski (2005) compared inputs and outputs to measure hospital efficiency, such as full-time equivalents in terms of staff size, beds, and operating expenses. Hussey et al. (2009) stated that the majority of the healthcare efficiency literature involves the production of hospital care. Studies have applied different outputs and inputs for efficiency measurement in healthcare. As an example, output efficiency measurements have included patient visits per physician per month (Albritton et al., 1997) and average length of stay (Weingarten et al., 2002). Examples of input efficiency measurements involve physician labor time (Conrad et al., 2002) and nursing labor time and laboratory tests (Rosenman & Friesner, 2004). Moreover, Inman et al. (2011) stated that operational measurements can indicate an aggregate performance outcome. Likewise, when facilities achieve higher quality care, higher operational costs may result (Davis, 1991). Hence, some studies have applied nursing home expenditures as a measure of operational costs to evaluate the facility in providing high performance services (Harkey & Vraciu; 1992). However, facilities that deliver a better quality of care typically generate less waste and fewer errors with superior efficiency of care (Harkey & Vraciu; 1992; Fleming, 1991).

### ***Supply Chain Collaboration***

Supply chain collaboration involves two or more independent partners working together to plan and implement supply chain operations (Lejeune & Yakova, 2005). When dealing with uncertain environments, firms often seek outside their organizations for opportunities to achieve greater supply chain collaboration with suppliers and customers by sharing resources and knowledge. Specifically, long-term supply chain collaboration relationship with suppliers provides benefits between partners by reducing transaction costs to gain a stronger competitive position (Sheu et al., 2006). This strong supply chain management relationship allows firms to share risks (Kogut, 1988), enhance productivity (Kalwani & Narayandas, 1995), and exchange complementary resources (Park et al., 2004).

Supply chain collaboration yields a collaborative advantage composed of a sequential interdependent relationship rather than competition among external partners (Chen & Paulraj, 2004). Therefore, supply chain partners view supply chain collaboration as a positive gain to maximize firms' benefits. Moreover, Cao and Zhang (2011) note that process focus and relationship focus are two types of supply chain collaboration. Two or more supply chain partners must work together toward common goals to improve business processes. Golicic et al. (2003) defined the supply chain collaboration as partners working together and sharing resources, information, and risks to form a close long-term partnership enabling the accomplishment of mutual objectives. Furthermore, research has focused on supply chain collaboration in information sharing within the virtual environment (Manthou et al., 2004), decision-making process with external partners (Stank et al., 2001), and goal setting for electronic data interchange among supply chain partners (Angeles & Nath, 2001).

Within the healthcare industry, efforts of reducing costs often lead to decreased quality and service. Frequently, cost versus quality focuses on delivery of healthcare to the patient. However, purchasing of healthcare products and supplies by hospitals or nursing facilities should also be considered. Lambert et al. (1997) pointed out that the cost of goods and supplies are estimated at 16 to 28 percent of healthcare facilities' budgets, thereby becoming an important area of cost reduction. In the United States, more than 80 percent of nursing home medications are supplied by "institutional" pharmacies. However, independent community pharmacies or retail pharmacy chains still attempt to compete for market share (Mendelson, 2002). Effective supplier collaboration is achieved when both the organization and its suppliers can access accurate and real-time information (Wong & Boon-itt, 2008), thereby confirming many other research findings on the benefits of reducing ordering costs and inventory levels. The enhancement of transparency across the supply chain can eliminate information distortion and increase information speed by reducing information delays (Popp, 2000).

Moreover, supply chain collaboration should take into account certain issues such as mutual benefits, rewards, risk sharing, trust, and information exchange. Internal and external collaboration should accompany tactical and strategic levels in firms across the supply chain network. Specifically, external collaboration presents a vertical supply chain collaboration that includes downstream and upstream aspects, such as customer relationship management (CRM) along with suppliers (Barratt, 2004). Furthermore, information-sharing between partners of a supply chain when implementing electronic data interchange (EDI) technology decreases uncertainty and improves supplier performance, considerably improving the overall supply chain system (Srinivasan et al., 1994). Firms can also cooperate with different partners through acquisition or joint ventures to cultivate first-hand or complementary technology and generate internal knowledge (Wang & Ahmed, 2007).

### **Research Hypotheses**

Figure 1 presents the research model derived from the previous discussion. The research hypotheses to be tested in this present study provide an evaluation of the theory based on causal relationships among the external pressures of institutional theory, adaptive capability, employee satisfaction, operational efficiency, and supply chain collaboration.

