# Strategic decision-making in the healthcare industry: the effects of physician executives on decision outcomes

Strategic decision-making in healthcare

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#### Abstract

**Purpose** – Research on strategic decision-making has emphasized the importance of team decision-making as it brings the benefits of synergy. Literature on healthcare is silent on the role of professional doctors in the strategic decision-making process and their impact on decision outcomes. The purpose of the present paper is to empirically examine the outcomes of decisions when physician executives were involved in strategic decision-making process in healthcare organizations.

**Design/methodology/approach** – Using a structured survey instrument, this paper gathered data from 361 senior executives from 109 hospitals in USA and analyzed the data using regression techniques on whether the presence of physicians in strategic decision-making processes enhanced decision quality, commitment, and understanding.

**Findings** – Results showed the presence of professional doctors in the decision-making process enhances commitment and decision quality in healthcare organizations.

**Research limitations/implications** – Only the healthcare industry was considered. Self-report measures may have some inherent social desirability bias.

**Practical implications** – This study contributes to both practicing managers as well as to strategic management literature. This study suggests that healthcare administrators need to engage physician executives in strategic decision-making to have successful decision outcomes.

**Originality/value** – To the extent strategic decision-making process is similar in other industries, the findings can be generalizable across other industries.

Keywords Decision making, Strategic management, Medical management, Health services, United States of America

Paper type Research paper

In today's complex healthcare industry, strategic decisions must be effective and competitive in order for hospitals to survive. Strategic decisions include major pronouncements, such as where to invest capital, where to expand service lines, or whether to start a new surgery center. To make these decisions, more often than not, the administrators of healthcare organizations involve teams. In strategic management literature, these are called strategic decision-making teams (SDMTs) which are the basic building blocks of organizations (West, 2002) and are responsible for formulating and implementing decisions which have long-term strategic direction and performance implications (Hambrick, 1994). Strategic decisions are vague, complex, and nonroutine. Thus, effective strategic decisions require administrators and chief executive officers (CEOs) to take advantage of the diverse perspectives of their members (Garman *et al.*, 2005). An area of research that is lacking in healthcare literature is the



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importance of healthcare professionals in decision-making, more specifically, the influence of physicians on SDMTs. Although a prior healthcare empirical study based on simulations did not find noticeable differences in simulated hospital performance between non-medically educated managers and medically educated managers (Schultz and Pal, 2005), the present study focuses on the composition of the healthcare executive teams in strategic decision-making.

Healthcare SDMTs typically consist of both professional doctors as well as administrative personnel. Since most of the strategic decisions require inputs from the professional doctors it is more likely that these professionals are involved in decision-making. However, at times, administrators may not feel the desire or need to impose upon medical personnel who are occupied with clinical work (e.g. surgery). Available empirical evidence suggests that physicians have a clinical mentality and believe that their primary allegiance is to their clients, whereas managerially educated executives have the organization as their primary focus (Schultz and Pal, 2005). These differing mindsets may influence the strategic decision-making process. However, the effect of professional health personnel in SDMTs has not been studied in the healthcare industry. Thus, the objective of the present study is to determine whether the presence of physicians in the strategic decision-making process enhances decision understanding, decision commitment, and decision quality.

# Theoretical background and hypotheses

Research on strategic decision-making is vast and diverse (Eisenhardt and Zbaracki, 1992) and primarily focuses on decision effectiveness (Langley *et al.*, 1995), social comparison in teams (Lant and Hewlin, 2002), and cognitive and affective conflict in teams (Amason, 1996). Research related to executive healthcare management is sparse and scattered, with some studies focusing on behavioral patterns of physician executives (Seibert and Singleton, 1996; Singleton, 1994), and others on CEO compensation and executive turnover (Moore, 2000; Dinsmore, 1998). Very little attention, however, has been on healthcare team composition and its impact on decisions. Following upper echelons theory (Hambrick and Mason, 1984), several non-healthcare studies on strategic decision-making have focused on demographic characteristics of the executives and their influence on decision outcomes. These demographic characteristics include age, educational background, and functional background. Presumably, these characteristics influence the perceptual filtering process that executives use in making decisions (Schultz and Pal, 2005).

Healthcare SDMTs typically consist of both physicians and administrative personnel who may differ in their perspectives. A physician's perspective of healthcare delivery stems from his or her combined knowledge of medicine and the healthcare environment and the motivation to serve as a patient advocate (Sherer, 1993; LeTourneau and Curry, 1997), whereas administrators have greater knowledge of financial metrics and have general business expertise (Schultz and Pal, 2005). Thus, administrators tend to include executives with different backgrounds in order to gain diverse perspectives on decision situations. In this study, we examine one of the key demographic characteristics of healthcare executives, namely educational background.

Healthcare organizations are becoming increasingly competitive, making strategic decision-making a more complex and challenging process. Strategic decisions, as discussed earlier, are non-routine, vague, and complex; strategic decisions do not have set precedents, but they do have long-term commitment of resources and organization-wide consequences. Therefore, in the healthcare field, it is essential to consider both

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financial viability as well as quality of care to remain competitive in the industry. Yet, there may be conflict amongst team members when trying to establish the delicate balance between these two potentially diametrically opposed perspectives. Physician executives seek to ensure high quality care, by virtue of their medical background, whereas administrators render financially viable strategic decisions. Based on upper echelons theory (Hambrick and Mason, 1984; Finkelstein and Hambrick, 1996), we contend that physician executives influence the strategic decisions by providing quality-of-care related information in the decision-making process, which should equate to higher quality decisions.

The inclusion of physician executives in SDMTs is supported by another theoretical foundation from accounting literature (Pattersen, 1995). Empirical research in the hospital sector amply demonstrated that there is a loose coupling between decisions and actions; that is, when the decision system is separated from the action system, information from the action system is not fed back to the decision system (Pattersen, 1995). While hospital managers generally follow the logic of consequentiality (i.e. behaviors driven by preferences and expectations about consequences), physician executives mainly represent the logic of appropriateness (behaviors driven by necessity rather than preference). Thus, communication between participants (members of SDMTs) is necessary for a thorough realization of the outcome. Thus, upper echelons theory from strategic management perspective and the logic of appropriateness and consequentiality from accounting perspective provide theoretical foundation for the present study.

