

# Functional Top Management Team Members: A Review, Synthesis, and Research Agenda

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*Functional top management team (TMT) members, defined as senior executives in the TMT responsible for one or more functional areas in their organizations, have received increased attention from scholars from different fields over the past few years. The purpose of this article is to review the disconnected research on various functional TMT members; to identify the variables of interest, the dominant relationships, and the contributions; and to organize the existing knowledge into a framework. On the basis of a synthesis of the literature, the author discusses the shortcomings and gaps and presents an agenda for future research that contributes to our understanding of functional TMT members and, thus, of TMT structure and composition.*

**Keywords:** *functional top management team members; functional executives; top management teams; upper echelons; strategic leadership*

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Since Hambrick and Mason's (1984) seminal article on the upper echelons perspective, research on top management teams (TMTs) has developed into one of the most prominent areas in the management field. While the majority of this research focuses on TMT composition and the chief executive officer (CEO; Carpenter, Geletkanycz, & Sanders, 2004; Finkelstein, Hambrick, & Cannella, 2009), scholars have recently begun to study individual TMT members other than the CEO. Over the past few years, *functional TMT members*,

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defined as senior executives in the TMT responsible for one or more functional areas in their organizations, have particularly received attention from scholars from different fields. This research focuses on different functional TMT members, such as the chief financial officer (CFO; e.g., Geiger & North, 2006; Zorn, 2004), chief information officer (CIO; e.g., Enns, Huff, & Higgins, 2003; Li & Ye, 1999), chief operating officer (COO; e.g., Hambrick & Cannella, 2004; Marcel, 2009; Zhang, 2006), chief marketing officer (CMO; e.g., Nath & Mahajan, 2008), and chief strategy officer (CSO; e.g., Angwin, Paroutis, & Mitson, 2009; Breene, Nunes, & Shill, 2007).

Emanating from an increasing variety of partly unrelated domains such as accounting, finance, information systems, marketing, and strategic management, these studies have addressed different research questions, employing different theoretical and methodological approaches. Studies often fail to integrate existing knowledge from other domains, further limiting our understanding of the variables of interest and their interrelationships. As a result, while research on functional TMT members is a relatively young area, its contributions are already disconnected. Particularly in the light of this area's great potential, its various unresolved and unexplored research issues, and the many unexplored functional TMT members, there is a need to integrate dispersed insights and approaches upon which future studies can build.

A key premise of research on functional TMT members is that the structural choice to have a functional executive role in the TMT, such as a COO or CMO, affects outcomes (e.g., Hambrick & Cannella, 2004; Nath & Mahajan, 2008), whereas most existing TMT studies focus on the TMT's composition—considering aggregate measures of individual TMT member demographics but not their roles (Beckman & Burton, 2011; Finkelstein et al., 2009). Since a particular functional TMT member role determines the demographics of the individual executive selected for this role, TMT role structure affects not only the relationships between those roles but also the demographic composition of the TMT and, thus, group processes such as behavioral integration and consensus (Beckman & Burton, 2011). Indeed, Hambrick notes, "I have long thought that there needs to be much more attention paid to the 'structure' of TMTs, to complement—and improve—our understanding of TMT composition and processes" (2007: 337). Hence, despite the differences, research on functional TMT members—both individually and collectively at a subgroup level of analysis—may contribute to research on TMT composition.

Given these shortcomings and opportunities, this article has two main purposes. First, I offer a first review of the literature on various functional TMT members. This includes delineating the emergence of the functional TMT member literature and the different perspectives to identify the state of the research, enhance our understanding of how research issues have emerged, and establish a shared vocabulary. Following this overview, I provide a detailed review and a comprehensive framework to organize and synthesize the dispersed insights, identify the most relevant variables of interest, and specify the dominant relationships between them. Second, research on functional TMT members has the potential to contribute to the study of TMTs. With some strong, already thoroughly analyzed research areas, but also with many weak, or even unexplored, areas, this literature is still in the process of unfolding its potential. I therefore identify gaps within and across the different areas and highlight opportunities and pressing questions for future research.

## Emergence of Research on Functional TMT Members

The emergence of functional TMT member research is mainly indicative of the development in many firms' TMTs during the past four decades. While firms had few functional TMT members—often only CFOs—in the 1970s, new functional heads joined the C-suite during the subsequent decades. For example, during the 1970s and early 1980s, strategic planning's professionalization and centralization influenced firms to create a related position (Delmar, 2003). Further, during the late 1980s and 1990s, information technology (IT) became an increasingly important functional area, as indicated by the increasing number of CIOs at that time. Likewise, early articles on individual functional TMT members present findings related to the CFO (Gerstner & Anderson, 1976), CIO (Benjamin, Dickinson, & Rockart, 1985), chief technology officer (CTO; Adler & Ferdows, 1990), and CSO (Rappaport, 1992). During the following years, scholars from diverse fields also explored the chief knowledge officer (CKO; Earl & Scott, 1999), COO (Hambrick & Cannella, 2004), and CMO (Nath & Mahajan, 2008; for an overview on fields with research on functional TMT members, see Table 1).

Even though there are many different functional TMT members today, they all share characteristics, which allows scholars to integrate related studies' findings and to define them collectively as senior executives in the TMT responsible for one or more functional areas in their organizations. The first element of this definition refers to their inclusion in the TMT and raises the question of who constitutes this team. Prior research relied upon a variety of approaches to define the TMT (for an overview, see Carpenter et al., 2004; Finkelstein et al., 2009), such as the top managers involved in strategic decision making as identified by the CEO (e.g., Amason & Sapienza, 1997), the CEO and direct reports (e.g., Boeker, 1997), and the two top management tiers (e.g., Carpenter & Fredrickson, 2001). Hence, most of these conceptualizations would regard the functional heads reviewed here as TMT members. Indeed, these executives are typically involved in strategic leadership and decisions (Hambrick & Cannella, 2004; Karahanna & Watson, 2006). The second element of the definition refers to the functional TMT member's more obvious responsibility for one or more functional areas. In contrast to the divisional heads in the TMT, who are general managers, functional TMT members typically represent a specific organizational function such as finance, marketing, or strategy (Drazin & Rao, 1999).

The variety of functional TMT members is also reflected in the different fields and theoretical perspectives from which these specialized executives have been studied. First, research on CFOs has been published mainly in accounting or finance journals and refers to theories such as financial economics and agency theory. The relevant articles largely center on the reasons for and performance consequences of CFO succession (Geiger & North, 2006; Mian, 2001) as well as on CFOs' incentives (Indjejikian & Matejka, 2009). Second, research on CIOs, CKOs, and CTOs in the information systems literature focuses predominantly on their roles and their relationships with the CEO or with the overall TMT. While studies addressing the former area often rely upon more applied perspectives, such as Mintzberg's (1973) classic framework of managerial roles (e.g., Stephens, Ledbetter, Mitra, & Ford, 1992), research on the latter considers diverse theories such as power dependence theory or communication theory. Third, research on CMOs considers a variety of different

**Table 1**  
**Fields With Research on Functional Top Management Team (TMT) Members**

| Field   | Accounting/Finance   | Information Systems/<br>Technology   | Marketing   | Strategic Management  |
|---|--|--|---|---|
| Functional TMT member(s) studied (exemplary synonyms) | <ul style="list-style-type: none"> <li>• CFO (SVP finance)</li> </ul>  | <ul style="list-style-type: none"> <li>• CKO</li> <li>• CIO (IS executive/manager)</li> <li>• CTO</li> </ul>   | <ul style="list-style-type: none"> <li>• CMO (SVP branding)</li> </ul>  | <ul style="list-style-type: none"> <li>• COO</li> <li>• CSO (SVP strategy, SVP corporate development)</li> </ul>  |
| Research focus  | <ul style="list-style-type: none"> <li>• Reasons for and performance effects of CFO turnover; ethical issues</li> </ul>  | <ul style="list-style-type: none"> <li>• General roles; relationship with CEO and overall TMT</li> </ul>   | <ul style="list-style-type: none"> <li>• Antecedents and performance consequences of their presence; general roles</li> </ul>         | <ul style="list-style-type: none"> <li>• Antecedents and performance consequences of their presence; general roles</li> </ul>   |
| Theories/perspectives                                 | <ul style="list-style-type: none"> <li>• Agency theory (incentives)</li> <li>• Corporate governance (no explicit theory)</li> <li>• Financial economics</li> <li>• Managerial (no explicit theory)</li> <li>• Moral reasoning theory</li> <li>• Stakeholder theory</li> <li>• Theory of planned behavior</li> <li>• Theory of reasoned action</li> </ul> | <ul style="list-style-type: none"> <li>• Communication theory</li> <li>• Contingency theory</li> <li>• Information management (no explicit theory)</li> <li>• Managerial (no explicit theory)</li> <li>• Managerial discretion</li> <li>• Power dependence theory</li> <li>• Resource-based view</li> <li>• Socialization theory</li> <li>• Social capital theory</li> </ul> | <ul style="list-style-type: none"> <li>• Contingency theory</li> <li>• Homophily theory</li> <li>• Power dependence theory</li> </ul> | <ul style="list-style-type: none"> <li>• Contingency theory</li> <li>• Information-processing theory</li> <li>• Managerial (no explicit theory)</li> <li>• Organizational adaptation theory</li> <li>• Strategy-as-practice view</li> </ul> |
| Methods   | <ul style="list-style-type: none"> <li>• Quantitative drawing upon survey data</li> <li>• Event study</li> </ul>   | <ul style="list-style-type: none"> <li>• Quantitative drawing upon survey data</li> <li>• Qualitative drawing upon interviews/case studies</li> <li>• Conceptual</li> </ul>  | <ul style="list-style-type: none"> <li>• Quantitative drawing upon archival data</li> <li>• Conceptual</li> </ul>                     | <ul style="list-style-type: none"> <li>• Quantitative drawing upon archival data</li> <li>• Qualitative drawing upon interviews/case studies</li> </ul>   |
| Typical journals                                      | <ul style="list-style-type: none"> <li>• <i>Contemporary Accounting Research</i></li> <li>• <i>Journal of Financial Economics</i></li> <li>• <i>Accounting Review</i></li> </ul>   | <ul style="list-style-type: none"> <li>• <i>IEEE Transactions on Engineering Management</i></li> <li>• <i>Information and Management</i></li> <li>• <i>MIS Quarterly</i></li> <li>• <i>R&amp;D Management</i></li> </ul>   | <ul style="list-style-type: none"> <li>• <i>California Management Review</i></li> <li>• <i>Journal of Marketing</i></li> </ul>        | <ul style="list-style-type: none"> <li>• <i>California Management Review</i></li> <li>• <i>Harvard Business Review</i></li> <li>• <i>Strategic Management Journal</i></li> </ul>  |

(continued)

**Table 1 (continued)**

| Field                  | Accounting/Finance                            | Information Systems/<br>Technology        | Marketing             | Strategic Management              |
|------------------------|---|---|-----------------------|-----------------------------------|
| Selected contributions | Mian (2001)                                   | Stephens, Ledbetter, Mitra, & Ford (1992) | Aaker (2008)          | Hambrick & Cannella (2004)        |
|                        | Stevens, Steensma, Harrison, & Cochran (2005) | Enns, Huff, & Higgins (2003)              | Nath & Mahajan (2008) | Zhang (2006)                      |
|                        | Geiger & North (2006)                         | Preston, Karahanna, & Rowe (2006)         |                       | Angwin, Paroutis, & Mitson (2009) |
|                        | Indjejkian & Matejka (2009)                   | Medcof (2008)                             |                       | Marcel (2009)                     |
|                        |   |   |                       |                                   |

*Note:* CFO = chief financial officer; SVP = senior vice president; CKO = chief knowledge officer; CIO = chief information officer; IS = information systems; CTO = chief technology officer; CMO = chief marketing officer; COO = chief operating officer; CSO = chief strategy officer; CEO = chief executive officer.