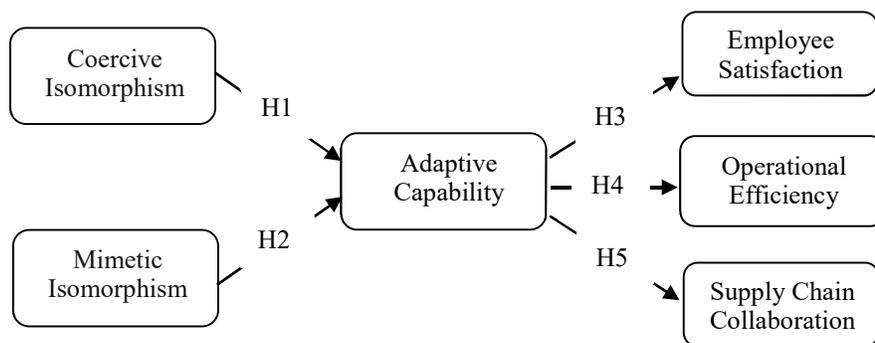


Figure 1. Research Framework

Gupta et al. (2010) stated that institutions play a central role in establishing the capability of society to adapt to change. Likewise, Agrawal (2008) mentioned that institutions facilitate changes within individuals by providing incentives to cooperate, thereby assisting the distribution of resources and impacting different groups. As for the healthcare industry, due to high dependency on government funding acting as an institutional pressure, the facilities inevitably adapt to governmental quality requirements. Lemos et al. (2007) stated that decision-making and resource transfer reflect a crucial adaptive capability for social groups to respond to institutional practices. The public sector decision-makers depend on resources drawn from external policy funding sources, along with incremental improvements to develop internal processes. Market adaptive capability (Oktemgil & Greenley, 1997) is a useful organizational complement to environmental dynamism. The ability to establish market-adaptive capability is achieved by continually scanning and monitoring the market and implementing appropriate actions to adapt to environmental changes.

Liang et al. (2007) maintain that institutional theory affects external social and political environments via knowledge adaptation behaviors. Institutional theory proposed that structural and behavioral aspects are shaped more by the necessities of organizational legitimacy and less by the desire for efficiency. Swanson and Ramiller (2004) suggest that firms may observe and replicate successful competitors. Hence, firms tend to develop certainty regarding a novel behavior as a way of responding to uncertainty within the environment and consequently transforming policy into actions. Liu et al. (2010) discuss the relationship between organizational behavior and institutional factors (coercive and mimetic isomorphism) which influence management to practice new adoption processes. The ability to predict, perceive, and reproduce a given process that replicates previous successes is an essential action for adaptive theory.

*Hypothesis 1: Coercive isomorphism is positively related to adaptive capability.*

*Hypothesis 2: Mimetic isomorphism is positively related to adaptive capability.*

Sarkis et al. (2010) studied the effects of stakeholder pressures (e.g. government regulators) as substantial motivation for firms to adapt and implement various processes as a form of adaptive capabilities. These adaptive capabilities are relevant to workforce management and required employee training. Therefore, management strategies often guide the firm's capabilities regarding organizational process and knowledge, thereby enabling the organization to implement its goals and objectives more effectively (Barney, 1991). As mentioned earlier, healthcare is a highly labor intense industry that require many nurses to care for the patients or residents in the facilities. Castle and Engberg (2008) have pointed out that improving the quality of care in nursing homes is not achieved by simply adding more staff; specifically, other elements may influence health care processes such as stability of work environment, professional staff mix, and accountability of staff. Castle (2005) indicated that nursing directors influence employees' commitment to the firm, as well as their turnover rates. Therefore, it is crucial that management teams emphasize quality workforce management and provide proper training to the staff. Similarly, job satisfaction is the most frequently cited issue regarding nurses' turnover rate. Lu et al. (2005) said that the

job dissatisfaction for nurses does not solely depend on the nature of the job, but also on the individual expectations of what the job should provide and how to advance one's career. Furthermore, lack of job satisfaction included poor work relationships with management, lack of staff or job overload, and unclear standards of care. A culture of organizational resistance, or other such barriers might coexist with firm's desire to meet external stakeholders' requirements (e.g. improve their quality and utilize their available resources). These barriers might be overcome by educating and increasing knowledge of employees (Coates & McDermott, 2002).

