This study examines how the demographic characteristics of the top management team in 236 nursing homes can affect the adoption of innovations. The computerization of the Minimum Data Set (MDS) is the innovation we examine, and tenure, education, and involvement in a professional society are the demographic characteristics investigated. Controlling for 10 organizational and environmental factors, the results are generally significant for each of these demographic factors. However, the results for top managers of nonchain nursing homes show a greater association between these demographic factors and innovation than the results for top managers of nursing homes belonging to a chain. We discuss these results in terms of their significance for innovation research, nursing homes, and top management.

Key Words: Chains, Demographic factors, Minimum Data Set (MDS)

Top Management Team Characteristics and Innovation in Nursing Homes

Nicholas G. Castle, PhD, and Jane Banaszak-Holl, PhD

Innovations in the long-term care industry in recent years have included numerous changes in facilities’ links to other health care providers, diversification in services provided, and changes in the techniques for internal management (Brannon, Castle, Callaway, & Zinn, 1995). These innovations can play a critical role in the survival and prosperity of nursing facilities (Moch, 1976), and yet innovations have not been well studied in the long-term care setting. This study examines how the demographic characteristics of a nursing home's top management team can affect the facility’s adoption of innovations (Hambrick & Mason, 1984; Kimberly & Evanisko, 1981). As shown in the management literature, demographic characteristics play a leading role in shaping team dynamics and individual behavior that ultimately affect the team’s willingness to adopt innovations under changing environmental conditions.

Research has shown that nursing home administrators affect resident outcomes (Castle, 1996). For example, after controlling for resident factors such as severity of illness, age, and sex, the number of full-time equivalent (FTE) work hours of nursing home administrators affected the long-term prevalence of pressure ulcers and the use of psychotropic medications among residents (Castle, 1996). In this investigation, we argue that the top management of the nursing home can affect the adoption of innovations. Traditionally, top management within nursing homes includes both the director of nursing (DON) and the administrator. These individuals are involved in decision making, and we argue that together they will affect innovation in nursing homes.

Chain ownership may be an extremely important variable in innovation research. When a facility is a member of a chain, certain economies of scale may be achieved. For example, the purchasing of equipment and supplies may be less expensive. These cost savings may free resources that can then be used to promote innovation. In addition, the top management of chain-owned nursing homes will be more closely regulated in their activities than the top management teams of nursing homes with a sole proprietor. The central office in a chain may make many of the administrative decisions for a nursing home, including initiation of innovative administrative practices. Consequently, we examined chain-owned and nonchain nursing homes separately.

Innovation in the Nursing Home Industry

Within the health care arena, innovation researchers have predominantly examined hospitals and physicians (e.g., Greer, 1986; Kimberly & Evanisko, 1981; Meyer & Goes, 1988; Rogers, 1983). For example, Kimberly and Evanisko have shown hospital size is important in the innovation process within hospitals (Kimberly & Evanisko, 1981). However, in contrast to hospitals, physicians play a relatively minor role in the administration of most nursing homes and are less likely to be influential in the adoption of innovations. The long-term care industry is also structurally dissimilar from the hospital industry in factors known to have an effect on innovation such as staffing levels, types of staff, organi-
Among these managerial innovations has been the development of residents' care plans. The RAI provided the assessment tools, nor is it an innovation term care. Heavy regulation has been successful in curbing growth of the industry (Bishop, 1980) and has diminished some of the competitive incentive to change. For example, state-level Certificate of Need (CON) programs that require reviews of capital expenditures for any substantial changes in bed capacity or services and moratoria on the building of new nursing home beds have led to high occupancy rates and waiting lists for entry into some facilities (Banaszak-Holl, Zinn, & Mor, 1996; Feder & Scanlon, 1980). Waiting lists, low growth, and high occupancy rates discourage innovation (Joskow, 1980).

Regardless of these factors, the need to attract private pay residents has provided the nursing home industry with some competitive incentives. Unlike the cost-controlling features of Medicare and Medicaid reimbursements, nursing homes have been unregulated with regard to the types and costs of services they provide private pay residents. Consequently, private pay residents are usually charged more than other residents. Indeed, some nursing homes are financially dependent on their ability to attract higher paying private pay residents.