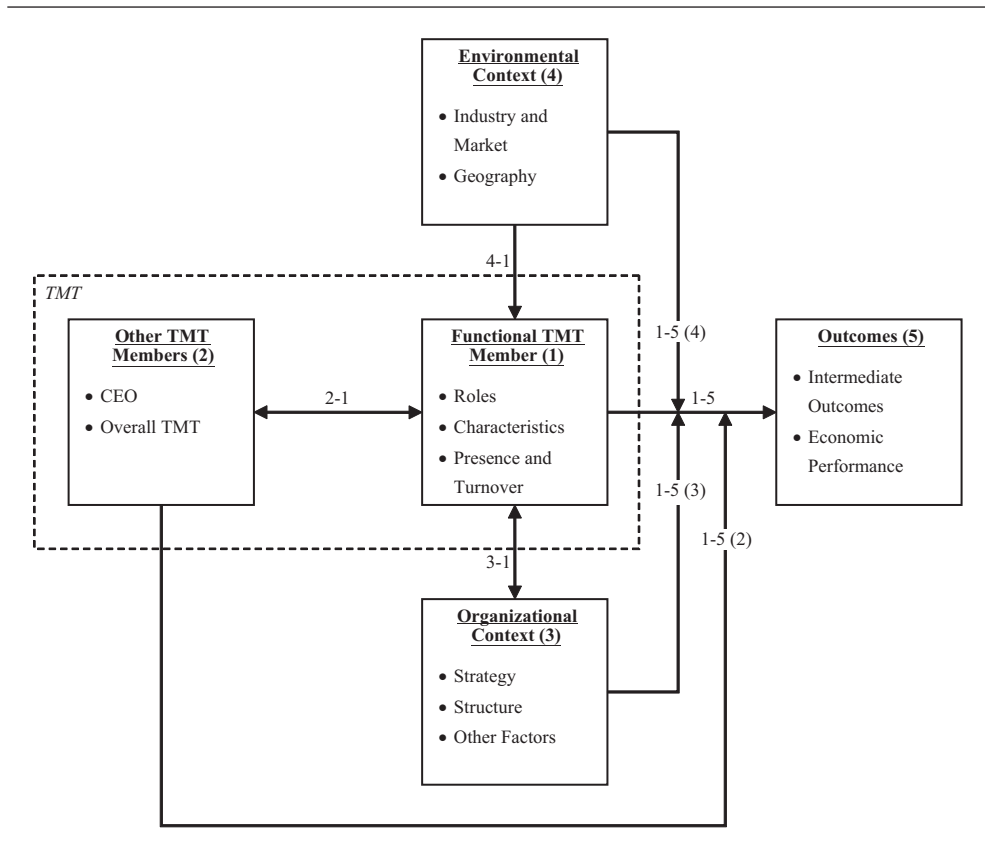
theories, including contingency theory, power dependence theory, and homophily theory, to develop hypotheses related to the various antecedents and performance consequences of CMO presence (Nath & Mahajan, 2008). Finally, there are studies on COOs and CSOs in the strategic management literature. Research on COOs frequently draws upon contingency theory, arguing that COO presence and the corresponding performance effects depend upon environmental, strategic, and TMT-related factors (Hambrick & Cannella, 2004; Marcel, 2009). Otherwise, work on CSOs is based on the strategy-as-practice perspective focusing on a detailed examination of the CSO's role and capabilities (Angwin et al., 2009).

Despite the diverse literature, most studies explicitly refer to Hambrick and Mason's (1984) upper echelons perspective or to related concepts such as managerial discretion (Hambrick & Finkelstein, 1987). Indeed, consistent with this common perspective of regarding "the organization as a reflection of its top managers" (Hambrick & Mason, 1984: 193), research from various fields attempts to explain how functional TMT members affect outcomes and may therefore be advanced by the following comprehensive literature review.

## **Review of Research on Functional TMT Members**

To provide a complete and coherent picture of prior research on functional TMT members, I followed the recommendations by fellow scholars when searching and reviewing the articles (Short, 2009; Webster & Watson, 2002). Specifically, I identified the top 100 journals in the business/finance and management categories, as indicated in the Social Sciences Citation Index 2008 journal ranking, and searched the EBSCO database for the various functional TMT members, as well as their synonyms, published until 2009. The search resulted in 39 articles and revealed that only 1 work (Gerstner & Anderson, 1976) was published prior to Hambrick and Mason's (1984) article, which is considered the starting point of the upper echelons perspective. The majority of the articles appeared in the 2000s, and

**Figure 1**  
**Organizing Framework for Research on Functional**  
**Top Management Team (TMT) Members**



there was a general increase in the number of articles on the various functional TMT members. Most studies relate to CIOs, followed by studies on CFOs, COOs, CSOs, and CMOs. All the articles relate to individual functional TMT members and not to functional TMT members collectively as a specific subgroup of executives in the TMT.

Building upon the analysis of existing research, I categorized the articles into an organizing framework. As illustrated in Figure 1, the studies address functional TMT members' roles, characteristics, and presence and turnover; their relationship with other TMT members; organizational factors; environmental factors; and outcomes. Table 2 presents a summary of selected studies, including each study's focal functional TMT member, research focus, theory or perspective, methodology, and key findings. This summary of research enables analysis of the literature's contribution and identification of gaps and promising areas for future studies.

**Table 2**  
**Summary of Selected Research on Functional Top**  
**Management Team (TMT) Members (in chronological order)**

| Study  | Functional<br>TMT<br>Member | Research<br>Focus | Theory/<br>Perspective             | Methodology   | Key Finding   |
|--|-----------------------------|-------------------|------------------------------------|---|---|
| Gerstner &<br>Anderson<br>(1976)               | CFO                         | 1; 3-1            | Managerial (no<br>explicit theory) | Conceptual,<br>illustrative case<br>examples                      | The CFO is much more<br>involved in operational<br>decisions in the 1970s<br>than in the 1960s. CFOs<br>extend their influence<br>through financial<br>reporting and control<br>systems, capital<br>budgeting procedures,<br>and strategic planning<br>processes. |
| Benjamin,<br>Dickinson,<br>& Rockart<br>(1985) | CIO                         | 1; 2-1;<br>3-1    | Managerial (no<br>explicit theory) | Exploratory survey<br>of 20 CIOs in<br>Canadian and U.S.<br>firms | The results indicate that<br>IS responsibility is<br>being rapidly<br>distributed and that the<br>senior IS executive<br>emphasizes staff<br>responsibilities and<br>becomes proactive in<br>business strategy<br>issues.   |
| Adler &<br>Ferdows<br>(1990)                   | CTO                         | 1; 4-1            | Managerial (no<br>explicit theory) | Survey of 25 CTOs<br>in <i>Fortune</i> 100<br>firms               | As a reaction to the<br>increasing importance of<br>technology, firms often<br>employ a CTO with<br>broad responsibility<br>across at least two of the<br>three general technology<br>areas: product, process,<br>and IT.   |
| Watson<br>(1990)                               | CIO                         | 2-1               | Communication<br>theory            | Survey of 43 CIOs<br>in Australian firms                          | CIOs who have two-way<br>communication with<br>the CEO rate strategic<br>planning as less critical<br>than those who do not.<br>CIOs tend to scan<br>sources that are close<br>to the industry, and<br>they are most<br>influenced by their<br>peers.             |

(continued)

**Table 2 (continued)**

| Study                                     | Functional TMT Member | Research Focus | Theory/ Perspective                         | Methodology   | Key Finding   |
|---|-----------------------|----------------|---|---|---|
| Applegate & Elam (1992)                   | CIO                   | 1; 2-1         | Information management (no explicit theory) | In-depth interviews with 9 CIOs, survey of 64 CIOs in U.S. firms    | CIOs' backgrounds and role focus have changed. CIOs should have a broad business perspective and take actions that enable their reports to acquire business management experience.                          |
| Feeny, Edwards, & Simpson (1992)          | CIO                   | 2-1; 1-5(2)    | Information management (no explicit theory) | Exploratory interviews with 14 CEO-CIO pairs in large U.K. firms    | Linking the fit between CEO and CIO attributes to the quality of the CEO-CIO relationship, the authors find that a shared vision of the role of IT and acceptance of the CIO as a TMT member are essential. |
| Rappaport (1992)                          | CFO/CSO               | 1; 2-1         | Managerial (no explicit theory)             | Conceptual, illustrative cases                                      | CFOs look primarily at short-term productivity, while CSOs project cash flows much more optimistically and much further into the future than the marketplace does.  |
| Stephens, Ledbetter, Mitra, & Ford (1992) | CIO                   | 1              | Information management (no explicit theory) | In-depth case studies of 5 CIOs in U.S. firms                       | The study finds that CIOs are executives rather than functional managers. They are active participants in strategy planning and a bridge between the IT group, the functional areas, and external entities. |
| Grover, Jeong, Kettinger, & Lee (1993)    | CIO                   | 1              | Managerial (no explicit theory)             | Survey of 111 CIOs/IS middle managers in <i>Fortune</i> 1,000 firms | CIOs differ from manufacturing and sales executives in the relative importance placed on managerial roles, however, not from finance executives and IS middle managers.                                     |

(continued)



**Table 2 (continued)**

| Study                                 | Functional TMT Member | Research Focus | Theory/ Perspective   | Methodology   | Key Finding  |
|---------------------------------------|-----------------------|----------------|---|---|--|
| Earl & Scott (1999)                   | CKO                   | 1              | Managerial (no explicit theory)                                   | Interviews with 20 CKOs in U.S. and European firms              | There is a remarkable similarity in the personal profiles and experiences of CKOs across firms. Successful CKOs have career experience, familiarity with the organization, and personal qualities.   |
| Li & Ye (1999)                        | CIO                   | 1-5 (2; 3; 4)  | Alignment theory, resource-based view, transaction cost economics | Longitudinal study of 216 U.S. firms (1992-1994, archival data) | IT investment seems to have a stronger positive impact on financial performance for greater environmental dynamism, more proactive company strategy, and closer CEO-CIO ties.  |
| Chatterjee, Richardson, & Zmud (2001) | CIO                   | 1-5; 1-5 (4)   | Financial economics   | Event study of 96 CIO appointment announcements                 | For firms in industries undergoing IT-driven transformation, announcements of newly created CIO positions result in positive abnormal stock market returns.  |
| Mian (2001)                           | CFO                   | 1-5; 1-5 (2)   | Financial economics   | Event study of 2,227 CFO appointments in U.S. firms (1984-1997) | CFO turnover is disciplinary, and there is a significant decline in stock price over the two-year period preceding CFO turnover. Rapid sales growth accompanied by weak operating performance leads to the appointment of an outsider CFO. |

*(continued)*

**Table 2 (continued)**

| Study                        | Functional TMT Member | Research Focus | Theory/Perspective                                | Methodology   | Key Finding  |
|------------------------------|-----------------------|----------------|---|---|--|
| Uddin & Gillett (2002)       | CFO                   | 1              | Theory of reasoned action, moral reasoning theory | Survey of 122 CFOs in U.S. firms                                  | Studying effects of moral reasoning and self-monitoring on a CFO's intentions to report fraudulently, high-moral reasoners appear more influenced by their attitudes toward the behavior than low-moral reasoners. Low self-monitors appear more influenced by subjective norms than high self-monitors. |
| Enns, Huff, & Higgins (2003) | CIO                   | 1-5 (2)        | Socialization theory                              | Exploratory interviews, survey of 69 CIO and peer executive pairs | Analyzing how CIOs influence their peers to implement strategic IS projects, the authors find that rational persuasion and personal appeal appear to have a positive effect, whereas exchange and pressure are related to peer resistance.   |
| Hambrick & Cannella (2004)   | COO                   | 1-5 (2; 3; 4)  | Contingency theory                                | Longitudinal study of 404 U.S. firms (1987-1996)                  | There is some support for a contingency view in explaining COO presence; however, there is no support for this view to explain when COO presence is most beneficial. Firms with CEO-COO duos appear to have lower performance.   |
| Johnson & Lederer (2005)     | CIO                   | 1-5 (2)        | Communication theory                              | Survey of 202 CEO-CIO pairs in U.S. firms                         | Examining the impact of communication frequency and channel richness on CEO-CIO convergence (i.e. current and future roles of IT), the authors find that current role convergence predicts IS financial contribution.  |