*Hypothesis 3: Adaptive capability has a positive influence on employee satisfaction.*

DiMaggio and Powell (1983) discuss how Weber's theory of bureaucratization results in competition among capitalist firms and state-run agencies in the marketplace. It is further argued that while the organizations may become more homogeneous, bureaucratization does not make the firms more efficient. However, efficiency is achieved through the process of individual efforts to deal with uncertainty and constraints of interaction among organizations and coalitions between interorganizational structures. When firms increase their level of adaptive capability, such actions lead to better alignment of internal human resources (Wang & Ahmed, 2007). Furthermore, adaptive capability is also affected by different internal response functions. For example, when a firm understands its market objective and requirements, a higher adaptive capability can achieve a greater effectiveness which thereby enhances the firm's internal coordination of attention on customers and competitors (Oktemgil & Greenley, 1997).

Zollo and Winter (2002) state that learning mechanisms include administrative routines, experience and knowledge building. Within organizational processes, employee activities are the focus of operational functions of the firm and devoted to the adaptation of operating routines. Therefore, healthcare management teams often dedicate substantial effort and time to facilitate capabilities to improve patient process and performance (Pablo et al., 2007). Generally, a standard performance indicator is utilized for improving operational efficiency, evaluating management, offering accountability, and encouraging collaboration (McKone-Sweet et al., 2005).

*Hypothesis 4: Adaptive capability has a positive influence on operational efficiency.*

Among industrial markets, adaptive capability can be applied to individual customers and suppliers at the micro level, which has been studied as the International Marketing and Purchasing Project in European countries (Oktemgil & Greenley, 1997). Moreover, adaptive capability may encourage the adoption of new processes and routines, such as just-in-time, especially where an objective of establishing and sustaining relationships exists among the supply chain partners. As such, firms' flexibilities can reflect overall ability through responding to the requirements of target markets. This flexibility can spread throughout the supply chain, thus enhancing the adaption to dynamic market changes and further achieving overall performance (Cao & Zhang, 2011). Manthou et al. (2004) presented a supply chain collaboration framework to establish the appropriate criteria for agreements between supply chain partners. Their results identified several key capabilities of effective collaboration, such as sharing values, developing common goals, solving differences, and coordinating technical processes.

DeJohn (2008) stated that an efficient healthcare supply chain has the potential benefit of decreasing operating expenses by an estimated 2 to 8 percent. Likewise, an efficient and user-friendly supply chain is associated with healthcare revenues by reducing staff turnover rates and providing better patient services. Part of the barrier to implementing supply chain collaboration is a lack of understanding the importance of tracking and scrutinizing critical performance outcomes. Therefore, training and education of employees is a core part of adaptive capability, which involves gaining more knowledge of supply chain relationships and requiring business processes to accomplish greater competitive advantages (McKone-Sweet et al., 2005).

*Hypothesis 5: Adaptive capability has a positive influence on supply chain collaboration.*

## Research Methodology

### *Data Collection and Data Characteristic*

The survey items reflect coercive isomorphism, mimetic isomorphism, adaptive capability, employee satisfaction, operational efficiency, and supply chain management. There are no newly developed scale items for this present study, as all the survey items are from previously-tested questionnaires. The research model and survey items were approved by operations management faculty and other management professors. As a preliminary step, the questionnaires were scrutinized by seven administrators of skilled nursing facilities to confirm face validity. A few minor changes in wording were advised to better align with the healthcare and nursing home industry.

Fifteen hundred surveys were sent out via US Mail to the administrators of skilled nursing facilities subject to Medicare and Medicaid reimbursement. Therefore, the unit of analysis for this research is the level of individual skilled nursing facilities. A total of 264 surveys were received. Some surveys were omitted from our analysis due to one or more of the following reasons: missing more than 20% of the survey items, incorrect mailing address, and administrators' unwillingness to participate. Moreover, facilities with less than 30 beds comprise staffing characteristics with low signal-to-noise ratios, which should not be included in the analysis (Castle & Engberg, 2008). A total of 199 valid surveys were received from for-profit and 44 from not-for-profit SNFs' administrators. Hence, 243 valid surveys are included in the final data analysis, which represents a response rate of approximately 16.2%.