The significance of physician executives in strategic decisions stems from both of the extremely complex roles they play at the apex of the organization. Teams use collective cognitive skills in both defining and solving the complex decision problems (Wanous and Youtz, 1986; Murray, 1989). CEOs/Administrators are responsible for not only making decisions, but for the implementation of these decisions which requires them to involve as many executives as possible (Hickson et al., 1986). Implementation implies translation of decisions into actions. Successful implementation requires the executives to understand the rationale of decisions in the context of broad hospital objectives. A mere agreement on means, ends, and environmental perceptions will not increase performance of hospitals unless executives understand the relationship between the decisions and chosen goals and means (Wooldridge and Floyd, 1990). Further, high stakes involved in the outcomes of strategic decisions motivate the CEOs/ Administrators to make a concerted effort to understand the rationale of decisions and act accordingly (Mason and Mitroff, 1981). Strategic teams with physician executives may have an advantage of more fully comprehending the intricacies of the decision based on their educational training and perspective. For example, a hospital with physician executive team members would likely be much better equipped at understanding the implications of incorporating an open heart surgery unit within a hospital's existing structure, than would executive teams with fewer or no physicians. Financial costs are just one of many aspects that would have to be fully understood in implementing such a program. A physician's insight into the non-financial implications of this expansion would be invaluable.

In addition, commitment is a "reflection of an individual's identification with organizational goals and his/her willingness to work towards them" (Reichers, 1985, p. 468). Dooley *et al.* (2000, p. 1247) studied 68 SDMTs in the healthcare industry and revealed that "the more committed the decision making teams to the strategic decisions, the greater the likelihood of the decision being implemented successfully".



As discussed previously, strategic decisions within the healthcare industry can create a dilemma within the team due to the potentially opposing perspectives of cost and quality. Executive teams with a greater presence of physicians may more fully appreciate and thus address the importance of attaining the ultimate goal, which is providing quality of healthcare to their patients. Teams with this perspective may be more committed to a decision that would likely factor more intangibles that cannot be quantified but are essential for a quality strategic decision.

Thus, with greater involvement of physician executives, it is more likely that high quality patient care will be the primary objective of strategic decisions. This focus in turn will enable SDMT members to understand the rationale of decisions and will increase members' commitment to the decision throughout the implementation. Ultimately, the decision quality will be enhanced. Based on the above arguments, we hypothesize the following:

- H1. The greater the presence of physician executives in SDMTs the greater will be the decision quality.
- *H2.* The greater the presence of physician executives in SDMTs the greater will be the understanding of the rationale of decisions.
- H3. The greater the presence of physician executives in SDMTs the greater will be the commitment to decisions.

#### Methods

Study design, sample, and data collection

To test these hypotheses, we surveyed 980 hospitals from the states of Florida, California, Illinois, Colorado, Oklahoma, and Texas. We selected hospitals from the *Hospital Blue Book* (2003). A survey instrument was designed to collect data from the members of SDMTs in hospitals. Data was collected in two phases. During the first phase, surveys were mailed to the CEOs requesting them to describe a strategic decision made during the last 18 months. The methodology was designed to reduce the pitfalls of retrospective reports of team members and to increase the accuracy as far as possible (Huber and Power, 1985; Golden, 1992).

In addition to identifying a specific strategic decision made during the last 18 months, CEOs and Administrators were requested to identify key people (from the list provided by the researcher along with the survey instrument) who participated in the decision. The list of members is obtained from the *Hospital Blue Book* (2003).

Of the 980 surveys mailed, 146 questionnaires were returned. Of these 146 responses, CEOs from 12 hospitals replied that they were new to the hospital, and thus could not participate; 11 hospital CEOs reported that they were too busy to take part in the survey; and the CEOs of 9 hospitals declined to participate without mentioning any particular reason(s). In all, 114 usable surveys were returned. Although somewhat low by general standards, the response rate of 11.6 per cent is comparable to that garnered in other top management research using survey methods (e.g. Simons *et al.*, 1999).

The first phase of surveys thus yielded usable questionnaires from 114 CEOs. These CEOs identified 407 individuals who participated in the strategic decisions. The strategic decisions cited were related to new product development, improved customer service, restructuring and downsizing, and strategic alliances. The list of strategic decisions made by these hospitals is provided in the appendix.

In the second phase, we mailed surveys to the 407 identified strategic decisionmakers to request their participation in this study. These participants were to base

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their responses on the strategic decision designated by the CEO. 257 of the 407 surveys were returned, yielding a response rate of 62 per cent. Of these, two surveys were incomplete and one survey was returned with a note from the hospital that the participating member had moved to an undisclosed hospital. This resulted in 254 usable questionnaires from the members. The average top management team size of our sample hospitals was 4.68.

The respondents consisted of executive officers (e.g. chief financial officer (CFO), chief operating officer (COO), director of human resources (HR), chief technical officer (CTO)) – 61 per cent; chiefs of staffs (e.g. chief of surgery, chief of ambulatory services) – 23 per cent; nursing services – 14 per cent; and personnel involved in facilities, maintenance, and medical records – 2 per cent. Five hospitals had no responses other than the CEO. These responses were dropped from the data sample. This resulted in a total sample of 109 hospitals.

To assess the representativeness, the sample was compared with the larger population on two key dimensions – number of beds and number of employees. First, one way between-group analysis of variance (ANOVA) revealed that the average size of the hospital (number of beds) for responding hospitals, 163, was not statistically different from the average size of non-responding hospitals, 180, in the population (F = 1.007, p = 0.316). Second, the number of employees in responding hospitals, 725, was compared with the number of employees in non-responding ones, 661. The one way between-groups ANOVA resulted in a statistically non-significant F of 0.896 (p = 0.344). Thus the responding hospitals did not differ significantly from the non-responding hospitals in terms of number of employees and number of beds.