*(continued)*

**Table 2 (continued)**

| Study   | Functional TMT Member | Research Focus | Theory/ Perspective                            | Methodology  | Key Finding   |
|---|-----------------------|----------------|--|--|---|
| Stevens, Steensma, Harrison, & Cochran (2005) | CFO                   | 1; 4-1         | Stakeholder theory, theory of planned behavior | Survey of 302 CFOs in U.S. firms   | CFOs are more likely to integrate their firms' ethics codes into their strategic decision processes if they perceive pressure from market stakeholders, believe the use of ethics codes positively affects their firms, and the code is integrated into daily activities. |
| Geiger & North (2006)                         | CFO                   | 1-5            | Corporate governance (no explicit theory)      | Event study of 712 listed U.S. firms (1994-2000)                             | There is a decrease in discretionary accruals for firms with newly appointed CFOs, particularly for outsiders. Hence, CFOs may affect a firm's financial results.   |
| Preston, Karahanna, & Rowe (2006)             | CIO                   | 2-1            | Social capital theory                          | Survey of 163 CIOs in U.S. organizations and 44 CIOs in French organizations | In both samples, CIO educational mechanisms affect CIO-TMT shared understanding. But although in France social systems of knowing are key to develop CIO-TMT shared understanding, it is structural systems of knowing in the United States.                              |
| Zhang (2006)                                  | COO                   | 1-5 (2)        | Organizational adaptation theory               | Longitudinal study of 207 CEOs in U.S. firms (1993-1998, archival data)      | The effect of the presence of a separate COO or president on strategic change and CEO dismissal varies across different organizational contexts and appears to depend on the level of firm performance.   |

*(continued)*

**Table 2 (continued)**

| Study  | Functional<br>TMT<br>Member | Research<br>Focus | Theory/<br>Perspective                          | Methodology   | Key Finding   |
|--|-----------------------------|-------------------|---|---|---|
| Breene,<br>Nunes, &<br>Shill (2007)            | CSO                         | 1                 | Managerial (no<br>explicit theory)              | Survey of more than<br>200 CSOs in U.S.<br>firms, press<br>review of more<br>than 100 CSO<br>appointments | Although the CSO's role<br>consists of strategy<br>formulation, it mainly<br>encompasses tasks<br>related to strategy<br>implementation. It<br>involves engendering<br>commitment to clear<br>strategic plans, driving<br>immediate change, and<br>driving decision<br>making.                |
| Gibbins,<br>McCracken,<br>& Salterio<br>(2007) | CFO                         | 2-1               | Corporate<br>governance (no<br>explicit theory) | Survey of 101 CFOs<br>in Canadian firms   | CFOs regard negotiation<br>with auditors as a<br>consequence of changes<br>in accounting and<br>disclosure standards or<br>business changes. CFOs<br>inform other managers<br>and are aware of their<br>interests but do not<br>generally seek their<br>help.                                 |
| Aaker (2008)                                   | CMO                         | 1; 3-1            | Managerial (no<br>explicit theory)              | Conceptual,<br>findings from<br>interviews with 40<br>CMOs  | Unit-spanning marketing<br>activities are the core<br>responsibility and<br>challenge of CMOs.<br>Describing problems<br>associated with a silo<br>structure, the article<br>presents best practices to<br>enable effective and<br>efficient marketing in a<br>silo structure.                |
| Medcof<br>(2008)                               | CTO                         | 1-5 (2; 3;<br>4)  | Power dependence<br>theory                      | Conceptual  | The CTO's power and<br>influence are primarily<br>based on technical<br>expertise and position<br>power. Broad knowledge<br>of the firm and<br>environment, personal<br>relationships, ownership<br>position in the firm, and<br>intuitive understanding<br>of the business are<br>important. |

*(continued)*

**Table 2 (continued)**

| Study                             | Functional TMT Member | Research Focus | Theory/Perspective  | Methodology   | Key Finding   |
|-----------------------------------|-----------------------|----------------|---|---|---|
| Nath & Mahajan (2008)             | CMO                   | 1-5 (2; 3; 4)  | Contingency theory, homophily theory, power dependence theory | Longitudinal study of 167 U.S. firms (2000-2004, archival data) | Innovation, differentiation, branding strategy, diversification, TMT functional experience in marketing, and outsider CEO are associated with CMO presence. There is no significant effect between CMO presence and firm performance.   |
| Preston, Chen, & Leidner (2008)   | CIO                   | 2-1; 3-1; 1-5  | Managerial discretion, power and politics perspective         | Survey of 174 CEO-CIO pairs in U.S. firms                       | Organizational climate, organizational support for IT, the CIO's structural power, the CIO's level of strategic effectiveness, and a strong CIO-TMT partnership influence the CIO's level of strategic decision-making authority, which affects IT's contribution to performance. |
| Angwin, Paroutis, & Mitson (2009) | CSO                   | 1; 3-1         | Strategy-as-practice view                                     | Findings from 30 interviews with CSOs in FTSE-100 firms         | The CSO's role includes strategy formulation and strategy execution. CSOs should have technical/analytical capabilities as well as interaction and communication skills.  |
| Indjejkian & Matejka (2009)       | CFO                   | 1-5            | Agency theory (incentives)                                    | Survey of 1,353 U.S. firms                                      | From 2003 to 2007, public entities (rather than private entities) reduced the percentage of CFO bonuses that are contingent on financial performance.   |
| Marcel (2009)                     | COO                   | 1-5 (2)        | Information-processing theory, contingency theory             | Study of 153 U.S. firms in 5 industries (archival data)         | COO presence has a strong positive effect on financial performance. This relationship is contingent upon the characteristics of the TMT (functional heterogeneity, tenure heterogeneity, age).  |

*Note:* The numbers in the third column refer to Figure 1. CFO = chief financial officer; CIO = chief information officer; IS = information systems; CTO = chief technology officer; IT = information technology; CEO = chief executive officer; CFO = chief financial officer; CSO = chief strategy officer; CKO = chief knowledge officer; COO = chief operating officer; CMO = chief marketing officer.

*Research on Functional TMT Members' Roles, Characteristics, and Presence (1)<sup>1</sup>*

Informed by research from diverse fields, a major strand of the literature centers on functional TMT members' roles, demographic characteristics, and capabilities, as well as on their presence and turnover.

*Roles.* Scholars have examined various functional TMT members' general roles, their specific activities, and the change in roles over time. First, numerous studies focus on the roles and agendas of the various functional TMT members, such as CFOs (Gerstner & Anderson, 1976), CIOs (Applegate & Elam, 1992; Benjamin et al., 1985; Chun & Mooney, 2009; Grover, Jeong, Kettinger, & Lee, 1993; Smaltz, Sambamurthy, & Agarwal, 2006; Stephens et al., 1992), CMOs (Aaker, 2008), COOs (Bennett & Miles, 2006; Hambrick & Cannella, 2004), CSOs (Angwin et al., 2009; Breene et al., 2007), and CTOs (Adler & Ferdows, 1990). Most of this research, which often is published in practitioner-oriented journals, draws upon qualitative field research and/or descriptive analyses of survey data. Early articles on each functional TMT member provide particularly rich descriptions of these specialized executives' roles and activities. In essence, there is consensus that despite significant differences in the various functional TMT members' roles, which stem partly from the great variety of organizational functions that such executives lead (Grover et al., 1993), they share a strategic leadership role. Indeed, most studies find that the functional executive is not just the head of an organizational function; a significant part of the role comprises strategic decision making and leadership as a TMT member. For example, Stephens and colleagues note that the CIO is "an active participant in strategy planning" (1992: 449). It should be noted, however, that the various functional TMT members may fulfill the common strategic role differently. Rappaport (1992), for example, indicates that there are differences between CFOs and CSOs with regard to how they formulate and evaluate strategies.

Second, by analyzing the literature on functional TMT members' specific activities, the differences between them become more evident. Predominantly relating to CFOs, these studies focus on diverse activities such as CFOs' use of ethics codes (Stevens, Steensma, Harrison, & Cochran, 2005), CFOs' bonus plans (Indjejikian & Matejka, 2009), the effects of moral reasoning and self-monitoring on CFOs' intentions to submit fraudulent reports (Uddin & Gillett, 2002), CFOs' negotiations with auditors (Gibbins, McCracken, & Salterio, 2007), CIOs' scanning behavior and key issue perceptions (Watson, 1990), and unit-spanning marketing activities as a core CMO responsibility (Aaker, 2008). Often employing quantitative research designs, the studies show that there are role facets that are unique to CFOs, thus further supporting the proposition that other functional TMT members perform unique activities.

Third, several studies extend the analysis and explore various functional TMT members' role development over time (Aaker, 2008; Applegate & Elam, 1992; Benjamin et al., 1985; Chun & Mooney, 2009; Donovan, 1988; Gerstner & Anderson, 1976). For example, analyzing the CIO role over the past 25 years, Chun and Mooney find that two versions of the CIO role have emerged, "an executive-level manager focused on the firm's strategy and processes, and a technical manager focused on minimizing costs by rationalizing and leveraging the existing IS [information systems] infrastructure" (2009: 323). These studies usually focus on the more established functional TMT members, such as CIOs and CMOs, who are already present in many firms. Drawing upon interviews and surveys, scholars have observed changes in the functional TMT members' roles over the past few decades. They find that the roles have become more demanding and complex and that strategic leadership has specifically become a key role of successful functional TMT members (Applegate & Elam, 1992; Benjamin et al., 1985).

*Characteristics.* The literature also considers functional TMT members' personal characteristics and capabilities. Since Pfeffer's (1983) work on organizational demography, and Hambrick and Mason's (1984) article on the upper echelons perspective, a vast literature has emerged on the effect of executive experiences on outcomes (Finkelstein et al., 2009). The importance of these aspects is also reflected by the considerable number of studies on functional TMT members that analyze their personal characteristics. In these studies, scholars have explored a functional TMT member's age, gender, educational background, functional background experience, and firm-specific experience (Adler & Ferdows, 1990; Applegate & Elam, 1992; Chatterjee, Richardson, & Zmud, 2001; Enns, Huff, & Golden, 2003; Geiger & North, 2006; Li, Tan, Teo, & Tan, 2006; Mian, 2001; Sobol & Klein, 2009).

While such studies provide insights into various individual functional TMT members' characteristics, a comparison of the function-specific results is complicated. The studies' mixed findings, for example, offer only weak support for the proposition that the extent of firm-specific experience prior to assuming the functional TMT member position affects appointment decisions. Mian (2001) finds that rapid sales growth accompanied by weak operating performance leads firms to appoint an outsider CFO. Further, Geiger and North (2006) reveal that firms with newly appointed CFOs experience a decrease in discretionary accruals, particularly when such CFOs are hired from outside the firm. Conversely, while Chatterjee and colleagues' results also indicate some performance differences between insider and outsider CIOs, they find no "significant difference in the cumulative abnormal returns for firms filling their newly created CIO positions with internal or external candidates" (2001: 57). There are also few insights into the demographic differences between the various functional TMT members, partly because there are still no comparable studies of newly emerging functional TMT members such as CSOs. As reviewed in a later section, scholars shed more light on functional executives' suitability by analyzing their demographics in combination with those of the CEO or overall TMT.