Recently, increasing competition in the nursing home industry and a push to develop better market strategies have forced many nursing homes to improve and streamline their management practices in ways that cut administrative costs and more effectively meet government regulatory standards (Brannon et al., 1995). Nursing homes are introducing computerized systems for tracking both administrative and clinical records (Hines et al., 1994). Among these managerial innovations has been the introduction of computers to code and track residential care in a way that meets recent government requirements to implement the Resident Assessment Instrument (RAI). The RAI identifies and tracks residents' care preferences and their physical and psychosocial functioning and guides caregivers in the development of residents' care plans. The RAI includes a manual of utilization guidelines; the Minimum Data Set (MDS), a tool for preliminary assessment of physical and psychosocial functioning that "triggers" areas for further evaluation; and, the Resident Assessment Protocols (RAPs), which guides in-depth evaluation of 18 areas of physical and psychosocial functioning. Computerization of the MDS helps facilities track resident outcomes for quality assurance and improvement (Zinn, Brannon, & Mor, 1995).

This study defines the computerization of the MDS as an innovation that is still being introduced in nursing facilities. The computerization of the MDS is not a technological innovation produced by the long-term care industry, as the government provided the assessment tools, nor is it an innovation in computer technology; rather, it represents a new configuration of the two. We take the approach of defining this innovation, at the individual facility level, as a practice that is new to the organization adopting it (Aiken & Hage, 1971; Hage & Dewar, 1973). As Daft (1982, p. 131) described it, "the idea can be either new or old in comparison to other organizations so long as the idea has not been previously used by the adopting organization."

Top Management Teams and Demographic Characteristics

Top management team research characteristically assesses the demographic characteristics of upper management and how these demographic factors relate to outcomes such as turnover (McCain, O'Reilly, & Pfeffer, 1983), job performance (Norburn & Birley, 1988), and innovation (Bantel & Jackson, 1989). Rather than examine the importance of the demographic characteristics of single individuals, this research has focused on the dominant coalition within the organization, including both the chief executive officer (CEO) and vice presidents (VPs).

These studies assume that demographic characteristics are related to attitudes and cognitive abilities (e.g., Bantel & Jackson, 1989; Norburn & Birley, 1988). Attitudes and cognitive abilities are highly predictive of factors such as turnover, job performance, and innovation, thus explaining the types of outcomes top management team researchers examine. The disadvantage of this approach is that demographic characteristics are not perfect proxies for attitudes and cognitive abilities (Hambrick & Mason, 1984), whereas the advantage is that demographic characteristics are easier to measure than actual attitudes and cognitive abilities. Some of the demographic characteristics included in previous research include age, tenure, education, and functional background (Bantel & Jackson, 1989; Hage & Dewar, 1973; Kimberly & Evanisko, 1981). We examine tenure, education, and involvement in a professional society (Hage & Dewar, 1973).

Furthermore, this line of research has focused on both the aggregate properties of the top management team, such as the overall tenure of the top management team (Norburn & Birley, 1988), and on the relative homogeneity (or heterogeneity) of the top management team (Michel & Hambrick, 1992). We examine both aggregate properties and relative homogeneity within the top management team.

The aggregate demographic properties of top management teams, such as average age, can be used to represent the group's overall attitudes and cognitive abilities. These aggregate properties often predict several important individual, group, and organizational outcomes. For example, Norburn and Birley (1988) found the managerial characteristics of education, tenure, and gender significantly predict variations in corporate performance. In his meta-analysis of organizational innovation, Damanpour (1991) found a positive relationship between innovation and the tenure of managers. The link...
between aggregate demographic properties and innovation will be expanded upon in the hypotheses section.

Top management team researchers have also demonstrated the potential costs and benefits associated with group heterogeneity and homogeneity. Demographic factors, because of their visibility, readily serve as a signal of attraction to others who share the same features (Pfeffer, 1985). Interpersonal attraction may promote more frequent communication among individuals than otherwise expected (Pfeffer & O'Reilly, 1987). Frequent communication in turn promotes social bonding, thus helping in the formation of social groups (Tsui, Egan, & O'Reilly, 1992). This "group cohesion" is thought to be beneficial in situations that require continuity in decision making (Wiersema & Bird, 1993, p. 1003).