Third, participating and non-participating hospitals were compared on the basis of profit-orientation and ownership of hospitals. The sample hospitals consisted of 55 per cent not-for-profit, 8 per cent for profit, 1 per cent private, 18 per cent proprietary, 12 per cent church ownership, and 6 per cent government hospitals. The respective percentages for the population were: 50 per cent not-for-profit, 6 per cent for profit, 1 per cent private, 22 per cent proprietary, 11 per cent church ownership, and 7 per cent government hospitals ( $\chi^2 = 7.59$ , df = 5, p > 0.05). This suggests that there were no significant differences in the data from the sample and from the population.

# Measures

Our theoretical model and hypotheses examine the connection between the proportion of physicians in the SDMTs (the independent variable) and decision outcomes such as decision quality, understanding, and commitment (dependent variables).

This study involves the responses of two or more individuals that participated in a specific strategic decision: thus data was aggregated. Aggregation was prepared by considering the mean scores. Before aggregating, it was necessary to assess the within-group agreement: therefore, inter-rater agreement was calculated for each of the key variables before aggregating (Glick, 1985). We used an Rwg coefficient to assess the within-group agreement (James *et al.*, 1984) which ranges between -1 and 1. A value of 1 indicates complete agreement, -1 represents complete disagreement, and 0 represents lack of agreement (which does not equal disagreement). The general rule of thumb is that data can be aggregated when the coefficient is greater than 0.6 (Glick, 1985). The Rwg coefficients (reported in Table I) have uniform distribution and suggest that there were no problems associated with aggregating the data.

We also calculated two intraclass correlation coefficients – ICC(1) and ICC(2) – and conducted an F-test for the ICC(1). Specifically, ICC(1) indicates the percentage of