There is also qualitative research on functional TMT members' capabilities (Angwin et al., 2009; Breene et al., 2007; Earl & Scott, 1999). Angwin and colleagues (2009), for example, observe that CSOs have three broad capability sets: technical/analytical, interaction, and metalevel (i.e., the ability to use knowledge in novel ways). Similarly, Earl and Scott (1999) explore CKOs' capabilities and find that successful CKOs have personal qualities such as social skills. Collectively, the extant literature suggests that, while various functional TMT members require similar social and communication skills, there are differences in the type and scope of their technical capabilities.

*Presence and turnover.* As indicated by studies on a functional TMT member's firm-specific experience, research on functional TMT members' presence and turnover plays an important role in the literature. In recent years, studies have focused particularly on the antecedents and performance consequences of a specific functional TMT member's presence. Often drawing upon contingency theory, research confirms that the decision whether to have a specific functional executive in the TMT may be contingent upon various environmental, strategic, structural, and TMT-related factors (Hambrick & Cannella, 2004; Marcel, 2009; Nath & Mahajan, 2008; Zhang, 2006). These studies also indicate trends and fashions regarding the prevalence of certain functional TMT members in general. By analyzing a sample of 404 U.S. firms, Hambrick and Cannella (2004), for example, find that the percentage of firms with a COO in the TMT decreased slightly from 23% in 1989 to less than 18% in 1996. Further, Nath and Mahajan's (2008) sample of 167 U.S. firms reveals that the percentage of firms with a CMO in the TMT remained largely stable at about 40% between 2000 and 2004. While there is still no evidence to support the proposition that the number of functional TMT members has generally increased, studies suggest that the prevalence of certain functional executives in TMTs has increased (e.g., CSOs), remained stable (e.g., CMOs), or even decreased (e.g., COOs).

Despite the extensive literature on CEO and executive succession (Giambatista, Rowe, & Riaz, 2005; Kesner & Sebor, 1994), few functional TMT member studies address succession and turnover issues. For example, Mian (2001) reveals that rapid sales growth and weak operating performance leads to CFO change. Further, surveying 64 CIOs in U.S. firms, Applegate and Elam (1992) find that those CIOs who retired were all replaced with internal candidates, whereas those who were dismissed were generally succeeded by external candidates. Given the sparse evidence, it is difficult to derive general conclusions for functional TMT members as a TMT subgroup. It seems, however, that the succeeding functional TMT member's requirements depend on the turnover situation.

### *Research on Functional TMT Members' Relationships With Other TMT Members (2-1)*

Although interaction processes within the TMT are considered critical (Finkelstein et al., 2009), the emerging research on the relationships between functional TMT members and the CEO or other TMT members is still relatively sparse.



*Relationship with the CEO.* Since functional TMT members often report directly to the CEO, the relationships and “fit” between these executives are important. Earlier studies on this topic analyze the reporting relationships between functional TMT members and the CEO (Applegate & Elam, 1992; Benjamin et al., 1985; Li & Ye, 1999). For example, in a longitudinal sample of 216 U.S. firms, Li and Ye (1999) find that closer CEO–CIO ties (i.e., a more direct reporting relationship between the CIO and CEO) positively moderate IT investments’ performance effects. Various functional TMT members are not just considered experts in a specific area but also are regarded as executives with knowledge and skills that supplement and/or complement those of the CEO (Angwin et al., 2009; Hambrick & Cannella, 2004; Nath & Mahajan, 2008). Hambrick and Cannella, for example, examine the task division between CEOs and COOs and find that the decision to have a COO is contingent upon “the degree to which the CEO lacked experience in operational activities and in managing the focal firm” (2004: 969). Consistent with the results of studies on CMOs (Nath & Mahajan, 2008) and CSOs (Angwin et al., 2009), these findings confirm that functional TMT members often compensate for CEOs’ lack of experience in an important functional area and lack of firm-specific experience.

Although the relationship between the more managerial functional TMT members (e.g., CFOs, CMOs, COOs, and CSOs) and the CEO seems particularly important, almost all of the studies analyzing the processes in such relationships are on the more technical functional executives (e.g., CIOs and CTOs; Feeny, Edwards, & Simpson, 1992; Gupta, 1991; Johnson & Lederer, 2005; Medcof, 2008; Watson, 1990). Watson for example, finds that CIOs “who have two-way conversations with the CEO have a better understanding of the goals, objectives, and direction of the organization and consequently find that planning is a less onerous task” (1990: 225). Further, Johnson and Lederer’s (2005) survey of 202 CEO–CIO pairs in U.S. firms reveals that communication frequency and the richness of the communication channels have a positive effect on CEO–CIO convergence (i.e., shared understanding). Conceptual and exploratory research on the general interaction processes between CEOs and CIOs also contributes to our understanding. These studies focus on how to develop a strategic partnership between the two executives (Gupta, 1991), on the various determinants of successful two-way relationships between CEOs and CIOs (Feeny et al., 1992), and on the CEO’s leadership style (Medcof, 2008). Despite the sparse empirical research, the literature indicates that functional TMT members’ effectiveness is contingent upon the quality of their relationships with the CEO.

*Relationship with the overall TMT.* Very few studies address a specific functional TMT member’s relationship with TMT members other than the CEO. Except for Rappaport’s (1992) article on the goal conflict between CFOs and CSOs, this research focuses on a functional TMT member’s relationship with the overall TMT. One strand of this literature centers on a functional TMT member’s fit with the rest of the TMT. Nath and Mahajan (2008), for example, find that the proportion of a firm’s TMT with marketing experience is positively related to CMO presence, while the proportion of a firm’s TMT with general management

experience is negatively related to CMO presence. Somewhat consistent with these results, Marcel (2009) reveals that COO presence is beneficial for low levels of functional background heterogeneity of the TMT. In sum, these studies tend to support the homophily phenomenon, meaning that functional TMT members are not selected for the potential complementarities between their experiences and those of the rest of the TMT but, rather, because “people tend to like those who are similar to them” (Nath & Mahajan, 2008: 69).

Another literature strand focuses on process-related factors in the relationship between functional TMT members and other TMT members. Relating predominantly to CIOs, this research centers on questions of how functional TMT members can influence other TMT members and gain their commitment (Enns, Huff, & Golden, 2003; Enns, Huff, & Higgins, 2003) and how functional TMT members can develop a shared understanding, or even a partnership, with them (Preston, Chen, & Leidner, 2008; Preston, Karahanna, & Rowe, 2006). Informed by Finkelstein’s (1992) article on the power of executives, Preston and colleagues (2008), for example, find that CIOs’ structural power and their strong partnership with the rest of the TMT affect their level of strategic decision-making authority within the organization. Further, a survey of CIOs and TMTs in 100 North American health care firms that focused on the interaction and trust between the CIO and the rest of the TMT reveals that high levels of CIO–TMT engagement are not directly related to CIO effectiveness but are mediated by CIO capabilities (Smaltz et al., 2006). Another study also uncovers that not all CIO influencing behaviors are equally suitable to influence other TMT members (Enns, Huff, & Higgins, 2003). In essence, the few studies indicate that, since functional TMT members often have comparably little formal power and typically supervise few employees, it may be crucial for them—particularly for executives such as CIOs and CSOs who have not yet fully established their legitimacy—to achieve influence through their interpersonal skills and get support through an appropriate hierarchical setting.

### *Research on Organizational Factors (3-1)*

Most studies on functional TMT members implicitly consider organizational factors such as strategy, structure, and size. These factors are explicitly examined in research on the antecedents and performance effects of functional TMT member presence.

*Strategy.* Strategic factors play an important role in studies exploring functional TMT members such as CMOs, COOs, and CSOs. Since functional TMT members are predominantly corporate-level executives, it is not surprising that scholars have examined the relationship between diversification—the most frequently explored aspect of a firm’s corporate strategy—and functional TMT member presence (e.g., Hambrick & Cannella, 2004; Nath & Mahajan, 2008). Suggesting that related diversification (as opposed to unrelated diversification) is positively associated with organizational task demands and thus with COO presence, Hambrick and Cannella (2004) find no support that diversification affects COO presence.

Similarly, Nath and Mahajan find that diversification is not associated with CMO presence; however, they reveal that “in relatively small firms, there is a decrease in likelihood of CMO presence as diversification increases” (2008: 74). Hence, there is only weak empirical support that a firm’s diversification strategy affects functional TMT member presence (both articles use measures of related, unrelated, and total diversification). Scholars have explored other strategic factors. For example, a firm’s acquisition activity does not affect the decision to have a COO (Hambrick & Cannella, 2004), whereas a firm’s level of innovation and differentiation, as well as its corporate branding strategies, are positively related to CMO presence (Nath & Mahajan, 2008). Although existing studies indicate that several strategic factors may affect a functional TMT member’s presence, the limited evidence calls for further research in this area.

*Structure.* Several studies on functional TMT members address issues of organization structure and design (Aaker, 2008; Benjamin et al., 1985; Donovan, 1988; Gerstner & Anderson, 1976). Contrary to research on strategic factors, which is largely quantitative, studies on structural factors are predominantly conceptual or employ qualitative research designs. A key theme in the literature relates to the interrelatedness between a firm’s decision to centralize or decentralize and the creation of a specific functional TMT member position or a functional TMT member’s role. For example, Gerstner and Anderson argue that a CFO’s presence in an organization “can be detected in the prevailing tendency to centralize, or recentralize” (1976: 101). Further, research illustrates that some of the CIO’s activities are centralized to allow for effective planning and coordination, while other activities are decentralized (Benjamin et al., 1985). Decentralized structural arrangements with many different business and geographic units pose new challenges for functional TMT members. Indeed, recent research shows that CMOs located in the TMT should bridge organizational silos (i.e., business and geographic units) and create synergy through, for example, a shared marketing planning process (Aaker, 2008). Although the initial findings highlight the importance of understanding the relationship between organization design and functional TMT member presence, there is still little established knowledge.

*Other factors.* Scholars have considered a variety of other organizational factors in their studies. In particular, the potential effect of firm size on functional TMT member presence is explored (Hambrick & Cannella, 2004; Nath & Mahajan, 2008). For example, Hambrick and Cannella (2004) find that a firm’s sales are significantly related to COO presence. While this is not yet supported with regard to other functional TMT members, qualitative research suggests that larger firms tend to have specialized executives such as CMOs and CSOs in the TMT (Aaker, 2008; Angwin et al., 2009; Breene et al., 2007). Most of the literature on other organizational factors relates to CIOs and examines diverse aspects, for instance, the effect of organizational climate and organizational support for IT on a CIO’s strategic decision-making authority (Preston et al., 2008), IT orientation and IT infrastructure’s mediating role on the link between CIO characteristics and financial performance (Sobol & Klein,

2009), and the relationship between the standardization of the information systems architecture infrastructure and the CIO's role (Chun & Mooney, 2009). Owing to its focus on function-specific factors, this research offers few insights for other functional TMT members. A notable exception is Stevens and colleagues' (2005) survey of 302 CFOs in U.S. firms, finding that these executives are more likely to integrate the firm's ethics code into their strategic decision processes if they perceive pressure from market stakeholders, if they believe the use of an ethics code positively affects their firms, and if the code is integrated into the firm's daily activities.

### *Research on Environmental Factors (4-1)*

Although there is still little research on functional TMT members that explicitly considers external factors, there is a growing literature that acknowledges the effect of industry characteristics and geographic differences on a functional TMT member's presence and role.