Conversely, people with dissimilar demographic factors may find it difficult to communicate with each other (Roberts, Karlene, & O'Reilly, 1979). Also, heterogeneous groups are likely to differ with respect to attitudes and cognitive abilities (e.g., Bantel & Jackson, 1989; Norburn & Birley, 1988), which in turn may lead to interpersonal conflict (Wagner, Pfeffer, & O'Reilly, 1984). However, these dissimilarities also foster creativity and innovation, leading to diversity and novelty in problem solving (Murray, 1989; Wiersema & Bantel, 1992). The few studies examining the effects of demographic diversity on innovation identified heterogeneity as having "a positive effect on innovative and creative decision making" (Bantel & Jackson, 1989, p. 118).

Hypotheses

Existing research on innovation has found a positive relationship between the adoption of innovations and the length of a leader's service (Damanpour, 1991; Kimberly & Evanisko, 1981). For example, Kimberly and Evanisko (1981) found a positive relationship between adoption of innovations and the tenure of top managers. Meyer and Goes (1988) found that increased tenure provides leaders with the necessary legitimacy to facilitate the adoption of innovations. In accordance with this previous research, we suggest the following hypothesis:

Hypothesis 1a. — Top management groups with longer tenure are more likely to adopt innovations.

As described earlier, demographic heterogeneity and homogeneity influence the frequency of communication among individuals. The degree of homogeneity of tenure within the top management team is also of interest because cohorts of similar tenure develop norms and language shared among members that reflect similarities in how they interpret, understand, and respond to information (McCain et al., 1983; Wagner et al., 1984). This may lead to conformity, which in turn may have a negative influence on innovation. For example, recent studies have shown that groups with heterogeneous tenures have a positive effect on innovation (e.g., Bantel & Jackson, 1989). A diversity of perspectives is associated with heterogeneous tenures and this may facilitate innovative behavior (Wiersema & Bantel, 1992). Therefore, we propose the following hypothesis:

Hypothesis 1b. — Top management groups whose members have dissimilar tenure are more likely to adopt innovations.

Higher levels of education are associated with a greater tolerance for ambiguity, a higher capacity for information processing (Dollinger, 1984), and a greater likelihood of adopting innovations (Rogers & Shoemaker, 1971). Meyer and Goes (1988, p. 909) argued that leaders with increased education possess the necessary "acumen" to facilitate the adoption of innovations. Similarly, Bantel and Jackson (1989) believed that the education level attained is correlated with cognitive ability. Therefore, higher levels of education are positively associated with innovations (Bantel & Jackson, 1989). Education can also promote innovative behavior as educational curricula broaden the perspectives of top managers (Wiersema & Bantel, 1992). This is consistent with the following hypothesis:

Hypothesis 2. — Top management groups with higher levels of education are more likely to adopt innovations.

Past research has also found that active involvement in professional societies increases the likelihood of adopting innovations (Hage & Dewar, 1973). Miller and Friesen (1984) found that professional activities, such as attending professional meetings, help managers scan their environments for potential innovations. We propose the following hypothesis:

Hypothesis 3. — Top management groups with more involvement in professional societies are more likely to adopt innovations.

Methods

Sources of Data

The data used in this investigation come from three sources: A telephone survey of nursing home administrators and directors of nursing, the Medicare/Medicaid Automated Certification Survey (MMACS), and the Area Resource File (ARF).

The telephone survey of nursing home administrators and directors of nursing (DON) was conducted after implementation of the federally mandated Resident Assessment Instrument (RAI), during the spring and summer of 1993. Two hundred and thirty-seven DONs and 236 nursing home administrators from a total of 248 facilities participated. One hundred and thirty four (52%) of these facilities belonged to chains. The study sample consisted of nursing homes in both urban and rural communities in ten states (Hines et al., 1994).