### *Non-respondent Bias*

The differences in organizational status (for profit and not-for profit status), as well as differences in size of nursing facilities, were tested between responding and non-responding facilities to examine how the sample might vary from the population. Non-respondent bias by nursing home ownership (For Profit, Government, or Not-For Profit) was assessed and also indicated no significant difference ( $\chi^2 = 2.28$ ,  $d.f. = 2$ ,  $p = 0.32$ ) between respondents and non-respondents. Non-respondent bias was further evaluated by facility size and ownership. The Chi-square test statistic is examined for the number of beds and revealed a value that is not significant ( $\chi^2 = 0.71$ ,  $d.f. = 2$ ,  $p = 0.701$ ). Thus, the difference in response rate as related to the number of bed sizes is not significant.

## Research Results

For this present study, the research model (Figure 1) is implemented and analyzed to assess causal relationships in the long-term care industry using structural equation modeling (SEM). The input for the structural equation model estimations are based on scores of a total of six dimensions: two institutional theory constructs (coercive and mimetic), adaptive capability, employee satisfaction, operational efficiency, and supply chain management.

### *Reliability and Validity Analysis*

Reliability is tested by applying Cronbach's coefficient alpha and composite reliability (CR) for six scale constructs. The Cronbach's alpha (CA) for coercive isomorphism, mimetic isomorphism, adaptive capability, employee satisfaction, operational efficiency, and supply chain management are 0.707, 0.922, 0.844, 0.860, 0.747, and 0.851, respectively. Cronbach's reliability test is often applied to inspect the fit of multiple items to measure for one underlying construct. The general guideline for Cronbach's alpha is defined as at least 0.6 in the lower limit for reliability (Nunnally, 1978). Factor analysis was conducted to reduce item responses to a particular score for each of six construct dimensions. Principle component analysis is used to summarize the original data into a range of scores. All composite reliability values are between 0.962 and 0.834, which indicates acceptable reliability as these values exceed 0.70. Please see Table 1 Measurement scales and loadings.

All average variance extracted (AVE) values range between 0.927 and 0.568 (at construct level), which is greater than 0.5. This suggests that convergent validity at the indicator and construct levels is verified.

The square root of each AVE is examined for discriminant validity and should be greater than 0.7 (Chin, 1998) and it should exceed the related inter-construct correlations for reflective constructs. All the square roots of AVE are greater than the related inter-construct correlations. Therefore, discriminant validity is confirmed.

Table 1  
*Measurement Scales and Loadings*

	Factor Loading
Coercive Isomorphism: (AVE=0.626 /CR= 0.834 /CA=0.707)	
Source: Liang et al. (2007) and Liu et al. (2010)	
The industry association requires our facility to follow government regulations	0.740
Our insurance company requires our facility to follow government regulations	0.669
Our main customers that matter to us believe that we should follow government regulations	0.604
Mimetic Isomorphism: (AVE=0.927 /CR=0.962 /CA=0.922)	
Source: Liang et al. (2007) and Liu et al. (2010)	
Our main competitors who have adopted government policies are favorable perceived by others in the same industry	0.885
Our main competitors who have adopted government policies are favorably perceived by their customers	0.798
Adaptive Capability: (AVE=0.681 /CR=0.895 /CA=0.844)	
Source: Oktemgil and Greenley (1996)	
Our firm can meet the social expectation quickly	0.725
Our firm freely communicates information about our customer experiences across our firm	0.676
We regularly use inputs of relevant information	0.658
Our firm can predict the change trend of public policy	0.638
Our firm can adapt to the change of public policy quickly	0.638
Employee Satisfaction: (AVE=0.640 /CR=0.899 /CA=0.860)	
Source: Chesteen et al. (2005)	
We use a variety of methods to measure employee satisfaction	0.799
Our work environment supports the well-being and development of all employees	0.766
Employees receive career development services	0.743
We work to improved employee health and safety (such as ergonomic training for jobs requiring lifting)	0.622
Operational Efficiency: (AVE=0.568 /CR=0.840 /CA=0.747)	
Source: Chesteen et al. (2005)	
Feedback on administrative services is obtained from external customers (patients and other stakeholders)	0.682
We measure the performance of our administrative services	0.652
Analytical techniques such as process mapping and error proofing are used for addressing problems	0.651
Feedback on administrative services is obtained from internal customers (other departments)	0.621
Supply Chain Collaboration: (AVE=0.629 /CR=0.894 /CA=0.851)	
Source: Cao and Zhang (2011)	
Our firm and supply chain partners (pharmacies) jointly assimilate and apply relevant knowledge	0.853
Our firm and supply chain partners (pharmacies) jointly search and acquire new and relevant knowledge	0.773
Our firm and supply chain partners (pharmacies) jointly identify customer needs	0.697
Our firm and supply chain partners (pharmacies) influence each other's decisions through discussion rather than requests	0.683
Our firm and supply chain partners jointly (pharmacies) discover new or emerging services	0.656

