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Self-Managing Team Performance: A Systematic Review of Multilevel Input Factors

Nina Cristina Magpili[1] and Pilar Pazos[1]

Abstract

Organizations need flexible and adaptable structures to thrive in an increasingly turbulent business environment. Self-managing team (SMT) structures have evolved as an optimal approach to increase flexibility and performance as evidenced by their documented proliferation in organizations. However, even with their broad organizational adoption, research shows inconsistencies concerning SMT's potential to enhance performance. This review integrates prior empirical research on input factors that influence the successful implementation of high-performing SMTs. Using a prior team effectiveness framework as a lens, we conducted a systematic analysis of the literature to shed light into the variables at the individual, team, and organizational level that affect performance and successful implementation of SMT. The sample of studies resulted from an exhaustive search that included quantitative, qualitative, and mixed methods research. Last, we present gaps in the literature and propose future directions for research on SMTs.

Keywords

self-managing teams, team performance, autonomy, work groups, agile teams

[1]Engineering Management and Systems Engineering Department, Old Dominion University, Norfolk, VA, USA

Corresponding Author:
Pilar Pazos, Old Dominion University, 2101D Engineering Systems Building, Norfolk, VA 23529, USA.
Email: mpazosla@odu.edu

As organizations recognize human capital and agility as cornerstones of organizational success, they have increasingly flattened their structures and transferred power downward from upper management through to team-based autonomous structures known as self-managing teams (SMTs; Bernstein, Bunch, Canner, & Lee, 2016). A SMT is a group of individuals with diverse skills and knowledge with the collective autonomy and responsibility to plan, manage, and execute tasks interdependently to attain a common goal (De Jong, De Ruyter, & Lemmink, 2004; Guzzo & Dickson, 1996). Lawler, Mohrman, and Ledford (1995) noted that the use of SMTs in Fortune 1000 companies increased from 27% in 1987 to 68% in 1993. In 2004, Douglas and Gardner observed a further expansion to 75% of top 1,000 U.S. firms.

SMTs have autonomy to make decisions regarding project management, problem solving, conflict management, strategy formulation, skill development, and even performance evaluation (Humphrey, Nahrgang, & Morgeson, 2007; Lawler, 1986; Leach, Wall, Rogelberg, & Jackson, 2005; Thoms, Pinto, Parente, & Druskat, 2002; Wellins & George, 1991; Yang & Guy, 2011). Sociotechnical systems theory asserts that the high level of autonomy of SMTs and their proximity to the process or product helps accelerate their ability to respond to changes in customer demands or specifications (Johnson, Hollenbeck, Scott DeRue, Barnes, & Jundt, 2013; Wall, Jackson, & Davids, 1992).

Prior research suggests that SMTs enhance decision making and performance through harnessing the specialized knowledge and skills from the team members (Cooney, 2004). Power in SMTs is distributed among team members through a shared leadership model where all members hold collective responsibility for the project outcome (Hackman, 2002; Nahavandi & Malekzadeh, 1999; Wall, Kemp, Jackson, & Clegg, 1986; Yang & Guy, 2011). The augmented authority and ownership they have over the task has been linked to increased motivation and improved work processes, ultimately leading to increased productivity (van der Vegt, Bunderson, & Kuipers, 2010). Wageman (1997) also observed that the combination of a heightened motivational state and having a comprehensive set of skills contributed to improved organizational flexibility and adaptability.

SMTs are widely recognized as a leading innovation in work structures and even a management paradigm shift (Alper, Tjosvold, & Law, 1998; Druskat & Wheeler, 2003; Kozlowski & Bell, 2001; Manz & Sims, 2001; Sundstrom, De Meuse, & Futrell, 1990). However, despite their claimed promise and widespread adoption, several review studies reveal that SMTs vary in their effectiveness (Beekun, 1989; Cohen & Ledford, 1994; Guzzo & Dickson, 1996). Some implementations have resulted in adverse

outcomes, such as conflict escalation and reduced awareness of changes outside of the team (Johnson et al., 2013; Wu, Wang, Bi, & Liu, 2013). Furthermore, empirical studies on the relationship between team autonomy and team performance have also been inconclusive (Cordery, Morrison, Wright, & Wall, 2010; Goodman, Devadas, & Hughson, 1988; Guzzo & Dickson, 1996).

Leading scholars have argued that rather than further scrutinizing the effectiveness of SMTs, research should delve into the variables that influence the success of SMTs (Millikin, Hom, & Manz, 2010; Stewart, 2006). Others have pointed to the lack of broad, evidence-based prescriptions that identify and address the significant barriers to SMT success (Wageman, Gardner, & Mortensen, 2012). Based on published empirical research, this review aims at closing these gaps through a comprehensive review of the factors at the individual-, team-, and organizational-level that drive SMT effectiveness. Through this review, we will discuss the primary obstacles to a successful implementation of SMTs as well as specific evidence-based interventions that have resulted in high-performing SMTs.