The MMACS contains facility and aggregated resident data routinely collected through the nursing
home certification process by state licensure and certification agencies (Zinn, 1993). Relevant MMACS data were taken from the 1993 survey and include the number of nursing personnel categorized by job category and FTE status, the number of residents categorized by payor category, facility ownership, the number of beds in the facility, and the average census of different payor types.

The 1993 ARF used in this analysis is a publicly available data set summarizing a large array of census, health, and social resource information that included data from a number of sources including the American Hospital Association (AHA) annual hospital survey, the U.S. census of population and housing, the Centers for Disease Control (CDC), and the National Center for Health Statistics (NCHS; Stambler, 1988). These data are aggregated to the county level, and we use the county to represent the local nursing home market in the formulation of a competition index, and for environmental factors such as the number of elderly persons in the county. The use of county level data is consistent with past health services research (e.g., Banaszak-Holl et al., 1996; Farley, 1988; Nyman, 1987, 1989).

The Resident Assessment Instrument

The RAI went into effect as a statutory regulation requirement in October 1990. However, most states required facilities to begin implementation in the spring and summer of 1991. Nursing homes participating in the Medicare or Medicaid programs must use the RAI to assess all residents (a) on admission, (b) annually, and (c) with any significant change in the resident's status. The RAI involves the completion of approximately 300 questions using the MDS. For example, the resident must be assessed for vision, hearing, and cognitive patterns.

Model Specification and Operationalization

Table 1 shows how the variables are operationalized. Many of the definitions are self evident and we do not elaborate on those variables. For education, however, we use four levels: (1) those with an associate's degree or less education; (2) those with an RN degree; (3) those with a bachelor's degree (including a BA or BSN); and (4) those with a master's degree or higher graduate degree. The Herfindahl index is a measure of market share for each facility and is defined as the sum of the squares of a facility's market share or percentage share of beds in the county. It can range from 0 to 1, with higher values indicating a more concentrated market (White & Chirikos, 1988). We also created a dichotomous scale of increasing professional activities: (a) no professional involvement and (b) whether the administrator or DON were active members of any professional organizations or societies related to either nursing or nursing home administration. Tenure can be defined in a number of ways (McCain et al., 1983). We define two different measures of tenure status: (1) length of service in years in the current position (on the top management team), and (2) categorically, whether or not the individual was in his or her current position prior to the implementation of the RAI.

The pre- and post-RAI measure of tenure is a categorical variable (1 or 0); therefore, to measure heterogeneity in the tenure of the top management

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Operational Definition</th>
<th>Data Source</th>
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<tbody>
<tr>
<td>Tenure of the top management team (TMT)*</td>
<td>(1) A top manager pre- or post-implementation of the RAI</td>
<td>Telephone survey</td>
</tr>
<tr>
<td>Education of the TMT</td>
<td>Highest degree awarded (masters, bachelors, RN, or associate)</td>
<td>Telephone survey</td>
</tr>
<tr>
<td>TMT’s involvement in professional societies</td>
<td>Attendance at professional society meetings</td>
<td>Telephone survey</td>
</tr>
<tr>
<td>Organizational size</td>
<td>Number of beds</td>
<td>MMACS*</td>
</tr>
<tr>
<td>Specialists</td>
<td>Number of FTE specialists (occupational therapy, physical therapy, and speech pathology)</td>
<td>MMACS</td>
</tr>
<tr>
<td>Charter</td>
<td>For-profit or not-for-profit</td>
<td>MMACS</td>
</tr>
<tr>
<td>Chain</td>
<td>If the facility is a member of a chain</td>
<td>MMACS</td>
</tr>
<tr>
<td>Medicaid census</td>
<td>Percent of Medicaid residents</td>
<td>Taken from Harrington, DuNah, and Curtis (1994)</td>
</tr>
<tr>
<td>Medicaid reimbursement policy</td>
<td>Retrospective or flat rate</td>
<td>Telephone survey</td>
</tr>
<tr>
<td>Corporate directions</td>
<td>If the corporate owners previously directed the facility to use computers</td>
<td></td>
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<tr>
<td>Certificate of need</td>
<td>If CON present in the State</td>
<td>Harrington et al. (1994)</td>
</tr>
<tr>
<td>Competition</td>
<td>Herfindahl index</td>
<td>ARF*</td>
</tr>
<tr>
<td>Environmental munificence</td>
<td>Number of elderly persons, average income in the county, and hospital beds/100,000 persons in the county</td>
<td>ARF</td>
</tr>
</tbody>
</table>