*Industry and market.* Existing studies address various aspects of a firm's industry and/or market environment and their impact on functional TMT members. First, scholars have analyzed industry characteristics' effects on the presence of functional TMT members, such as CMOs (Nath & Mahajan, 2008) and COOs (Hambrick & Cannella, 2004). Although Marcel argues that "industrial firms may possess a stronger 'operations-based' rationale for the presence of a COO" (2009: 655) than do service firms, empirical findings indicate that the decision to have a specific functional TMT member does not depend on a firm's industry (Hambrick & Cannella, 2004; Nath & Mahajan, 2008). For example, Nath and Mahajan (2008) find that the market concentration of a firm's industry does not affect the likelihood of CMO presence. Similarly, Hambrick and Cannella (2004) reveal that industry characteristics—specifically industry growth, the instability of growth, and R&D intensity—do not predict COO presence.

Second, there is support for the notion that the roles of certain functional TMT members, such as CIOs and CTOs, may be contingent upon the industry and market environment. Medcof (2008), for example, proposes that a firm's competitive environment may affect the relationship between the CTO's personal power base and his or her influence. Further, Kearns and Sabherwal (2007) find that environmental heterogeneity is positively related to the CIO's participation in business planning. Although these differences may relate exclusively to CIOs and CTOs, due to the limited evidence for other functional TMT members, this is still an unresolved debate.

*Geography.* Differences across geographic regions and their potential impact on functional TMT members are among the least explored issues in the literature. Interestingly, recent research on various functional TMT members indicates that these differences may indeed exist. For example, in a qualitative study, Angwin and colleagues (2009) find that there are similarities and differences between CSOs in U.K. and U.S. firms with respect to

their titles and/or locations in the hierarchy and the scope of their roles. Further, in a survey of 163 CIOs in the United States and 44 CIOs in France, Preston and colleagues (2006) reveal similarities and differences regarding the mechanisms through which CIO–TMT shared understanding is achieved. While educational mechanisms appear to work in both countries, the “systems of knowing” differ between France (social systems of knowing) and the United States (structural systems of knowing). In short, there are only a few fragmented insights into the geographic differences in functional TMT members’ roles, characteristics, and presence.

### *Research on Outcomes (1-5)*

As a common theme in research on the various functional TMT members, scholars have frequently addressed the question of whether and how functional TMT members matter, by considering either intermediate organizational outcomes or economic performance.

*Intermediate outcomes.* Research on intermediate outcomes is very diverse but falls into two major categories. First, there are studies on functional TMT members’ effect on more general aspects such as their influence on the organization (Medcof, 2008; Preston et al., 2008), on strategic change (Zhang, 2006), and on the number and quality of institutional investors (Higgins & Gulati, 2006). For example, in a longitudinal study of 207 U.S. firms, Zhang (2006) finds that COO presence increases (decreases) the extent of strategic change under conditions of low (high) firm performance. There is also research on functional TMT members’ effect on function-specific outcomes such as the quality of IT plans (Kearns & Sabherwal, 2007), the innovative usage of IT (Li et al., 2006), CIO role effectiveness (Smaltz et al., 2006), CIO influencing behaviors (Enns, Huff, & Golden, 2003), and IT’s contribution to firm performance (Preston et al., 2008). Preston and colleagues’ (2008) results, for example, suggest that CIO strategic decision-making authority affects IT’s contribution to firm performance. Further, CIOs’ participation in business planning is positively associated with the quality of the IT plans (Kearns & Sabherwal, 2007). Although the majority of the research is on CIOs, the collective findings indicate that functional TMT members may influence a variety of intermediate outcomes.

Second, scholars have analyzed functional TMT members’ impact on other TMT members or have attempted to explain the quality of a functional TMT member’s relationship with the CEO or with the overall TMT (Earl & Feeny, 1994; Enns, Huff, & Higgins, 2003; Feeny et al., 1992; Kearns & Sabherwal, 2007; Zhang, 2006). Zhang (2006), for example, reveals that COO presence increases the likelihood of a CEO’s dismissal under conditions of low firm performance. Further, CIOs’ participation in business planning is positively associated with top management participation in IT resource allocation (Kearns & Sabherwal, 2007). In sum, although a functional TMT member’s interplay with other TMT members appears critical, there is still little knowledge on the processes by which functional TMT members create value.

*Economic performance.* In recent years, studies have emerged that address functional TMT members' influence on economic performance. Scholars have analyzed the effect of functional TMT member presence on accounting-based (e.g., a decrease in discretionary accruals, return on assets [ROA], sales growth) and market-based (e.g., market-to-book ratio [MTB], Tobin's  $q$ ) performance measures (Hambrick & Cannella, 2004; Marcel, 2009; Nath & Mahajan, 2008). Although the few studies' results rely on similar or even the same measures, they are inconsistent and, partly, even contradictory—both when considering studies on a certain functional TMT member and when comparing studies on different functional TMT members. Research findings suggest that CMO presence has no effect on firm performance (Nath & Mahajan, 2008). Conversely, Hambrick and Cannella (2004) find that COO presence results in lower performance, whereas Marcel's (2009) study of 153 U.S. industrial firms reveals a positive relationship between COO presence and firm performance.

The variance in the findings can be attributed to at least two factors. First, as noted by Marcel (2009), there are differences in the various studies' samples that may affect the potential contribution of certain functional TMT members' presence. Industrial firms, for example, may gain greater benefits from COOs than service firms do. Indeed, the benefits of certain functional TMT members' presence tend to vary across industries. Not surprisingly, firms in industries characterized by IT-driven transformation benefit particularly from CIO appointments (Chatterjee et al., 2001). Second, it appears that the benefits of functional TMT member presence may be contingent upon certain firm characteristics. Somewhat contrary to their overall results, Hambrick and Cannella find that firms with "sales above \$9 billion had higher ROAs (on average) with COOs than without" (2004: 974). Further, Marcel's (2009) sample includes only firms with sales exceeding US\$500 million, whereas Hambrick and Cannella's (2004) sample has a lower threshold of US\$200 million. Hence, specifically, large firms seem to profit from functional TMT member presence.

In addition, functional TMT members' characteristics and roles may vary, which affects their suitability for an organization. In a survey of 92 CIOs in U.S. firms, Sobol and Klein (2009), for example, find that CIOs with an IT background are more beneficial than CIOs with a general management background. By conducting event studies, scholars have also revealed that a new functional TMT member position or functional TMT member turnover may affect firm performance (Chatterjee et al., 2001; Geiger & North, 2006; Mian, 2001). Announcements of newly created CIO positions, for example, result in positive abnormal stock market returns (Chatterjee et al., 2001). Further, while CFO turnover does not generally seem to be followed by significant stock market reactions, according to Mian, "the evidence shows that the stock market reacts unfavorably when the old CFO quits and when the CFO replacement is internal" (2001: 174).

Finally, research has consistently revealed that the fit between a functional TMT member and the CEO and/or overall TMT is vital for superior performance. For example, CEO–CIO role convergence is indicative of the financial contribution of a firm's information systems (Johnson & Lederer, 2005), while CEO–CIO ties positively moderate IT investments' effect on firm performance (Li & Ye, 1999). Scholars who have also considered the demographics of the overall TMT find that COOs are more likely to benefit firms with



relatively older TMT members and if the TMT members have more heterogeneous tenures (Marcel, 2009). In sum, studies suggest that functional TMT members may affect economic performance but that these effects are often subtle and contingent upon industry, firm, and particularly TMT-level factors that require further analyses.

## **Overall Synthesis and Research Agenda**

The emerging research on functional TMT members has the potential to become an important area in the study of TMTs. In order to fulfill its promise, however, this area needs to substantiate research on emerging and established functional TMT members and to explore the numerous unexplored functional TMT members (for an overview on the various functional TMT members in S&P 500 firms, see the appendix). Since research on the various functional TMT members is in different stages of development, different study foci and methods are needed. To contribute to the study of functional TMT members, however, it is important that future research on functional TMT members draws upon existing knowledge on other functional TMT members. Research on largely unexplored functional TMT members should focus on gaining an initial understanding of the various functional TMT member roles. Otherwise, the more established literatures, for example, on CIOs, CFOs, and—to a lesser extent—COOs, should focus on clarifying the unresolved debates (e.g., factors affecting functional TMT member presence, economic performance consequences) and on studying previously neglected aspects (e.g., interaction with other functional TMT members, relationship with board of directors).

Future studies on functional TMT members may also inform TMT research generally, especially regarding the nature of TMT members' work, TMT processes (consensus, behavioral integration/faultlines), TMT members' ties beyond the TMT, TMT impact, and TMT change over time. Accordingly, Table 3 provides five research opportunities and several corresponding research questions that may guide scholars from different fields, facilitate cross-fertilization, and inform TMT research generally. I will now elaborate on those opportunities and suggest theories/perspectives and methods for studying the various functional TMT members. The opportunities range from micro- to macrothemes and may partially benefit from research approaches that span multiple levels of analysis.

### *Opportunity 1: Functional TMT Members and the Nature of TMT Members' Work*

The first opportunity for future research on functional TMT members relates to the nature of their work and thus to their roles and activities. Since Mintzberg's (1973) classic framework of managerial roles and Kotter's (1982) seminal study of "the general managers," there has been little research focusing on the nature of TMT members' work, and considerable effort is needed to deepen our understanding of the TMT member roles and activities (Finkelstein et al., 2009). As Finkelstein and colleagues note, "this need is particularly great

**Table 3**  
**Opportunities for Future Research on Functional Top Management Team (TMT) Members**

| Research Opportunity  | Suggested Research Questions   |
|---|--|
| Opportunity 1: Functional TMT members and the nature of TMT members' work | <ul style="list-style-type: none"> <li>• Who are the functional TMT members and what do they do?</li> <li>• What are features of their roles (e.g., job title, activities, required capabilities, hierarchical location, and demographics such as education, functional experience, firm-specific experience)?</li> <li>• What are the similarities and differences of the functional TMT member's roles and characteristics across settings (e.g., regions, firms)?</li> <li>• Are there different types of functional TMT members; if so, how do they differ?</li> </ul>   |
| Opportunity 2: Functional TMT members and TMT processes                   | <ul style="list-style-type: none"> <li>• Does the fit of functional TMT members' demographic characteristics (individually and collectively) with those of the chief executive officer (CEO) and/or other TMT members enhance TMT effectiveness?</li> <li>• How do various functional TMT members effectively interact, reach consensus, and engage in decision making with the CEO and/or other TMT members?</li> <li>• How does functional TMT member presence affect TMT behavioral integration?</li> <li>• What are the factional faultlines between functional TMT members and divisional TMT members?</li> </ul>   |
| Opportunity 3: Functional TMT members' ties beyond the TMT                | <ul style="list-style-type: none"> <li>• How do individual functional TMT members collaborate with the board of directors?</li> <li>• To what extent do the interactions of functional TMT members with middle managers benefit the implementation of function-specific plans?</li> <li>• To what extent do boundary-spanning networks of functional TMT members affect outcomes such as strategy or firm performance?</li> </ul>  |
| Opportunity 4: Functional TMT members and TMT impact                      | <ul style="list-style-type: none"> <li>• How do functional TMT members (individually and collectively) affect strategic decision making?</li> <li>• To what extent do individual functional TMT members affect a certain function-specific outcome?</li> <li>• How do functional TMT members affect a firm's strategy?</li> <li>• To what extent are individual functional TMT members ambidextrous? What constellations of (functional) TMT members lead to ambidextrous TMTs?</li> <li>• Do some functional TMT members benefit their organizations more than others? How do multiple contingencies (and their interactions) affect the benefits of functional TMT member presence?</li> </ul> |
| Opportunity 5: Functional TMT members and TMT change                      | <ul style="list-style-type: none"> <li>• How do functional TMT member presence, TMT role structure, and TMT composition change over time?</li> <li>• What factors affect the change of TMTs over time? What general and function-specific factors affect the decision to have a specific functional TMT member role?</li> <li>• Does organization design affect the decision to have a functional executive in the TMT and/or the role of this executive?</li> <li>• To what extent do institutional factors or bandwagon effects affect the rise (and fall) of functional TMT members? Are there "fashions" regarding individual functional TMT members?</li> </ul>                             |

since so much idealized imagery, prescriptive folklore, and naïve attributions exist about top executives" (2009: 41). Further, as most of this research focuses on general managers, such as the CEO or divisional managers, studying what "specialist" functional TMT members do



appears particularly promising to provide a comprehensive picture of TMT members' nature of work.