This article sheds light on the input factors that influence the success of SMTs through a systematic review of prior quantitative, qualitative, and mixed methods empirical studies. Given the complexity and multilevel nature of the input factors that affect SMT performance, we analyzed the variables through the lens of a widely accepted team effectiveness framework (Mathieu, Maynard, Rapp, & Gilson, 2008). From the theoretical perspective, this review provides state-of-the-art knowledge on input factors that influence the performance of SMTs and outlines future avenues for research. From a practical standpoint, this review identifies and integrates evidence-based approaches of successful implementations of SMT structures.

Method

A systematic literature review was conducted in two stages. The first stage was a multiple database search using the following keywords: self-managing teams, self-directed teams, autonomous teams, team autonomy, and team empowerment. This stage used an automated process that searched simultaneously on 19 databases, including ABI/INFORM, JSTOR, ProQuest Science Collection, Science Direct Journals, Scopus, and Springer Link. A second targeted search was conducted later using the same keywords within on the following individual databases: EBSCOhost, Emerald Management Xtra, PsycARTICLES, SAGE, and Web of Science. This comprehensive search strategy generated 695 articles published between 1980 and 2017. Specific criteria were used to filter the publications that aligned with the goals of this study. The inclusion criteria

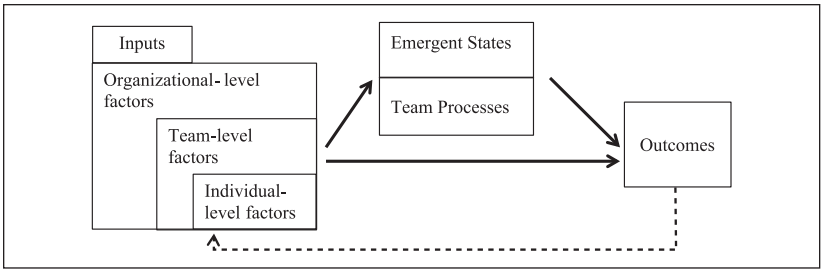

Figure 1. Team effectiveness framework.

called for published empirical research (quantitative, qualitative, and mixed methods) that (a) used a conceptualization of SMTs consistent with the proposed operational definition, (b) examined input factors according to the operational definitions provided by Ilgen, Hollenbeck, Johnson, and Jundt (2005) and Mathieu et al. (2008), and (c) studied the association between input factors and team or organizational performance. After the inclusion criteria, 165 published studies (82 quantitative studies, 83 qualitative studies) remained from the original sample of 695. The articles originate from a broad range of disciplines, including communication, economics, education, engineering, human resource management, management, psychology, and sociology.

The goal of this review is to synthesize empirical studies that investigated the influence of input variables on SMT performance. Input variables are antecedent factors at the individual, team, and organizational level that influence team performance (McGrath, 1984). The input factors identified through this systematic review were organized using an existing and widely accepted framework of team effectiveness (Mathieu et al., 2008). The framework categorizes inputs into three nested levels that are linked to the team outcomes through team processes and emergent states. This systematic review focused on input factors because they are original predictors of emergent states, processes, and outcomes. Understanding these predecessors can shed light into the original drivers of team performance that precede task execution and outcomes. In addition, the focus on inputs also helps control the scope of this review. Figure 1 illustrates the team effectiveness framework that has been adapted from Matheiu and colleagues (2008) initial framework.

Results

This section presents the results of the systematic review of the empirical studies organized by individual-, team-, and organizational-level factors.

Individual-Level Input Variables

Individual-level input variables represent characteristics associated with specific members of the team. The following individual-level variables were found to have an impact on SMT performance: individual autonomy, individual roles, leadership, skills (self-management, general skills, and teamwork), resistance to change, and work experience.

Individual autonomy. SMTs reportedly deal with a tension between individual-level and team-level autonomy. While individual autonomy has been found empowering and motivating for single members (Banai, Nirenberg, & Menachem, 2000; Hackman & Oldham, 1976), it has reportedly inhibited collective success in the context of SMTs. A quantitative study by Langfred (2004) uncovered a negative association between individual autonomy and SMT performance. In a later study, Langfred (2005) also found that for highly interdependent tasks, a combination of low individual autonomy and high team autonomy led to significantly higher levels of performance. A more recent qualitative study by Moe, Dingsøyr, and Dybå (2010) found that individual autonomy became a liability when team members plan or make decisions on their own without consulting other team members. There is also evidence that an emphasis on individual autonomy entices team members to focus on their individual tasks, thus inhibiting skill acquisition and hindering cross-training and job rotation (Barney, Moe, Dybå, Aurum & Winata, 2009; Thursfield, 2015).