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Task-based conflict How many disagreements over different ideas about this decision were there?  How many differences about the content of this decision did the group have to work through?  How many differences of opinion were there within the group over this decision?  Relationship conflict How much anger was there among the group over this decision?  Round much anger was there among the group over this decision?  How much personal friction was there in the group during this decision?  How much were personality clashes between group members evident during this decision?  How much tension was there in the group during this decision?  How much tension was there in the group during this decision?  How much tension was there in the group during this decision?  How much tension was there in the group members evident during this decision?  How much tension was there in the group members evident during this decision?  How much tension was there in the group members feel that the decision has had on company is:  Relative to what we expected, the results of the decision has had on company is:  The degree to which team's decision rationale covered the maximum range of relevant issues was:  The degree to which the team's decision rationale was well structured and reflective of inter-relationships among the relevant issues was:  The degree to which the team's decision rationale was expressed in depth was:  O.89 0.88 0.81 0.66 0.34 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.5	Variable	Rwg	Alpha	Standardized loadings $(\lambda_{yi})$	Reliability $(\lambda_{yi}^2)$	Variance $(Var(\varepsilon_i))$	Variance- extracted estimate $\Sigma \lambda_{yi}^2 / [\Sigma \lambda_{yi}^2 + \Sigma \text{Var}(\varepsilon_i)]$
were there? How many differences about the content of this decision did the group have to work through?  How many differences of opinion were there within the group over this decision?  Relativoship conflict How much ension was there in the group members evident during this decision?  How much tension was there in the group during this decision audity The effect that the decision has had on company is: Relative to what we expected, the results of the decision have been: Overall, the group members feel that the decision was: The degree to which the team's decision rationale was well structured and reflective of inter-relationships and intrarelationships and intrarelationships and intrarelation swas:  How much the team's decision rationale was expressed in depth was:  O.80  O.77  O.60  O.40  O.74  O.60  O.83  O.69  O.31  O.85  O.72  O.28  O.54  O.54  O.54  O.54  O.54  O.55  O.65  O.72  O.28  O.73  O.53  O.47  O.74  O.74  O.74  O.74  O.74  O.75  O.80  O.70  O.80  O.71  O.80  O.72  O.88  O.89  O.81  O.66  O.34  O.75  O.85  O.75  O.85  O.77  O.80  O.78  O.80  O.70  O.80  O.83  O.69  O.31  O.85  O.72  O.28  O.72  O.28  O.73  O.73  O.73  O.73  O.74  O.80  O.77  O.80  O.83  O.69  O.31  O.85  O.72  O.28  O.72  O.28  O.73  O.73  O.74  O.74  O.74  O.74  O.74  O.74  O.74  O.74  O.74  O.80  O.80  O.80  O.81  O.66  O.34  O.85  O.85  O.75  O.85  O.75  O.85  O.75  O.85  O.75  O.75  O.85  O.7	How many disagreements over	0.85	0.85				0.65
How many differences of opinion were there within the group over this decision?  How much anger was there among the group over this decision?  How much personal friction was there in the group during this decision?  How much tension was there in the group during this decision?  How much tension was there in the group during this decision?  How much tension was there in the group during this decision?  How much tension was there in the group during this decision?  Decision quality  The effect that the decision has had on company is:  Relative to what we expected, the results of the decision have been:  Overall, the group members feel that the decision was:  The degree to which team's decision rationale covered the maximum range of relevant issues was:  The degree to which the team's decision rationale was well structured and reflective of inter-relationships among the relevant issues was:  The degree to which the team's decision rationale was expressed in depth was:  Decision commitment  How much were team members with the decision was properly implemented?  O.93  O.92  O.83  O.69  O.31  O.72  O.28  O.72  O.28  O.73  O.53  O.47  O.54  O.54  O.59  O.50	were there? How many differences about the			0.86	0.74	0.26	
this decision?  Relationship conflict  Row much anger was there among the group over this decision?  How much personal friction was there in the group during this decision?  How much tension was there in the group during this decision?  How much tension was there in the group during this decision?  How much tension was there in the group during this decision?  Decision quality  O.91  0.85  0.72  0.28  D.54  D.54  D.54  D.54  D.54  D.55  D.55  D.55  D.55  D.75  D.55  D.75  D.7	How many differences of opinion			0.78	0.61	0.39	
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decision? How much were personality clashes between group members evident during this decision?  How much tension was there in the group during this decision?  Decision quality  Decision quality  The effect that the decision has had on company is: Relative to what we expected, the results of the decision have been: Overall, the group members feel that the decision was:  The degree to which team's decision rationale covered the maximum range of relevant issues was:  The degree to which the team's decision rationale was well structured and reflective of inter-relationships among the relevant issues was:  The degree to which the team's decision rationale was expressed in depth was:  Decision commitment  How much were team members willing to do to see that the decision was properly implemented?  O.83  O.83  O.69  O.83  O.72  O.28  O.54  O.55  O.50  O.50  O.50  O.51  O.52  O.53  O.54  O.55  O.50  O.50  O.50  O.51  O.52  O.55  O				0.83	0.69	0.31	
evident during this decision?  How much tension was there in the group during this decision?  Decision quality  Decision quality  O.91  O.85  O.72  O.28  Decision quality  O.91  O.85  O.73  O.53  O.47  Relative to what we expected, the results of the decision have been: Overall, the group members feel that the decision was:  The degree to which team's decision rationale covered the maximum range of relevant issues was:  The degree to which the team's decision rationale was well structured and reflective of inter-relationships among the relevant issues was:  The degree to which the team's decision rationale was expressed in depth was:  Decision commitment  O.89  O.80  O.81  O.60  O.30  O.64  O.60  O.30  O.64  O.60  O.30  O.67  O.33  The degree to which the team's decision rationale was expressed in depth was:  Decision commitment  O.89  O.89  O.80  O.81  O.66  O.34  Decision was properly implemented?  O.59  O.59  O.35  O.65	decision? How much were personality			0.92	0.85	0.15	
the group during this decision?  Decision quality  The effect that the decision has had on company is:  Relative to what we expected, the results of the decision have been:  Overall, the group members feel that the decision was:  The degree to which team's decision rationale covered the maximum range of relevant issues was:  The degree to which the team's decision rationale was well structured and reflective of inter-relationships among the relevant issues was:  The degree to which the team's decision rationale was expressed in depth was:  Decision commitment  0.89  0.85  0.73  0.53  0.47  0.29  0.71  0.60  0.36  0.64  0.64  0.82  0.67  0.33  0.82  0.82  0.85  0.73  0.27  0.85  0.85  0.81  0.86  0.89  0.88  0.81  0.89  0.89  0.88  0.89	evident during this decision?			0.83	0.69	0.31	
had on company is:  Relative to what we expected, the results of the decision have been:  Overall, the group members feel that the decision was:  The degree to which team's decision rationale covered the maximum range of relevant issues was:  The degree to which the team's decision rationale was well structured and reflective of inter-relationships among the relevant issues was:  O.85  O.80  O.60  O.36  O.64  The degree to which the team's decision rationale was well structured and reflective of inter-relationships among the relevant issues was:  O.85  O.73  O.27  The degree to which the team's decision rationale was expressed in depth was:  Decision commitment  O.89  O.89  O.81  O.66  O.34  Decision commitment  O.89  O.55  How much were team members willing to do to see that the decision was properly implemented?  O.59  O.53  O.67  O.33  O.67  O.33  O.73  O.27	the group during this decision?  Decision quality	0.91	0.85	0.85	0.72	0.28	0.54
Overall, the group members feel that the decision was:  The degree to which team's decision rationale covered the maximum range of relevant issues was:  The degree to which the team's decision rationale was well structured and reflective of inter-relationships among the relevant issues was:  The degree to which the team's decision rationale was expressed in depth was:  Decision commitment  0.89  0.81  0.66  0.34  0.55  0.55	had on company is:			0.73	0.53	0.47	
that the decision was:  The degree to which team's decision rationale covered the maximum range of relevant issues was:  O.82  O.67  O.33  The degree to which the team's decision rationale was well structured and reflective of inter-relationships among the relevant issues was:  O.85  O.87  O.89  O.89  O.89  O.80  O.81  O.86  O.86  O.86  O.86  O.87  O.89  O.88  O.81  O.89  O.88  O.85  O.85  O.85  O.86  O.86	results of the decision have been:			0.54	0.29	0.71	
issues was:  The degree to which the team's decision rationale was well structured and reflective of inter-relationships and intrarelationships among the relevant issues was:  0.85  0.85  0.73  0.27  The degree to which the team's decision rationale was expressed in depth was:  Decision commitment  0.89  0.81  0.66  0.34  0.55  How much were team members willing to do to see that the decision was properly implemented?  0.59  0.33  0.67  0.33  0.67  0.33	The degree to which team's decision rationale covered the			0.60	0.36	0.64	
issues was:  O.85  O.73  O.27  The degree to which the team's decision rationale was expressed in depth was:  Decision commitment  O.89  O.81  O.66  O.34  Decision commitment  O.89  O.55  How much were team members willing to do to see that the decision was properly implemented?  O.59  O.50  O.65	issues was: The degree to which the team's decision rationale was well structured and reflective of inter-relationships and intra-			0.82	0.67	0.33	
decision rationale was expressed in depth was:  Decision commitment  0.89 0.88  How much were team members willing to do to see that the decision was properly implemented?  0.81 0.66 0.34  0.55  0.55	issues was:			0.85	0.73	0.27	
decision was properly implemented? 0.59 0.35 0.65	decision rationale was expressed in depth was:  Decision commitment  How much were team members	0.89	0.88	0.81	0.66	0.34	0.55
	decision was properly			0.59	0.35	0.65	(Continued)

**Table I.**Results of CFA and measurement properties

(Continued)