Consequently, scholars not only should analyze previously studied functional TMT members but also should explore the many other unexplored functional TMT members (see the appendix). Since the TMTs of contemporary organizations typically include various functional executives responsible for different functional areas, there is great potential for research on largely unexplored functional TMT members such as chief human resources officers, chief compliance officers, and chief sustainability officers. A detailed exploration of these "new" functional TMT member roles—including diverse aspects such as job title, activities, required capabilities, hierarchical location, and demographics (e.g., education, functional experience, firm-specific experience)—may be foundational for future studies on other issues.

Applegate and Elam's (1992) exploratory survey of CIOs or Angwin and colleagues' (2009) qualitative analysis of CSOs in U.K. firms are examples of initial work on previously largely unexplored functional TMT members. Perspectives such as strategy-as-practice (Jarzabkowski & Spee, 2009; Johnson, Melin, & Whittington, 2003) may guide the exploration of what these executives actually do. In particular, practice theory (Bourdieu, 1977; Feldman, 2003; Giddens, 1984), which may integrate diverse theories (e.g., transaction cost economics, dynamic capabilities) and adds a sociological dimension, as used by Martin (2011) for the study of general managers, could be a suitable lens. To study functional TMT members' work, both qualitative research and alternative research designs and data sources such as content analyses of job descriptions or surveys of executive search consultants should be considered.

To substantiate the understanding of any functional TMT member's work, scholars should also explore differences across settings. While two studies indicate similarities and differences between functional TMT members across countries (Angwin et al., 2009; Preston et al., 2006), most other research does not consider these differences. It is likely that factors such as culture, economic development, and regulatory framework, which vary across countries, affect a functional TMT member's role. Further, it appears that certain functional TMT members, such as CFOs, perform similar activities and have similar experiences across organizations, whereas others, such as CIOs and CSOs, vary much more (Angwin et al., 2009; Karahanna & Watson, 2006). Since prior qualitative research indicates that an individual functional TMT member may vary across firms by the extent of firm-specific or task-specific knowledge, future studies may conduct conceptual and empirical studies of these differences by drawing upon the knowledge-based view of the firm (Grant, 1996; Spender, 1996).

At a subgroup level of analysis, examining differences and similarities between functional TMT members is likely to inform TMT research. Despite some initial suggestions (Grover et al., 1993), however, there is little knowledge of different functional TMT member types. Interestingly, prior TMT research distinguishes the functional backgrounds of executives as "output functions" (e.g., marketing, sales, R&D) and "throughput functions" (e.g., manufacturing, accounting, finance, administration; Hambrick & Mason, 1984; Thomas, Litschert, & Ramaswamy, 1991). Given the variety of functional TMT members, examining

the potential differences within this TMT subgroup could provide explanations regarding whether certain functional TMT members can substitute others (and if so, why) and which constellations of functional TMT members are advantageous, as well as offer insights into their selection.

### *Opportunity 2: Functional TMT Members and TMT Processes*

Research on functional TMT members may enhance the understanding of TMT processes, such as behavioral integration and consensus, and thus also of TMT strategic decision making. While TMT research in this area is generally considered sparse (Finkelstein et al., 2009), the inconclusive findings concerning the fit between a functional TMT member and the CEO and/or other TMT members' demographic characteristics, in particular, call for future research. Studies' findings suggest that functional TMT members, particularly "second in commands" such as COOs, may be selected because they compensate for a CEO's lack of skills in a particular functional area as well as for his or her lack of firm-specific experience (Angwin et al., 2009; Hambrick & Cannella, 2004; Nath & Mahajan, 2008), however, not because of their complementarities to the TMT (Nath & Mahajan, 2008). Partly challenging conventional wisdom regarding TMT diversity's potential benefits (Finkelstein et al., 2009), this proposition and the limited findings underline the need for a more fine-grained analysis of TMT composition that also considers TMT role structure (Beckman & Burton, 2011; Hambrick, 2007).

In addition, since studies on TMT composition that rely on demographics often "black-box" the way TMTs affect outcomes (Lawrence, 1997; Priem, Lyon, & Dess, 1999), scholars should analyze the processes in the relationships between functional TMT members and the CEO and/or overall TMT. Research on CIOs and CTOs focusing on communication frequency (Johnson & Lederer, 2005), shared understanding (Preston et al., 2006), and influence behaviors (Enns, Huff, & Higgins, 2003) consistently confirms these aspects' importance and may guide studies on other functional TMT members. Since functional TMT members often have few subordinates and little legitimacy compared with divisional TMT members, these two TMT subgroups' power may differ and, consequently, affect their collaboration. Further, the relationships between the various functional TMT members deserve particular attention. Anecdotal evidence and a consulting study suggest that there may be tensions and goal conflict between CSOs and CFOs (Breene, Nunes, & Shill, 2008; Rappaport, 1992). While divisional heads' responsibilities are typically tied to a particular division or business unit (Drazin & Rao, 1999), functional TMT member roles are often less clear-cut and overlap, which may complicate the reaching of consensus between them as well as their decision making. As this area of research is likely to further inform us of how TMTs affect outcomes, a study of the process-related factors by means of surveys and/or qualitative research will be worthwhile.

Research on functional TMT members also offers the opportunity to enhance our understanding of the TMT's behavioral integration, "the degree to which the group engages in mutual and collective interaction" (Hambrick, 1994: 188), particularly of TMT faultlines as a reason for behavioral disintegration. Lau and Murnighan suggest that faultlines "divide a group's members on the basis of one or more attributes" (1998: 325). These attributes can

be gender, age, functional background, education, or tenure, and they potentially can divide groups into different subgroups, with implications for team effectiveness. Li and Hambrick observe that “there are many instances in which members do not come to a group as individuals, but rather come as representative factions” (2005: 794), and study “factional groups”—a priori defined groups that typically have preexisting faultlines concerning their demographic composition. They find that large factional faultlines “engender task conflict, emotional conflict, and behavioral disintegration—which in turn lead to poor performance” (2005: 794).

Collectively, functional TMT members seem to be one of the most obvious factional groups in the TMT. The above literature review and a first conceptual attempt to distinguish subgroups of executives—CEOs, corporate functional managers, strategic business unit (SBU) functional managers, and divisional (or SBU) general managers—by Drazin and Rao (1999) suggest that there may be larger differences in the roles and demographic characteristics *across* these subgroups than *within* them. Indeed, TMT member roles are typically defined a priori (e.g., by the CEO) before selecting a suitable individual executive. The consequence is factional groups with corresponding demographic faultlines that may affect overall TMT processes such as communication or behavioral integration and, thus, decision making. Therefore, future research should study this particular potential factional faultline and analyze how it affects TMT effectiveness.

### *Opportunity 3: Functional TMT Members' Ties Beyond the TMT*

Future research on functional TMT members also offers the opportunity to refine our understanding of TMT member relationships beyond the TMT, particularly TMT members' ties with boards of directors, with middle managers, and across organizational boundaries. First, prior research on functional TMT members did not consider their interaction with the board of directors, an increasingly active group of strategic leaders that is sometimes even referred to as “supra-TMT” (Finkelstein et al., 2009: 11). Members of boards of directors are involved in important strategic and financial decisions, which often require them to collaborate with functional TMT members. Generally considered beneficial, such a collaboration may create additional tensions, as noted by Nichols: “When a CFO with all the right numbers confronts a CEO with all the right moves, how does a board of directors decide who to back?” (1992: 14). Triggered by strategic leadership's increased complexity and more complicated regulatory frameworks, many boards of directors have recently created specialized committees that appear to require even more collaboration with the respective functional TMT member, for example, between a board of directors' risk committee and the chief risk officer.

Second, future studies should examine the interactions between functional TMT members and middle managers—the “managers located below top managers and above first-level supervision in the hierarchy” (Wooldridge, Schmid, & Floyd, 2008: 1192). Recent research proposes that the interface between TMTs and middle managers may be essential for strategic decision quality and implementation quality (Raes, Heijltjes, Glunk, & Roe, 2011). Although particularly functional TMT members collaborate with middle managers, with the exception of a study by Grover and colleagues (1993) that finds that CIOs and information

systems middle managers are similar concerning the importance placed on managerial roles, the relationship between functional TMT members and middle managers has rarely been considered.

Finally, there is a need for studies on functional TMT members' relationships beyond the organizational boundaries, a theme that has been neglected to date.<sup>2</sup> Prior research suggests that TMT members' external ties affect a firm's strategy and may benefit firm performance (Collins & Clark, 2003; Geletkanycz & Hambrick, 1997). Relationships with academics, consultants, or peers in other firms, as well as membership in more formalized networks such as CIO circles, may affect functional TMT member effectiveness. For example, chief communications officers may benefit from their contacts with diverse media and agencies, whereas a CFO's network with financial analysts may affect analysts' recommendations. For exploring both intraorganizational and boundary-spanning ties of functional TMT members, social network theory (Granovetter, 1973) may be a suitable lens. Although employing the corresponding quantitative research designs, potentially using surveys, will be demanding, their contribution to explain the effectiveness of the various functional TMT members is likely to be substantial.

#### *Opportunity 4: Functional TMT Members and TMT Impact*

The inconclusive literature on the impact of individual executives and TMTs on strategic decision making, on strategy and the organization, and on firm performance is also likely to benefit from studies on functional TMT members. First, examining various functional TMT members' effect on the strategic decision making of the TMT appears a promising research direction, as it would allow for comparisons across different functional TMT members and provide insights into their collective influence. Despite some notable exceptions (Medcof, 2008; Preston et al., 2008; Zhang, 2006), studies rarely consider individual functional TMT members' influence on strategic decision making. Since research from diverse literature strands on almost all functional TMT members considers strategic leadership and strategic decision making as key functional executive roles (e.g., Angwin et al., 2009; Applegate & Elam, 1992; Peppard, 2010; Zhang, 2006), this shortcoming is surprising and confirms the need for research.

Second, scholars should consider the impact of functional TMT members on the organization and its strategy. While there has been research on how TMTs affect corporate strategic change (Wiersema & Bantel, 1992), there is no knowledge of the influence of functional TMT members such as chief growth officers or chief risk officers on strategy. Further, there is a need for future work on function-specific outcomes. Besides engaging in strategic leadership as TMT members, these executives are supposed to enhance an organizational function's strategy and effectiveness. Informed by prior research on CIOs (e.g., Kearns & Sabherwal, 2007; Li et al., 2006; Preston et al., 2008), functional TMT member performance should also be analyzed by means of function-specific measures. For example, chief integration officer effectiveness could be assessed by analyzing the success of acquisitions and strategy implementation, and that of a chief science officer by the number of the firm's patents.

A particularly promising research opportunity is examining (functional) TMT member impact on ambidexterity, “an organization’s ability to be aligned and efficient in its management of today’s business demands while simultaneously being adaptive to changes in the environment” (Raisch & Birkinshaw, 2008: 375). Though some studies reveal that jointly pursuing exploration and exploitation at the TMT level and the individual executive level is important (Jansen, George, Van Den Bosch, & Volberda, 2008; Lubatkin, Simsek, Ling, & Veiga, 2006), this literature remains sparse (Raisch, Birkinshaw, Probst, & Tushman, 2009). Interestingly, the above literature review and anecdotal evidence suggest that functional TMT members may be distinguished into more exploration-oriented roles, such as chief growth officers, chief innovation officers, or CSOs, and into more exploitation-oriented roles, such as chief administrative officers, chief quality officers, or COOs. Drawing upon this distinction, the functional TMT member roles in a TMT may indicate the extent of TMT ambidexterity. Similarly, an individual functional TMT member’s role could potentially indicate ambidextrous actions and behavior. In short, studying the link between functional TMT members and ambidexterity seems promising.