*Aggregate and similarity measures used in analyses.
*RAI = Resident Assessment Instrument.
*MMACS = Medicare/Medicaid Automated Certification Survey.
*FTE = Full time equivalent.
*CON = Certificate of Need.
*ARF = Area Resource File.
the sum of the administrators’ and DONs’ aggregate tenure in their jobs, their dissimilarity of tenure in their jobs, combined pre- or post-RAI tenure, dissimilarity of pre- or post-RAI tenure, their combined level of education, and their combined degree of professional involvement. We conducted three analyses; one including only the control variables; one including the aggregate demographic variables and control variables; and, finally, one including the aggregate demographic variables, demographic dissimilarity variables, and control variables. This approach allowed us to determine the relative importance of the aggregate demographic and dissimilarity variables with and without the control variables. The statistical significance of the added variables was determined using a chi-square statistical test of the difference in log likelihoods, given the degrees of freedom added to the models. In evaluating effects of independent variables, odds ratios were calculated by taking the exponent of the parameter estimates for a range from 0 to 1 on all variables. In the second set of analyses we used the same analytic approach to examine the effects of the demographic characteristics of the top management team in nursing homes not belonging to a chain.

### Results

Table 2 presents descriptive data. A total of 236 nursing homes are examined. One hundred and thirty-four of these nursing homes belong to chains; the remaining 102 facilities do not belong to chains. Of the chain facilities 50% have computerized the MDS, whereas 44% of nonchain nursing homes have computerized the MDS. From these facilities, 236 nursing home administrators and 236 directors of nursing (DON) are included in our analyses. For these 472 individuals, 15% have an associate’s degree as their highest level of education, 40% have a bachelor’s degree, 10% have an RN degree, and 35% have a master’s degree as their highest level of education. Years of experience as a top manager in the
nursing home varied considerably, from a low of one month to a high of 34 years (M = 9 years). Only 10% of respondents have fewer than two years of experience. The mean length of time over which the top managers held their current position is 3 years. Fifty-six percent of administrators and DONs are members of professional organizations or societies, and 18% report attending national meetings of these organizations on a regular basis. The bed size of the facilities ranged from 32 to 559 beds (M = 147 beds).

Table 3 shows estimates of a multivariate logistic model for the probability of computerizing the MDS in nursing homes belonging to chains. In this table, Model 3.1 introduces the control variables, Model 3.2 adds the aggregate demographic variables of interest, and Model 3.3 adds the demographic dissimilarity variables. Using the chi-squared statistic, the difference in log likelihoods of 37.19 with the addition of 4 variables in Model 3.2 indicates that the aggregate demographic attributes of the top management team contribute significantly to the model of the probability of computerizing the MDS. On the other hand, using the chi-squared statistic, the difference of log likelihoods of 3.34 with the addition of the two demographic dissimilarity variables in Model 3.3 indicates that these variables do not have a significant effect on the adoption of this innovation.

Looking specifically at Model 3.2, we find that the parameter estimates for the effects of top management team educational level and professional involvement as well as the effects of ownership, corporate directions, and the presence of CON are significant. Additionally, results for estimated odds ratios indicate that as the combined educational levels of the administrator and DON increase, the likelihood of the nursing home adopting a computerized version of the MDS increases, albeit slightly, by approximately one third. The degree of professional involvement of the top management team has a slightly stronger effect on the likelihood that the nursing home has computerized the MDS; as involvement increases, the odds ratio shows that likelihood of computerizing the MDS almost doubles. Among the control variables, corporate directions, ownership, and the presence of CON have significant effects in the expected directions and, clearly, corporate directions has the strongest effect on nursing home innovation, surpassing the demographic variables in importance. The odds ratio indicates that nursing homes belonging to chains and that have asked their members to use computers in the past are nine times more likely to have computerized the MDS.