Variable	Rwg	Alpha	Standardized loadings $(\lambda_{yi})$	Reliability $(\lambda_{yi}^2)$	Variance $(Var(\varepsilon_i))$	Variance- extracted estimate $\Sigma \lambda_{yi}^2 / [\Sigma \lambda_{yi}^2 + \Sigma \text{Var}(\varepsilon_i)]$	Strategic decision-making in healthcare
How consistent was the final decision with team members' personal priorities and interests? Did that particular decision			0.70	0.49	0.51		289
inspire the members to work hard or enthusiastically? How pleased were the team members that this particular			0.78	0.61	0.39		
decision was chosen over all of the potential alternatives? How much did the team members believe that the decision would			0.87	0.76	0.24		
enhance your hospital's overall performance? To what extent did the team members believe that the decision			0.76	0.58	0.42		
represented the best of all the possible alternatives?			0.74	0.55	0.45		Table I.

variance that resides between groups, whereas ICC(2) assesses the stability of group means. ICC(1) was computed by comparing the mean square between to the mean square total, based on the results of one-way ANOVA. ICC(2) was computed by comparing the mean square between minus the mean square within to the mean square between based on the results of ANOVA. In the present study, the average inter-rater agreement was above the 0.70 benchmark proposed by James *et al.* (1984) for task conflict (0.85), relationship conflict (0.93), decision commitment (0.89), and decision quality (0.92). ICC(1) and ICC(2) values were 0.21 and 0.49 for task conflict (F = 1.958, p < 0.05); 0.23 and 0.52 for relationship conflict (F = 2.104, p < 0.05); 0.18 and 0.45 for decision commitment (F = 1.802, p < 0.05); and 0.38 and 0.69 for decision quality (F = 3.249, p < 0.05). The values reported indicate acceptable levels of agreement between the team members on these variables, as well as reliable mean differences between the teams. These values are consistent with values usually obtained in team research (Bliese, 2000).

*Physicians ratio.* We measured proportion of physicians as the ratio of the total number of physicians to the total number of decision participants identified by the CEO/Administrator in each hospital.

Decision quality. Decision quality was measured with six items, three items from Amason (1996) and three items from Diehl and Stroebe (1987). The items asked team members' perception of the overall quality of the decision relative to its intent on a Likert-type four-point scale, anchored at 1, "poor"; 4, "excellent". The indices of decision quality developed by Diehl and Stroebe (1987) pertain to the range, organization, and depth of the decisions. Range is the degree to which a team's decision rationale covered the maximum range of relevant issues. Organization refers to the degree to which the team's decision rationale was well structured and reflective of the inter-relationships and intrarelationships among the relevant issues. Depth refers to the degree to which the

team's decision rationale explored issues deeply. The mean value of inter-rater agreement (Rwg) for decision quality was 0.92 and the alpha for the aggregated measure was 0.85.

Decision commitment. We measured decision commitment using six items adapted from Wooldridge and Floyd (1990). The respondents were asked to answer on a Likert-type seven-point scale questions such as "How much were the team members willing to do to see that the decision was properly implemented?" and "Did that particular decision inspire the members to work hard or enthusiastically?". The mean value of inter-rater agreement (Rwg) for decision commitment was 0.89 and the alpha for the aggregated measure was 0.85.

*Understanding*. Understanding was measured by asking the respondents to allocate ten points, based on relative importance, among six different areas:

- (1) cost/efficiency,
- (2) new product development,
- (3) coordination and control,
- (4) human resource development,
- (5) customer or market development, and
- (6) other concerns (specify).

The sum of squared differences on these items was computed for each team and was then divided by the team size to produce a distance score, which represents the level of disagreement among the members over the decision rationale. This distance score, subtracted from a constant, produced a measure of how well each team's members understood the organizational strategic priorities while making the decision. (Wooldridge and Floyd, 1990; Amason, 1996).

Control variables. The control variables included in this study are organizational slack, team size, team tenure, task-based conflict, and relationship conflict. Organizational slack may affect group decision-making processes and other outcomes such as innovation (Hambrick, 1994; West and Anderson, 1996). It was therefore thought necessary to control for the "resources". Organizational slack is measured by four items developed by Miller and Friesen (1982). In this study, the team tenure was measured as the number of years each team member had been employed by his or her current hospital. The mean value of inter-rater agreement (Rwg) for organizational slack was 0.86 with the values ranging between 0.99 and 0.41, and the alpha for slack was 0.67.

Task-based conflict was measured with three items from a scale developed by Jehn (1995). The items measure the extent to which team members perceive the existence of task-based differences and disagreements. An example of an item representing cognitive conflict is "How many disagreements over different ideas about this decision were there?". The mean value of inter-rater agreement (Rwg) for task-based conflict was 0.85 and Cronbach's alpha was 0.85. Relationship Conflict was measured using Jehn's (1995) four-item summative seven-point Likert-type scale. The items measure the extent to which team members perceive the existence of person-based differences. The items were tailored to reflect the team context and were slightly modified in phrasing. For example, "How much friction is there among members in your work unit" was changed as "How much personal friction was there in the group during this decision?" The mean value of inter-rater agreement (Rwg) for relationship conflict was 0.93 and the alpha was 0.92.

The measurement properties and the results of confirmatory factor analysis (CFA) are reported in Table I.

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We further tested for discriminant validity by following the procedures outlined by Fornell and Larcker (1981) and Netemeyer *et al.* (1990), by comparing the variance extracted estimates of the measures with the square of the correlation between constructs. Variance extracted estimate is calculated by dividing the sum or squared factor loadings by the sum of the squared factor loadings plus the sum of the variance due to the random measurement error in each loading (Variance extracted =  $\Sigma \lambda_{yi}^2 + \Sigma \text{Var}(\varepsilon_i)$ ). If the variance-extracted estimates of the variables are greater than the squares of the correlations between the constructs, evidence of discriminant validity is said to exist (Fornell and Larcker, 1981). In this study, the variance-extracted estimates for all the variables-exceeds the suggested level of 0.50 (Fornell and Larcker, 1981, p. 46) and also exceeds the squared correlation between the variables. These statistics, together with the CFA results, offer support for discriminant validity between decision quality, commitment, task conflict, and relationship conflict.

### Empirical results

The means, standard deviations, and correlations among study variables are reported in Table II.