AVE=average variance extracted, CR=composite reliability, CA=Cronbach alpha

Next, estimated model fit values are assessed. The root mean square error of approximation (RMSEA) is a measure of model fit that is not dependent on sample size (Hair et al., 1998). Its value of 0.056 (between

0.05 to 0.1) indicates a reasonable model fit in this study. Other measurement model statistics, including all reasonable fits, are reported in Table 2: Measurement model fit and Structural model fit. A normed Chi-square value of 2.0 or lower indicates that the model adequately represents the data; the value for this study is 1.76. The comparative fit index (CFI), normed fit index (NFI), goodness of fit index (GFI), and incremental fit index (IFI) are 0.933, 0.859, 0.878, and 0.934, respectively. According to the above analysis, the measurement model and indicators of this study met the validity and measurement requirements. Please see Table 2 Measurement model fit and structural model fit.

Table 2  
*Measurement Model Fit and Structural Model Fit*

<b>Model fit measure</b>	<b>CFA</b>	
<b>SEM</b>		
Degree of freedom (d.f.)	215.00	224.00
$\chi^2$ – Test statistic	378.97	400.03
Normed $\chi^2$ ( $\chi^2$ /d.f.)	1.76	1.79
RMSEA Point Est	0.056	0.057
Comparative fit index (CFI)	0.933	0.928
Normed fit index (NFI)	0.859	0.852
Goodness of fit index (GFI)	0.878	0.872
Incremental fit index (IFI)	0.934	0.929

### **Statistical Results**

AMOS was applied for the data analysis in this present study. The Table 2 Measurement model fit and Structural model fit provides the output results. The chi-square test for overall model fit with six dimensions has a value of 400.03 ( $p < 0.01$ ), and the normed chi-square statistic of 1.79 indicates the model is not overestimated and is a reasonable model. Also, RMSEA (0.057) specified a reasonable model fit. Additionally, the normed fit index (NFI) of 0.852, the comparative fit index (CFI) of 0.928, the goodness of fit index (GFI) of 0.872, and the incremental fit index (IFI) of 0.929 are reasonable outputs. Thus, our results offer empirical support for all five of the hypothesized causal relationships.

Table 3 Path estimates for overall structural model show the results of model estimation including path estimates, standard error, and t-tests for the path significance.

Hypotheses 1 assesses the causal influence of coercive isomorphism on adaptive capability. The path estimates for the relationship are coercive to adaptive capability ( $\gamma_{11} = 0.382$ ,  $p < .01$ ). Thus, a significant positive relationship exists between coercive isomorphism and adaptive capability.

Hypotheses 2 shows the causal influence of mimetic isomorphism on adaptive capability. The path estimates for the relationship are: mimetic to adaptive capability ( $\gamma_{21} = 0.134$ ,  $p < .05$ ). This indicates a significant positive relationship between mimetic isomorphism and adaptive capability.

Hypotheses 3 displays the causal influence of adaptive capability on employee satisfaction. The path estimates for the relationship are: adaptive capability to employee satisfaction ( $\beta_{21} = 1.146$ ,  $p < .01$ ). This reveals a significant positive relationship between adaptive capability and employee satisfaction.

Hypotheses 4 involves the causal influence of adaptive capability on operational efficiency. The path estimates for the relationship are adaptive capability to operational efficiency ( $\beta_{31} = 0.990$ ,  $p < .01$ ). Hence, a significant positive relationship exists between adaptive capability and operational efficiency.

Hypotheses 5 indicates the causal influence of adaptive capability on supply chain management. The path estimates for the relationship are adaptive capability to supply chain management ( $\beta_{41} = 0.738$ ,  $p < .01$ ). This identifies a significant positive relationship between adaptive capability and supply chain management. In sum, as discussed in the above analysis, significant relationships occurred for all five hypotheses.