Contrary to our expectations, adding measures of the dissimilarity in demographic characteristics between the administrator and the DON had no effect on the likelihood that homes had computerized the MDS. Otherwise, Model 3.3 does not change significantly from what was observed in the model without these additional variables.

Table 4 shows estimates of the multivariate logis-

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<th>Table 3. Logistic Regression Estimates of the Probability of Computerizing the RAI in Nursing Homes Belonging to Chains</th>
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<tr>
<td><strong>Independent Variable</strong></td>
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<tr>
<td>Intercept</td>
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<tr>
<td>Demographic variables</td>
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<tr>
<td>Job tenure</td>
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<tr>
<td>Dissimilarity in job tenure</td>
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<tr>
<td>Post-RAI</td>
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<tr>
<td>Professional involvement</td>
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<td>Organizational variables</td>
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<tr>
<td>Size</td>
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<td>Ownership</td>
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<td>Corporate directions</td>
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<td>Number of specialists</td>
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<td>Medicaid census</td>
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<tr>
<td>Environmental variables</td>
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<tr>
<td>Medicaid reimbursement policy</td>
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<tr>
<td>Certificate of need</td>
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<tr>
<td>Herfindahl index</td>
</tr>
<tr>
<td>Hospital beds</td>
</tr>
<tr>
<td>Mean income (×10^3)</td>
</tr>
<tr>
<td>Number of elderly (×10^3)</td>
</tr>
<tr>
<td>−2 log likelihood</td>
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<td>df</td>
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</tbody>
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Notes: N = 134 facilities and 268 top managers. RAI = Resident Assessment Instrument. 
+p ≤ .10; *p ≤ .05; **p ≤ .01; ***p ≤ .001.
tic model for the probability of computerizing the MDS in nursing homes not belonging to chains. This table is structured like Table 3, with the first model introducing controls, the second adding aggregate demographic variables, and the third adding demographic dissimilarity variables. As with Table 3, the introduction of the aggregate demographic attributes in Model 4.2 significantly improves the fit of the model, with a significant chi-squared statistic for the difference in log likelihood of 41.72 for the four additional variables. In addition, using the chi-squared statistic, the demographic dissimilarity variables that are added in Model 4.3 also contribute significantly to the model, with a change in log likelihood of 9.84 for the two variables. Looking specifically at Models 4.2 and 4.3, we find that the parameter estimates for the effects of top management team educational level and professional involvement are significant. Results indicate that as the combined tenure of both the nursing home administrator and DON increased, the likelihood that the home had computerized the MDS increased slightly, but significantly. Furthermore, homes in which top management team members had been in their jobs prior to the implementation of MDS regulations were more likely to computerize the MDS. Additionally, results for estimated odds ratios show that as the combined educational experience of top management team members increased, the probability that the nursing home computerized the MDS increased by approximately one half. Finally, the degree of professional involvement of the top management team had a similar effect on the likelihood that the nursing home had computerized the MDS; as involvement increased, odds ratios show the likelihood of computerizing the MDS increased by approximately one half.

Table 4 also provides evidence that the similarity in demographic characteristics of the top management team affected the likelihood that the MDS was computerized (see Model 4.3). Homes in which top managers were more dissimilar in job tenure were more likely to computerize the MDS. Among the control variables, organizational characteristics, such as ownership, do not have an effect on whether nonchain homes adopted a computerized MDS. However, external factors seem to play a much larger role for nonchain than for chain homes in whether the home adopted a computerized MDS. Model 4.3 indicates that among states with higher levels of Medicaid reimbursement and among counties with higher average incomes and larger elderly populations, nursing homes were more likely to computerize the MDS.

**Discussion**

The results of this study present an initial examination of how the demographic characteristics of the top management team affects the likelihood of adoption of management innovations within these institutions. We conducted analyses separately for chain and nonchain homes.
nursing homes, and results show that a greater variety of top management team demographic characteristics have an impact on innovation adoption within nonchain nursing homes. For both chain and nonchain affiliated homes, the combined job tenure, educational experience, and professional involvement of the administrator and DON had a significant effect on the likelihood that a home had computerized the MDS, the specific innovation examined here. In addition, within homes not affiliated with a chain, measures of the dissimilarity in demographic characteristics of top management team members also affected the likelihood that the nursing home adopted innovations.