Third, given the inconclusive and even partly contradictory results, scholars should continue analyzing functional TMT members’ effect on firm performance. Studying the various functional TMT members with a single sample or accounting for organizations that differ in size, strategy, and structure, as well as for more complex interaction effects, may partly resolve the inconsistencies. Differences in the various functional TMT members’ roles also may be a source of performance variance across studies. For example, on average, COOs may be more critical to a firm’s economic performance than other functional TMT members are, such as chief communications officers. The COO usually has a broader role and greater responsibilities for overall business operations, assists the CEO in leading the overall firm (“two heads are better” theory), and often is the heir apparent to the CEO and thus constitutes an effective succession planning instrument (Hambrick & Cannella, 2004). Finally, functional TMT members’ varying diffusion across firms could be an alternative explanation for performance variance. For example, the presence of CFOs in most firms (Zorn, 2004) could, depending on the perspective, be associated either with this position’s higher degree of legitimacy or with its lower differentiation potential than that of less widespread functional executives. Hence, future studies could complement existing research by drawing upon theoretical frameworks such as institutional theory (DiMaggio & Powell, 1983) or the resource-based view (Barney, 1991).

### *Opportunity 5: Functional TMT Members and TMT Change*

The study of changes of the structure and composition of TMTs over time is a largely neglected topic in TMT research. As indicated in the review, the various functional executives’ presence in TMTs has changed over time. Since changes in individual functional TMT member presence affect TMT structure, particularly role interdependence, this has implications for both functional background diversity and group processes, such as behavioral integration, and thus group effectiveness (Beckman & Burton, 2011). As Beckman and Burton (2011) indicate, comparing studies of TMT functional diversity that do not account

for these differences across time may lead to inconsistent findings. Hence, understanding to what extent, why, and how functional TMT members' presence and thus TMT structure change over time is critical.

Although prior research has explored a variety of environmental and organizational factors that affect functional TMT member presence, for example, industry growth, organization size, or diversification degree (e.g., Hambrick & Cannella, 2004; Nath & Mahajan, 2008), we still have little established knowledge, several unresolved debates, and additional unexplored factors. An important antecedent to functional TMT member presence that has been largely neglected is a firm's organization design. Somewhat contrary to Hambrick and Mason's (1984) notion, a functional TMT member's presence and the TMT structure appear to reflect the organization's structure. Since functional TMT members are typically found at the organization's corporate level, one would expect decentralized firms with smaller headquarters to have fewer functional executives in their TMTs than those in centralized firms (Collis, Young, & Goold, 2007). Indeed, recent qualitative research indicates that functional executives' presence in the TMT often is due to the decision to centralize an organizational function and is due to the potential benefits of cross-divisional or cross-unit cooperation (Aaker, 2008). Interestingly, a recent study on CMOs considers the "divisionalization of TMT" (Nath & Mahajan, 2008), measured "as the proportion of executives in the TMT who were divisional heads" (Nath & Mahajan, 2008: 72) as a control to proxy a firm's organization design. Since related research confirms that TMTs are affected by changes in organization structure (Fligstein, 1987), the effect of those structural changes over time on individual functional TMT members' presence and TMT structure should be explored.

In addition, there may be function-specific factors affecting the change in functional TMT member presence over time. Depending on the focal functional TMT member, scholars should explore various factors such as the potential effect of acquisition activity on CSO presence and role or that of R&D spending on chief innovation officer presence. Further, the presence of other functional TMT members may depend on a specific business situation, such as a chief integration officer in a postacquisition phase. Efforts to analyze the effects of the various antecedents on functional TMT member presence could be informed by previous studies on COOs and CMOs (e.g., Hambrick & Cannella, 2004; Nath & Mahajan, 2008) and could draw upon contingency theory and employ large-scale panel research designs using archival data.

There also may be institutional developments attributable to the rise (and fall) of a functional TMT member. Zorn (2004), for example, finds that institutional factors such as a regulatory change in accounting rules in 1979 contributed to the rise of the CFO in American firms. In particular, the positions of functional TMT members responsible for accounting or finance and legal functions seem to depend on developments in the institutional environment. For example, accounting scandals and the Sarbanes-Oxley Act might have positively affected the presence of chief compliance officers, and the recent financial crisis is likely to be followed by an increase in the prevalence of chief risk officers. There also may be bandwagon effects that lead to the rise of a functional TMT member across firms. It seems that certain functional TMT members such as the chief environmental officer, chief ethics officer, or chief sustainability officer are currently becoming en vogue and are thus likely to diffuse



across a population of firms. Developed as a new TMT member role in one firm, a so-called management innovation (Birkinshaw, Hamel, & Mol, 2008), such roles may become management fashions (Abrahamson, 1991). Owing to our limited understanding of these developments and of changes in TMT roles (Beckman & Burton, 2011), studying functional TMT members' emergence and the implications for a TMT's structure and composition through an institutional lens (DiMaggio & Powell, 1983) or from a fashion perspective (Abrahamson, 1991) by means of longitudinal data seems promising.

## Conclusion

This article's objective was to offer a first review and synthesis of the disconnected literature on the various functional TMT members and to provide an agenda for future research. While there is a general tendency toward specialization in management research, this review took an alternative route and synthesized findings from the accounting and finance, information systems, marketing, and strategic management fields. In essence, I found that although the emerging literature already provides promising insights into the various functional TMT members, scholars must substantiate and extend the existing knowledge. Given the emerging state of the literature, I propose a broad research agenda that guides future research. It is my hope that this article encourages scholars to extend efforts to study functional TMT members and thus to contribute to our understanding of TMTs.

## Appendix

### Functional Top Management Team (TMT) Members in S&P 500 Firms

| Functional Area                | Functional TMT Members   |
|--------------------------------|--|
| Accounting/finance             | Chief Accounting Officer<br>Chief Financial Officer*<br>Chief Investment Officer<br>Chief Risk Officer   |
| Administration/legal           | Chief Administrative Officer<br>Chief Compliance Officer<br>Chief Environmental Officer<br>Chief Ethics Officer<br>Chief Governance Officer<br>Chief Legal Officer<br>Chief Sustainability Officer |
| Human resources                | Chief Human Resources Officer<br>Chief Learning Officer<br>Chief People Officer  |
| Information systems/technology | Chief Information Officer*<br>Chief Software Technology Officer  |

(continued)

## Appendix (continued)

| Functional Area        | Functional TMT Members   |
|------------------------|--|
| Marketing              | Chief Brands Officer<br>Chief Commercial Officer<br>Chief Communications Officer<br>Chief Customer Officer<br>Chief Marketing Officer*<br>Chief Merchandising Officer<br>Chief Sales Officer |
| Operations             | Chief Engineering Officer<br>Chief Operating Officer*<br>Chief Procurement Officer<br>Chief Quality Officer<br>Chief Supply Chain Officer  |
| Research & development | Chief Innovation Officer<br>Chief Medical Officer<br>Chief Science Officer<br>Chief Technical Officer<br>Chief Technology Officer*   |
| Strategy               | Chief Development Officer<br>Chief Globalization Officer<br>Chief Growth Officer<br>Chief Integration Officer<br>Chief Planning Officer<br>Chief Strategy Officer*                           |

*Note:* The functional TMT members were identified by a search of the TMTs of 150 randomly selected S&P 500 firms from 2004 to 2008 (as listed in the respective firms' Form 10-Ks). There are also synonyms for these titles as well as titles consisting of combinations of two or more of the above titles, mostly in one functional area. Functional TMT members with an asterisk are included in the formal literature review.

## Notes

1. In the subheadings, the numbers in parentheses refer to Figure 1.
2. I thank an anonymous reviewer for suggesting this future research opportunity.

## References

- Aaker, D. A. 2008. Marketing in a silo world: The new CMO challenge. *California Management Review*, 51(1): 144-156.
- Abrahamson, E. 1991. Managerial fads and fashions: The diffusion and rejection of innovations. *Academy of Management Review*, 16: 586-612.
- Adler, P. S., & Ferdows, K. 1990. The chief technology officer. *California Management Review*, 32(3): 55-62.
- Amason, A. C., & Sapienza, H. J. 1997. The effects of top management team size and interaction norms on cognitive and affective conflict. *Journal of Management*, 23: 495-601.
- Angwin, D., Paroutis, S., & Mitson, S. 2009. Connecting up strategy: Are senior strategy directors the missing link? *California Management Review*, 51(3): 74-94.
- Applegate, L. M., & Elam, J. J. 1992. New information systems leaders: A changing role in a changing world. *MIS Quarterly*, 16: 469-490.



- Barney, J. B. 1991. Firm resources and sustained competitive advantage. *Journal of Management*, 17: 99-120.
- Beckman, C. M., & Burton, M. D. 2011. Bringing organizational demography back in: Time, change and structure in top management team research. In M. A. Carpenter (Ed.), *Handbook of top management team research*: 49-70. Cheltenham, UK: Edward Elgar.
- Benjamin, R. I., Dickinson, C., Jr., & Rockart, J. F. 1985. Changing role of the corporate information systems officer. *MIS Quarterly*, 9(3): 177-188.
- Bennett, N., & Miles, S. A. 2006. Second in command: The misunderstood role of the chief operating officer. *Harvard Business Review*, 84(5): 71-78.
- Birkinshaw, J., Hamel, G., & Mol, M. J. 2008. Management innovation. *Academy of Management Review*, 33: 825-845.
- Boeker, W. 1997. Strategic change: The influence of managerial characteristics and organizational growth. *Academy of Management Journal*, 40: 152-170.
- Bourdieu, P. 1977. *Outline of a theory of practice*. Cambridge, UK: Cambridge University Press.
- Breene, R. T. S., Nunes, P. F., & Shill, W. E. 2007. The chief strategy officer. *Harvard Business Review*, 85(10): 84-93.
- Breene, R. T. S., Nunes, P. F., & Shill, W. E. 2008. Rise of the chief strategy officer. *Accenture Outlook*, 2008(1): 1-6.
- Carpenter, M. A., & Fredrickson, J. W. 2001. Top management teams, global strategic posture, and the moderating role of uncertainty. *Academy of Management Journal*, 44: 533-545.
- Carpenter, M. A., Geletkanycz, M. A., & Sanders, W. G. 2004. Upper echelons research revisited: Antecedents, elements, and consequences of top management team composition. *Journal of Management*, 30: 749-778.
- Chatterjee, D., Richardson, V. J., & Zmud, R. W. 2001. Examining the shareholder wealth effects of announcements of newly created CIO positions. *MIS Quarterly*, 25(1): 43-70.
- Chun, M., & Mooney, J. 2009. CIO roles and responsibilities: Twenty-five years of evolution and change. *Information and Management*, 46: 323-334.
- Collins, C. J., & Clark, K. D. 2003. Strategic human resource practices, top management team social networks, and firm performance: The role of human resource practices in creating organizational competitive advantage. *Academy of Management Journal*, 46: 740-751.
- Collis, D. J., Young, D., & Goold, M. 2007. The size, structure, and performance of corporate headquarters. *Strategic Management Journal*, 28: 383-405.
- Delmar, D. R. 2003. The rise of the CSO. *Journal of Business Strategy*, 24(2): 8-10.
- DiMaggio, P. J., & Powell, W. W. 1983. The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2): 147-160.
- Donovan, J. J. 1988. Beyond chief information officer to network manager. *Harvard Business Review*, 66(9-10): 134-140.
- Drazin, R., & Rao, H. 1999. Managerial power and succession: SBU managers of mutual funds. *Organization Studies*, 20: 167-196.
- Earl, M. J., & Feeny, D. F. 1994. Is your CIO adding value? *Sloan Management Review*, 35(3): 11-20.
- Earl, M. J., & Scott, I. A. 1999. What is a chief knowledge officer? *Sloan Management Review*, 40(2): 29-38.
- Enns, H. G., Huff, S. L., & Golden, B. R. 2003. CIO influence behaviors: The impact of technical background. *Information and Management*, 40: 467-485.
- Enns, H. G., Huff, S. L., & Higgins, C. A. 2003. CIO lateral influence behaviors: Gaining peers' commitment to strategic information systems. *MIS Quarterly*, 27(1): 155-176.
- Feeny, D. F., Edwards, B. R., & Simpson, K. M. 1992. Understanding the CEO/CIO relationship. *MIS Quarterly*, 16: 435-448.
- Feldman, M. S. 2003. A performative perspective on stability and change in organizational routines. *Industrial and Corporate Change*, 12(2): 727-751.
- Finkelstein, S. 1992. Power in top management teams: Dimensions, measurement, and validation. *Academy of Management Journal*, 35: 505-538.
- Finkelstein, S., Hambrick, D. C., & Cannella, A. A., Jr. 2009. *Strategic leadership: Theory and research on executives, top management teams, and boards*. Oxford: Oxford University Press.
- Fligstein, N. 1987. The intraorganizational power struggle: Rise of finance personnel to top leadership in large corporations, 1919-1979. *American Sociological Review*, 52(1): 44-58.