The preliminary analysis of correlation reveals significant positive correlations between the predictor variable and the dependent variables. Ratio of physicians is positively correlated with decision understanding, commitment, and quality.

Table III presents the results of the hierarchical regression analysis.

First we entered the control variables – organizational slack, team size, team tenure, task-based conflict, and relationship conflict – into the regression equation. Column 1 from Table III represents the direct effects model (step 1) of the effect of these control variables on dependent variable decision quality. The direct effect model suggests that task-based conflict is a significant predictor of decision quality ( $\beta$  = 0.62, p < 0.001). The model was significant (F = 12.01, p < 0.001) and explained 36 per cent of variance in decision quality (adjusted  $R^2$  = 0.34). H1 1 is related to the positive relationship between the physicians ratio and decision quality. In step 2 (Column 2) physicians ratio is entered into the regression equation. The results of hierarchical regression in step 2 show significant beta coefficients for task-based conflict ( $\beta$  = 0.48, p < 0.001) and physicians ratio ( $\beta$  = 0.45, p < 0.001). In addition, the model was significant (F = 19.64, p < 0.001) explaining 53 per cent of variance in decision quality. In step 2 (Column 2) inclusion of the physicians ratio accounted for additional 17 per cent of the variance in decision quality ( $\Delta F$  = 36.87, p < 0.001;  $\Delta R^2$  = 0.168). These results suggest that the physicians

Variable	Mean	SD	1	2	3	4	5	6	7	8
1. Organizational slack	4.41	0.55								
2. Team size	4.68	4.51	0.03							
3. Team tenure	9.70	6.24	0.08	0.14						
4. Task-based conflict	2.34	0.56	-0.09	0.21*	0.14					
5. Relationship conflict	2.04	0.59	-0.04	0.23*	0.11	0.40**				
6. Physicians ratio	0.32	0.17	0.09	0.23*	0.21*	0.34**	0.15			
7. Decision quality	3.21	0.57	0.01	0.18*	0.15	0.58**	0.15	0.59**		
8. Understanding	7.74	1.28	0.11	-0.03	0.18	0.41**	0.19*	0.29**	0.44**	
9. Commitment	5.78	0.69	0.02	0.10	0.12	0.68**	0.12	0.43**	0.64**	0.31*

**Notes:** \*p < 0.05; \*\*p < 0.001; \*\*\*p < 0.01

**Table II.** Descriptive statistics and correlations between variables



Table III.
Regression analysis of
physicians ratio on
decision quality,
understanding, and
commitment

Variables	Decision Column 1 (Step 1)	Decision quality tep 1) Column 2 (Step 2)	Understanding Column 3 (Step 1 <sup>a</sup> ) Column	Decision quality Understanding Decision commitment Column 1 (Step 1) Column 2 (Step 2) Column 3 (Step 1 <sup>a</sup> ) Column 4 (Step 2) Column 5 (Step 1) Column 6 (Step 2)	Decision c Column 5 (Step 1)	Decision commitment Step 1) Column 6 (Step 2)
Organizational slack 0.05 Team size 0.06 Team tenure 0.06 Task-based conflict 0.62 Relationship conflict $-0.12$ Physicians ratio 0.36 Adjusted $R^2$ 0.34 $F$ -value 12.01° $\Delta R^2$	(0.70; 0.48) (0.78; 0.41) (0.75; 0.45) (-1.40; 0.16)	0.01 (0.12; 0.90) -0.01 (-0.01; 0.98) -0.003 (-0.04; 0.96) 0.48**** (6.13; 0.00) -0.11 (-1.5; 0.14) 0.45***** (6.07; 0.000 0.53 0.50 19.64**** 0.17 36.87****	0.15* (1.67; 0.09) -0.16* (-1.8; 0.07) 0.12 (1.44; 0.15) 0.042*** (4.34; 0.000) 0.05 (0.60; 0.54) 0.23 0.19 6.06***	0.13 (1.48; 0.14) -0.18*** (-2.06; 0.0 0.10 (1.18; 0.24) 0.06 (0.65; 0.52) 0.06 (0.65; 0.52) 0.16** (1.72; 0.08) 0.25 0.20 5.65**** 0.02 2.98**	0.08 (1.2; 0.2) 0.03 (-0.45; 0.65) - 0.03 (-0.45; 0.65) - 0.076*** (9.88; 0.000) -0.18** (-2.31; 0.02) - 0.50 0.48 20.82****	0.06 (0.93; 0.35) -0.06 (-0.94; 0.34) 0.01 (0.05; 0.95) 0.099**** (8.94; 0.000) -0.17*** (-2.34; 0.02) 0.23***** (3.08; 0.003) 0.54 0.51 20.37****
Jp	5,103	1,102	5,103	1,102	5,103	1,102

Notes: t-values and p-values are in parentheses. <sup>a</sup>Standardized regression coefficients are reported. \*p < 0.10; \*\*\*p < 0.05; \*\*\*p < 0.001; \*\*\*\*p < 0.001

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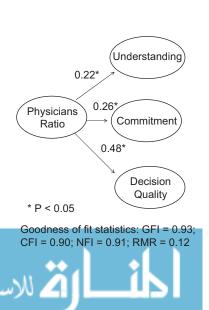
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ratio has a positive effect on decision quality thus supporting H1 that the greater the number of physician executives involved in the strategic decision-making process, the greater will be the decision quality.

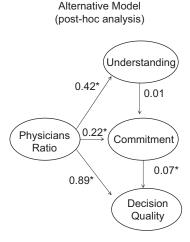
H2 was concerned with the effect of the physicians ratio on understanding the rationale of decisions. The direct effects model (Column 3) suggest that task conflict is significantly related to understanding and the beta coefficient is 0.42 (p < 0.001) (F = 6.06, p < 0.001) explaining 23 per cent of variance in understanding. Inclusion of the physicians ratio (Column 4) into the regression equation increased explained variance by 2 per cent ( $\Delta F = 2.98$ , p < 0.10) and was moderately significant. The beta coefficient for the physicians ratio was 0.16 (p < 0.10) and was moderately significant, suggesting that H2 has received modest support. The full model, however, was significant (F = 5.65, p < 0.001).