Table 3  
*Path Estimates for Overall Structural Model*

Hypotheses	Path	Point estimate		
		Standard error	t-Value	
H1	Coercive → Adaptive Cap.	0.382	0.107	3.56**
H2	Mimetic → Adaptive Cap.	0.134	0.058	2.28*
H3	Adaptive → Employee Satisfaction	1.146	0.142	8.07**
H4	Adaptive → Operational Efficiency	0.990	0.120	8.26**
H5	Adaptive → Supply Chain Collab.	0.738	0.097	7.85**

\*p<.05, \*\*p<.01

### Discussion and Conclusion

This research focuses on the effects of coercive isomorphism, mimetic isomorphism, and adaptive capability implementation on employee satisfaction, operational efficiency, and supply chain collaboration in U.S. long-term healthcare. For the final statistical output, H1, H2, H3, H4, and H5 were fully supported. Institutional theory influences the allocation of SNFs' capabilities and resources. Adaptive capability is the firm's ability to adapt to environmental uncertainty. Government-mandated quality standards and reimbursement funding typify coercive isomorphism; thus, SNFs often develop a strong sense of capability to comply with governmental requirements. The statistical results for H1 offer evidence that a positive relationship exists between coercive isomorphism and adaptive capability. In order to improve adaptive capability, SNFs often imitate the successful nursing facilities' services or processes as a form of mimetic isomorphism. In the U.S., many nursing homes are chain affiliates. The chain for-profit or non-for-profit SNFs can share resources and knowledge across facilities. Therefore, the relationship between mimetic isomorphism and adaptive capability is positive for H2.

Adaptive capability reflects the extent that facilities are aware of the changing public policy and able to predict and communicate across the firm. Also, one aspect of public policy regarding healthcare is to improve the quality of care. SNFs involve high density labor forces to provide services to their residents. Therefore, high quality care is generally associated with high employee satisfaction for the job. When management teams have the ability to implement well-defined workforce management and training for their employees, the results include better work environments and higher job satisfaction, thereby leading to reduced turnover rates. Thus, a proper allocation of firm adaptive capability in employee development can lead to positive job satisfaction as shown for H3.

Adaptive capability is also a learning capability for the company. Higher adaptive capability is evident by a firm's efforts to improve its knowledge-building of organizational processes and administrative routines. Clear processes and routines offer employees comprehensive guidance with regard to operations. Hence, higher adaptive capability can achieve a greater operational efficiency as identified in H4. A supply chain collaboration among partners is achieved when a firm appropriately develops its adaptive capability toward common goals, value sharing, and technical process coordination. A well-established supply chain relationship between suppliers and customers provides many benefits for both entities, including reduced expenses and improved business processes. Consequently, a higher adaptive capability represents supply chain collaboration in support of H5.

Most research studies of U.S. nursing homes have primarily focused on patient quality of care and overcoming deficiencies (Castle & Engberg, 2008; Davis, 1991). This present research takes a different view of firms' strategic planning via employee development, operational efficiency, and supply chain collaboration to meet government regulations. The statistical results reveal that external pressures are indeed linked to firm's capabilities in the U.S. long-term care industry. The findings indicate that facilities' capabilities are associated with institutional theory regarding government regulations. The positive relationship between coercive and adaptive capabilities can be explained by U.S. long-term care providers being regulated by the government for decades. Moreover, U.S. nursing homes are in a highly competitive

and regulated industry, which encourages firms to imitate each other to maintain patient quality and meet government mandates. As facilities utilize their adaptive capability, the following results typically occur: improved work systems, increased employee training, and support of staff well-being. Hence, the benefits of employee development lead to increased employee satisfaction, which enhances employee loyalty and increases employee retention. This study further investigates the association that adaptive capability can enhance operational efficiency and supply chain collaboration. Thus, the relationship between organizational adaptive capability and operational efficiency is one notable correlation between capability and performance.

In sum, as a facility is more adaptive to its market, the facility will decrease its operational expenses, thereby improving its efficiency. Higher workforce development through utilization of firm's capabilities tends to improve operational efficiency and supplier relationships. This outcome can be seen in employees' willingness to devote more effort toward increasing operational performance and building better communication channels with suppliers. Finally, government regulations appear to encourage the long-term care facilities to fulfill the government-mandated quality requirements in order to receive reimbursements. Thus, increased strategic planning can assist firms in reaching improved operational performance and supply chain relationships.

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