- Geiger, M. A., & North, D. S. 2006. Does hiring a new CFO change things? An investigation of changes in discretionary accruals. *Accounting Review*, 81(4): 781-809.
- Geletkanycz, M. A., & Hambrick, D. C. 1997. The external ties of top executives: Implications for strategic choice and performance. *Administrative Science Quarterly*, 42: 654-681.
- Gerstner, L. V., & Anderson, M. H. 1976. The chief financial officer as activist. *Harvard Business Review*, 54(9-10): 100-106.
- Giambattista, R. C., Rowe, W. G., & Riaz, S. 2005. Nothing succeeds like succession: A critical review of leader succession literature since 1994. *Leadership Quarterly*, 16: 963-991.
- Gibbins, M., McCracken, S. A., & Salterio, S. E. 2007. The chief financial officer's perspective on auditor-client negotiations. *Contemporary Accounting Research*, 24(2): 387-422.
- Giddens, A. 1984. *The constitution of society*. Berkeley: University of California Press.
- Granovetter, M. 1973. The strength of weak ties. *American Journal of Sociology*, 78: 1360-1380.
- Grant, R. M. 1996. Toward a knowledge-based theory of the firm. *Strategic Management Journal*, 17(Winter Special Issue): 109-122.
- Grover, V., Jeong, S.-R., Kettinger, W. J., & Lee, C. C. 1993. The chief information officer: A study of managerial roles. *Journal of Management Information Systems*, 10: 107-130.
- Gupta, Y. P. 1991. The chief executive officer and the chief information officer: The strategic partnership. *Journal of Information Technology*, 6: 128-139.
- Hambrick, D. C. 1994. Top management groups: A conceptual integration and reconsideration of the "team" label. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior*: 171-213. Greenwich, CT: JAI Press.
- Hambrick, D. C. 2007. Upper echelons theory: An update. *Academy of Management Review*, 32: 334-343.
- Hambrick, D. C., & Cannella, A. A., Jr. 2004. CEOs who have COOs: Contingency analysis of an unexplored structural form. *Strategic Management Journal*, 25: 959-979.
- Hambrick, D. C., & Finkelstein, S. 1987. Managerial discretion: A bridge between polar views of organizational outcomes. *Research in Organizational Behavior*, 9: 369-407.
- Hambrick, D. C., & Mason, P. A. 1984. Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review*, 9: 193-206.
- Higgins, M. C., & Gulati, R. 2006. Stacking the deck: The effects of top management backgrounds on investor decisions. *Strategic Management Journal*, 27: 1-25.
- Indjejikian, R., & Matejka, M. 2009. CFO fiduciary responsibilities and annual bonus incentives. *Journal of Accounting Research*, 47(4): 1061-1093.
- Jansen, J. J. P., George, G., Van Den Bosch, F. A. J., & Volberda, H. W. 2008. Senior team attributes and organizational ambidexterity: The moderating role of transformational leadership. *Journal of Management Studies*, 45: 982-1007.
- Jarzabkowski, P., & Spee, A. P. 2009. Strategy-as-practice: A review and future directions for the field. *International Journal of Management Reviews*, 11(1): 69-95.
- Johnson, A. M., & Lederer, A. L. 2005. The effect of communication frequency and channel richness on the convergence between chief executive and chief information officers. *Journal of Management Information Systems*, 22: 227-252.
- Johnson, G., Melin, L., & Whittington, R. 2003. Micro strategy and strategizing: Towards an activity-based view? *Journal of Management Studies*, 40: 3-22.
- Karahanna, E., & Watson, R. T. 2006. Information systems leadership. *IEEE Transactions on Engineering Management*, 53: 171-176.
- Kearns, G. S., & Sabherwal, R. 2007. Antecedents and consequences of information systems planning integration. *IEEE Transactions on Engineering Management*, 54: 628-643.
- Kesner, I. F., & Sebor, T. C. 1994. Executive succession: Past, present and future. *Journal of Management*, 20: 327-372.
- Kotter, J. P. 1982. *The general managers*. New York: Free Press.
- Lau, D. C., & Murnighan, J. K. 1998. Demographic diversity and faultlines: The compositional dynamics of organizational groups. *Academy of Management Review*, 23: 325-340.
- Lawrence, B. S. 1997. The black box of organizational demography. *Organization Science*, 8: 1-22.

- Li, J., & Hambrick, D. C. 2005. Factional groups: A new vantage on demographic faultlines, conflict, and disintegration in work teams. *Academy of Management Journal*, 48: 794-813.
- Li, M., & Ye, L. R. 1999. Information technology and firm performance: Linking with environmental, strategic and managerial contexts. *Information and Management*, 35: 43-51.
- Li, Y., Tan, C.-H., Teo, H.-H., & Tan, B. C. Y. 2006. Innovative usage of information technology in Singapore organizations: Do CIO characteristics make a difference? *IEEE Transactions on Engineering Management*, 53: 177-190.
- Lubatkin, M. H., Simsek, Z., Ling, Y., & Veiga, J. F. 2006. Ambidexterity and performance in small- to medium-sized firms: The pivotal role of top management team behavioral integration. *Journal of Management*, 32: 646-672.
- Marcel, J. J. 2009. Why top management team characteristics matter when employing a chief operating officer: A strategic contingency perspective. *Strategic Management Journal*, 30: 647-658.
- Martin, J. A. 2011. A practice theory of executive leadership groups: Dynamic managerial capabilities and the multi-business team. In M. A. Carpenter (Ed.), *The handbook of research on top management teams*: 237-260. Cheltenham, UK: Edward Elgar.
- Medcof, J. W. 2008. The organizational influence of the chief technology officer. *R&D Management*, 38: 406-420.
- Mian, S. 2001. On the choice and replacement of chief financial officers. *Journal of Financial Economics*, 60: 143-175.
- Mintzberg, H. 1973. *The nature of managerial work*. New York: Harper & Row.
- Nath, P., & Mahajan, V. 2008. Chief marketing officers: A study of their presence in firms' top management teams. *Journal of Marketing*, 72: 65-81.
- Nichols, N. A. 1992. HBR case study: The case of the combative CFO. *Harvard Business Review*, 1992(7-8): 14-24.
- Peppard, J. 2010. Unlocking the performance of the chief information officer (CIO). *California Management Review*, 52(4): 73-99.
- Pfeffer, J. 1983. Organizational demography. In B. Staw & L. Cummings (Eds.), *Research in organizational behavior*: 299-357. Greenwich, CT: JAI Press.
- Preston, D. S., Chen, D., & Leidner, D. E. 2008. Examining the antecedents and consequences of CIO strategic decision-making authority: An empirical study. *Decision Sciences*, 39: 605-642.
- Preston, D. S., Karahanna, E., & Rowe, F. 2006. Development of shared understanding between the chief information officer and top management team in U.S. And French organizations: A cross-cultural comparison. *IEEE Transactions on Engineering Management*, 53: 191-206.
- Priem, R. L., Lyon, D. W., & Dess, G. G. 1999. Inherent limitations of demographic proxies in top management team heterogeneity research. *Journal of Management*, 25: 935-953.
- Raes, A. M. L., Heijltjes, M. G., Glunk, U., & Roe, R. A. 2011. The interface of top management team and middle managers: A process model. *Academy of Management Review*, 36: 102-126.
- Raisch, S., & Birkinshaw, J. 2008. Organizational ambidexterity: Antecedents, outcomes, and moderators. *Journal of Management*, 34: 375-409.
- Raisch, S., Birkinshaw, J., Probst, G., & Tushman, M. L. 2009. Organizational ambidexterity: Balancing exploitation and exploration for sustained performance. *Organization Science*, 20: 685-695.
- Rappaport, A. 1992. CFOs and strategists: Forging a common framework. *Harvard Business Review*, 70(5-6): 84-91.
- Short, J. 2009. The art of writing a review article. *Journal of Management*, 35: 1312-1317.
- Smaltz, D. H., Sambamurthy, V., & Agarwal, R. 2006. The antecedents of CIO role effectiveness in organizations: An empirical study in the healthcare sector. *IEEE Transactions on Engineering Management*, 53: 207-222.
- Sobol, M. G., & Klein, G. 2009. Relation of CIO background, IT infrastructure, and economic performance. *Information and Management*, 46: 271-278.
- Sponder, J.-C. 1996. Making knowledge the basis of a dynamic theory of the firm. *Strategic Management Journal*, 17(Winter Special Issue): 45-62.
- Stephens, C. S., Ledbetter, W. N., Mitra, A., & Ford, F. N. 1992. Executive or functional manager? The nature of the CIO's job. *MIS Quarterly*, 16: 449-467.
- Stevens, J. M., Steensma, H. K., Harrison, D. A., & Cochran, P. L. 2005. Symbolic of substantive document? The influence of ethics codes on financial executives' decisions. *Strategic Management Journal*, 26: 181-195.

- Thomas, A. S., Litschert, R. J., & Ramaswamy, K. 1991. The performance impact of strategy-manager coalignment: An empirical examination. *Strategic Management Journal*, 12: 509-522.
- Uddin, N., & Gillett, P. R. 2002. The effects of moral reasoning and self-monitoring on CFO intentions to report fraudulently on financial statements. *Journal of Business Ethics*, 40: 15-32.
- Watson, R. T. 1990. Influences on the IS manager's perceptions of key issues: Information scanning and the relationship with the CEO. *MIS Quarterly*, 14: 217-231.
- Webster, J., & Watson, R. T. 2002. Analyzing the past to prepare for the future: Writing a literature review. *MIS Quarterly*, 26: xiii-xxiii.
- Wiersema, M. F., & Bantel, K. A. 1992. Top management team demography and corporate strategic change. *Academy of Management Journal*, 35: 91-121.
- Wooldridge, B., Schmid, T., & Floyd, S. W. 2008. The middle management perspective on strategy process: Contributions, synthesis, and future research. *Journal of Management*, 34: 1190-1221.
- Zhang, Y. 2006. The presence of a separate COO/president and its impact on strategic change and CEO dismissal. *Strategic Management Journal*, 27: 283-300.
- Zorn, D. M. 2004. Here a chief, there a chief: The rise of the CFO in the American firm. *American Sociological Review*, 69: 345-364.