The direct effects model (Column 5) of the relationship between physicians ratio and decision commitment suggest that both task-based conflict ( $\beta$  = 0.76, p < 0.001) and relationship conflict ( $\beta$  = -0.18, p < 0.05) were significant predictors of decision commitment (F = 20.82, p < 0.001). Inclusion of the physicians ratio into the regression equation (Column 6) increased explained variance by 4 per cent, and the regression coefficient for the physicians ratio was significant ( $\beta$  = 0.23, p < 0.001,  $\Delta F$  = 9.54, p < 0.01). In addition to the physicians ratio, task based conflict ( $\beta$  = 0.69, p < 0.001) and relationship conflict ( $\beta$  = -0.17, p < 0.05) explained 54 per cent of variance in decision commitment (F = 20.37, p < 0.001; adjusted  $R^2$  = 0.51) and are significant (F = 18.71, p < 0.001). These results support H3.

In addition to the hypothesized model that the physicians ratio has an effect on decision quality, commitment, and understanding, we conducted a post-hoc analysis of an alternative model whereby physicians ratio influences understanding, which in turn leads to commitment. Decision quality is enhanced when members are committed to the implementation of the decision. We tested these two models using structural equation modeling technique (Lisrel), and the path coefficients are presented in Figure 1.



Hypothesized Model



Goodness of fit statistics: GFI = 0.96; CFI = 0.95; NFI = 0.95; RMR = 0.05

Figure 1. Comparison of hypothesized model and alternative model

The structural equation modeling results parallel and support the regression results. The path coefficient of physicians ratio to understanding in regression was 0.16 (p < 0.10), whereas the path coefficient in the hypothesized model was 0.22. The path coefficient of physicians ratio to decision quality in regression was 0.45 (p < 0.001), whereas the path coefficient in the hypothesized model was 0.48 and significant. When we compared the hypothesized model with the alternative model, the alternative model demonstrated that commitment also leads to decision quality, as the path coefficient from commitment to decision quality was 0.07 and significant (p < 0.05). Comparison of the "goodness of fit" statistics between these two models suggests that the alternative model is superior to the hypothesized model. Future research may dwell on the antecedents to decision quality as suggested by our post-hoc analysis.

Using regression, we also conducted a post-hoc analysis of three alternative models. (i) Alternative model 1 represents the inclusion of understanding and physician ratio in the model of decision commitment; (ii) Alternative model 2 has understanding, commitment, and physician ratio included in the model of decision quality; and (iii) Alternative model 3 has physician ratio, understanding, and decision quality included in the model of commitment. In alternative model 1, when the variable understanding is included in the model of decision commitment, the beta coefficient of physician ratio  $(\beta = 0.23, p < 0.05)$  is significant, whereas beta coefficient of understanding  $(\beta = 0.019, p < 0.05)$ p > 0.05) is not significant (F = 17.31, p < 0.05). In alternative model 2, when understanding and commitment were added as variables in the model of decision quality, the beta coefficients of physicians ratio ( $\beta = 0.35$ , p < 0.05), understanding  $(\beta = 0.18, p < 0.05)$ , and commitment  $(\beta = 0.31, p < 0.05)$  were significant (F = 18.84, p < 0.05)p < 0.05). Finally, in the alternative model 3, when decision quality and understanding were added as independent variables in the model of commitment, only decision quality was significant ( $\beta = 0.31$ , p < 0.05) and neither physician ratio ( $\beta = 0.09$ , p > 0.05) nor understanding ( $\beta = -0.07$ , p > 0.05) were significant. Thus the regression results corroborate the structural equation modeling results.

#### Discussion and limitations

Our study is relevant and useful in several ways. First, it provides support for the benefits of having physician executives in the SDMTs. Though the dichotomy between physicians (wearing a "systems hat") and administrators (wearing a "financial hat") is more subtle than overt, some evidence is available that attitudes and priorities are different between administrators and physicians (Tietze, 2003; Conway et al., 1999; Kertesz, 1997). Available empirical evidence also suggests that physician executives have a unique perspective on healthcare delivery, which stems from their combined knowledge of medicine and the healthcare environment, as well as their intrinsic motivation to serve as patient advocates (Sherer, 1993; LeTourneau and Curry, 1997). Physician executives tend to exhibit diverse approaches to management, provide important insights and information, and seek opportunities for hospitals (Brown et al., 1988; Seibert and Singleton, 1996). Data from outside the USA (for example, Great Britain) also reveals that physician executives take the lead role as patient advocates while managers take the corporate strategic view (Ruta et al., 2005). Research suggests that to align the goals of physicians and managers in healthcare organizations it is essential to focus on reallocation of resources based on program budgeting and marginal analysis. To the decision-making platform, physicians bring essential critical appraisal skills to the evaluation of investment options, whereas managers provide financial and strategic management skills needed for effective decisions. In another

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study, it was suggested that dialogue between physicians and doctors is critical to efficient and effective functioning of health systems (Atun, 2003). Thus, presence of physician executives in teams contributes to quality decisions. The present research corroborates this conclusion.

While physician executives are strong in managing quality healthcare, in general they have less business and financial acumen. One independent study by Sherer (1993) found that about one-third of the physician executives surveyed lacked business training and financial expertise and hence were not effective in utilizing financial and other resources. Thus, some evidence suggests that clinical doctors have divergent views from managers and may hamper the decision-making process (Davies *et al.*, 2003). However, since the SDMTs consist of not only physician executives, other executives who have managerial mentality would compensate for the weak spots of physicians and therefore the quality of decisions would not suffer. The results from the present research suggest that teams comprised of both physicians and non-physician executives enhance decision quality. That is to say, with their broad knowledge bases, executives will have varied and likely overlapping experiences that will create the multiple alternatives necessary to address the complex and far reaching decisions.