The importance of the top management team’s job tenure, educational background, and professional involvement in explaining innovation supports Hypotheses 1a, 2, and 3. That top management teams with longer tenures are more likely to engage in innovative behavior suggests that increased tenure can provide the necessary legitimacy needed to facilitate the adoption of innovations. In addition, among nonchain homes, top management teams hired prior to MDS implementation were more likely to computerize the MDS, suggesting that top management teams that were in control prior to the regulatory change had an easier time responding in an innovative fashion. In chain homes, establishment of the top management team prior to MDS implementation had no effect on whether the home computerized the MDS, probably because the central office management had greater control over administrative changes.

In addition, our results show that more highly educated top management teams would be more likely to adopt innovations. These results support our hypothesis that increased education of management, by building the necessary acumen for facilitating innovativeness, will lead to greater adoption of innovations in nursing homes.

The professional involvement of top management team members also played a role in explaining the adoption of innovations within the nursing home. Increasing professional involvement can expose managers to a greater variety of ideas on how to manage and can lead to increased engagement in the exchange of ideas. We would argue that the exchange of ideas at professional meetings is the critical component of professional involvement that makes managers more likely to adopt innovations. Early analyses of our data suggested that simply belonging to a professional association did not affect innovation adoption. It may be that professional association memberships are often symbolic and not productive for nursing home managers, or that the exposure to innovative ideas through personal contacts is much more effective than the exposure to ideas through the routine publications that accompany professional memberships.

In contrast to chain-affiliated homes, the similarity of demographic characteristics among top management teams in nonchain homes also affected the likelihood that the MDS was computerized in these homes. In support of Hypothesis 1b, top management teams with dissimilar tenures were more likely to have computerized the MDS.

The differences between chain-affiliated and nonchain nursing homes provide strong evidence that chain membership has dramatically changed not only the cost structure but also the management practices of individual nursing homes. Among chain-affiliated nursing homes, corporate directions regarding computerization had the strongest effect on whether homes computerized the MDS. In addition, diversity among top management team members did not affect the likelihood that chain-affiliated homes adopted this innovation, suggesting that chains may also impose normative pressures that affect interactions among top management team members.

Results also suggest that the availability of resources throughout a chain may dictate the adoption of innovation within member homes and may shield member homes from local externalities that can affect cost/benefit analyses of innovations. In this study, chain-affiliated homes were not affected by most of the external factors that played a role in whether nonchain homes adopted the innovation. Nonchain homes were more likely to computerize the MDS as the local average income and elderly population increased and as the Medicaid reimbursement level increased; none of these factors affected whether chain-affiliated homes computerized the MDS. In contrast, only chain members were more likely to computerize the MDS if the state had a CON regulation, suggesting that chains may seek investments other than expansion in states with CON.

Although this study does show that external pressures have increased the likelihood that homes have computerized the MDS, we do not offer a full cost/benefit analysis of which homes are adopting the innovation. Such an analysis was outside the scope and purpose of this article and would require much more detailed information on the existing management practices within nursing homes as well as externalities within the local markets. In addition, the cost/benefit reasons for innovation adoption vary dramatically across facilities. As Meyer and Goes (1988, p. 900) argued, “identical pieces of new medical equipment might solve a long-standing problem for one hospital, create an opportunity for diversification in a second, and jeopardize well-established services in a third.”

Finally, our results provide strong evidence that the adoption of innovations is affected by both organizational characteristics and the personal characteristics of top managers. Many studies of innovation have assumed that innovation is a systemic property of the organization (Van de Ven, 1986). However, our analysis provides evidence that the adoption of this innovation, computerization of the MDS, was contingent on both top managers’ characteristics and structural differences across facilities. In conclusion, future research on nursing home practices should incorporate information on the top managers within those homes.
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