With any survey and cross-sectional study there will be limitations. Some strategic decision-making studies have incorporated object measures such as firm performance as the dependent variable (Ensley *et al.*, 2002). In our study, we had the team respond to a specific decision. This approach of retrospect to specific instances is common in studies that involve decision-making (Korsgaard *et al.*, 2002). Based on our design, we conclude that while this specific decision would directly impact hospital performance, the variance explained may be small: instead, it may be the combination of strategic decisions, not a single decision, which would explain more variance in hospital performance. We include all the team members' perceptions for commitment and understanding, since it is important to get the team's views on these two dependent variables, and the members themselves would be best qualified to judge these measures.

We must also be cautious when discussing causality within our model. Our hypothesized model has shown the direct outcomes of the presence of physician executives. Post-hoc analysis showed that in addition to physician executives, decision commitment leads to decision quality. One could argue that understanding leads to commitment, which in turn, leads to decision quality. Future studies may shed additional light on antecedents to high quality decisions.

It should also be remembered that resource allocation and maintenance of quality are not the only aims in healthcare management; other goals such as patient ethics, equity, and efficiency require attention. Physicians bring different experiences and perceptions to management and can highlight goals separate from allocation of resources. Some researchers contend that physician executives may perceive that their involvement in management may conflict with professional duties and add unnecessary work, and those who are willing to participate may feel they lack formal managerial training (Atun, 2003).

The use of self-report measures may raise a legitimate concern that the reported results were influenced by social desirability bias and common method variance. Although the use of multiple informants during the two data collection phases reduces the sources of error in the data, lack of objective measures force us to depend on the self-report measures, which becomes a potential limitation. Secondly, although we tested for representativeness of sample by comparing the sample with the larger population of beds and number of employees, low response rate remains a potential

limitation in the present study. However, given the fact that low response rate is not uncommon in top management research involving surveys (Simons *et al.*, 1999), it is unlikely that selection bias drove the reported results.

#### Conclusions

We examined empirically the involvement of physician executives in the strategic decision-making process and their effect on decision outcomes. Since physician executives are more directly concerned with patient care and would contribute to the decisions that result in higher levels of patient care, the decision outcomes have direct relevance to the ultimate objective of healthcare organization: i.e. patient care. The results of our study suggest that the number of physicians does make a difference in decision outcomes, and that the higher the ratio of physician executives in the strategic decision-making process, the greater the decision quality, commitment and understanding of the rationale of the decisions. Although research by Schultz and Pal (2005) did not find significant differences between physician senior managers and managerially educated senior managers in maximizing net income or increasing quality of healthcare in a simulation healthcare exercise, we found that SDMTs with a greater presence of medically education executives do in fact make a difference in decision commitment and quality.

One of the limitations of the study is that it focuses only on the understanding and commitment of the executives included in the SDMT. Future studies may dwell on the effect of understanding and commitment of the physician executives in the hospital who have not directly participated in the decision-making process but are central to the implementation of the decision. Future research may throw light on members that lay outside SDMTs, in addition to the SDMTs. For example, when an administrator proposes to launch a new facility to meet the increasing demands from patients, the level of commitment from other members is essential in the implementation of the decision. Further, the effort of the other members in implementation depends on how well they understand the importance of the decision.

The present study offers several avenues for future research. First, trust among the decision participants may play a crucial role in decision outcomes. For example, if individuals have competence-based trust in other team members, the information provided by these members will be interpreted positively and will contribute to the decision effectiveness. On the other hand, if individuals do not have competence-based trust in other team members, information provided by these members will be interpreted differently which may delay decision implementation and effectiveness. The CEO power dynamics, i.e. trust of the members in the CEO's management of the decision process, can affect the way in which decisions are made and implemented. Some CEOs have power and control over teams in conflict while others may not. Finally, CEO discretion to invite members to the decision platform may play a vital role in the decision-making process. Overall, the findings from this study provide strong support and reinforce the argument that it is beneficial for CEOs and Administrators to involve physician executives in the strategic decision-making process.

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# Appendix. A random selection of strategic decisions made by the hospitals

- Joining with a large HMO contract with a competing hospital and then joining with a competing HMO/IPA to balance the market.
- (2) Closure of satellite outpatient program.
- (3) Building a new hospital for the community.
- (4) Construction of new hospital 12 miles from existing facility and 10 miles from major competitor.
- (5) Purchased neighboring rural hospital.



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- (6) Development of master plan, evaluation of home health, skilled nursing, and acute rehabilitation services, and decision to implement a chief medical officer position.
- (7) Decision to replace the hospital.
- (8) Build new inpatient and outpatient complex.
- (9) Implement open heart surgery program.
- (10) A decision to joint venture on ambulatory surgery center plus develop urgent care center and CT scan capabilities.
- (11) Improving access through expansion of facilities.
- (12) Restructure departments of hospital affiliates resulting in hospital organization.
- (13) To purchase a competing hospital.
- (14) Development of outpatient services, cardiac cath lab, wound care program, and MRI center.
- (15) Building a new hospital in a new market.
- (16) To expand ICU services and implement open heart program.
- (17) Proforma development for new free standing facility.
- (18) Spun of two separate product lines under the corporate umbrella.
- (19) Focus on improving clinical quality even at the expense of the bottom-line.
- (20) Plant expansion: a plan was developed and being implemented to add 5 operating rooms, 16 additional critical care beds, 95 additional private rooms over the next 24 months.
- (21) Relocate to a new replacement facility.
- (22) Expansion of the number of outpatient locations from three to five, adding two brand new, geographically dispersed locations.
- (23) Closure of the pediatric program.
- (24) Development of 20 year strategic plan with proposals to replace a building, open new clinics in community, and expand community specialty services.
- (25) Commitment to remain at our current location and expand our plant facilities.
- (26) Expansion of plant's and facilities.
- (27) Decision on whether or not to offer services to the Beach Community.
- (28) Reorganization of medical coverage for the community.
- (29) Service line modifications reducing emphasis from in-patient to outpatient services.
- (30) Approval of a facilities master plan including land acquisition, a building expansion, and construction of a new building.

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