Individual roles. Prior studies have shown that roles within an SMT tend to evolve and change as work demand changes, with new roles being created, some being removed, and others becoming permanent (Bernstein et al., 2016; Hoda, Noble, & Marshall, 2013). This fluidity in roles has been associated with increased team responsiveness to the needs of the organization (Bernstein et al., 2016). According to a number of qualitative studies, the management of roles in SMTs is a key element that requires a specific approach (Banai et al., 2000; Heffron & Rerick, 1997; Hoda et al., 2013; Mcnair, Newswander, Boden, & Borrego, 2011; Perry, Karney, & Spencer, 2013). Roles in SMTs are not typically tied to job descriptions and are driven by what the team members decide it is needed to accomplish their goals (Banai et al., 2000; McCalman, 1998; Perry et al., 2013; Thursfield, 2015). Furthermore, high-performing SMTs often have a built-in capability to rotate roles due to overlapping skills (Perry et al., 2013; Wilson & Grey-Taylor, 1995). This capability has been associated with increased trust and improved negotiation within the team (Cook, Gerrish, & Clarke, 2001).

Prior studies identified some of the challenges associated with augmented roles leading to performance losses. For instance, Bernstein et al. (2016) noticed that when team members take on augmented roles, they might have difficulty focusing on the task and prioritizing. Other unintended consequences have emerged as a result of increased responsibilities, such as increased levels of stress in the team, especially when combined with peer pressure and performance-based rewards (Giuliani, 1996; McCalman, 1998; Roy, 2003).

Leadership. Leadership within the team surfaced as a key success factor in SMTs. In a quantitative study on self-managing virtual teams, Carte, Chidambaram, and Becker (2006) found that individuals in high-performing teams are more likely to exhibit more leadership behaviors than those in low-performing teams. Zafft, Adams, and Matkin (2009) showed that leaders need to apply a variety of leadership styles, also known as behavioral complexity, to successfully adapt to the context of SMTs. This display of behavioral complexity in leaders has been linked to increased flexibility, innovation, and improved results (Quinn, 1988). Gupta, Huang, and Yayla (2011) explored particular leadership styles and found that when collective transformational leadership in the SMT is high, social capital shows a stronger association with performance. Several quantitative studies have shown that shared leadership is positively related to SMT performance (Carte et al., 2006; Erez, Lepine, & Elms, 2002; McIntyre & Foti, 2013). Shared leadership was found to promote positive mutual influence through increased awareness of fellow members' roles and their importance to the team (Fausing, Jeppesen, Jønsson, Lewandowski, & Bligh, 2013).

According to several qualitative studies, successful SMTs exhibit competence-based leadership, where leadership appointments are based on demonstrated skills (Eseryel & Eseryel, 2013). Studies that looked into specific leadership behaviors reported that successful leaders help monitor performance quality (Banai et al., 2000; Pais, 2010), act as boundary spanners (Rolfsen & Langeland, 2012), mentor (Hoda et al., 2013), and coach peers (Banai et al., 2000). Several studies suggest that effective team leaders also help develop the teams socially by promoting group cohesion and norms (Heffron & Rerick, 1997; Perry et al., 2013), and by encouraging opinion sharing, removing misconceptions, and addressing concerns (Hoda et al., 2013). A transformational leadership approach that is action oriented and in which the leader is directly involved has shown evidence of success (Eseryel & Eseryel, 2013). Several studies have also looked into how emergent leaders can contribute to the success of SMT. They found that emergent leaders with strong technical, management, and teamwork skills are more likely to

use referent or expert power to influence the team and gain the support and respect of teammates (Banai et al., 2000; Eseryel & Eseryel, 2013; Yates & Finikiotis, 2010). Prior research suggests that, besides having the expertise and initiative, team leaders also need the ability to gain commitment from the team and to delegate if they want to succeed (Banai et al., 2000; Doorewaard, Geert, & Huys, 2002; Heffron & Rerick, 1997).

Self-management skills. Some studies identify the foundation of an SMT as having people with self-managing skills (Andrés, Broncano, Montoya, & Monsalve, 2015; De Jong & Ko, 2004). Self-management competencies have been linked to increasing performance through the collection of actions from self-regulating individuals who readily do tasks and willingly back up other team members (Millikin et al., 2010; Wageman, 2001). Some studies found that individuals who are highly invested and engaged in self-management enable the success of SMTs (e.g., Cohen, Ledford, & Spreitzer, 1996; Druskat & Pescosolido, 2002; Powell & Pazos, in press; van der Vegt et al., 2010). In a quantitative study, Carte et al. (2006) found that individuals in high-performing SMTs show more willingness to structure work processes than those in low-performing SMTs. Teams with members who engage in self-management have shown increased levels of commitment and team spirit (Rolfsen & Langeland, 2012; Wilson & Grey-Taylor, 1995). Several factors that explain team members' readiness to accept responsibilities include their skill level, experience, and expertise (e.g., Cohen & Ledford, 1994; Wall et al., 1986).

According to several qualitative studies, organizations can grant SMTs the autonomy to make decisions. However, their success relies on having individuals with self-management skills, including the ability to accept responsibilities (Andrés et al., 2015; Perry et al., 2013; Powell & Pazos, in press), self-regulate (Millikin et al., 2010), self-motivate (Yang & Guy, 2004), exert effort (Driedonks, Gevers, & van Weele, 2014), and exhibit resilience during challenging times (Gray, 2012). We also found evidence that poorly performing SMTs often fail to accept responsibilities and continue to depend on upper management to make decisions for them (Bazirjian & Stanley, 2001; Nicholls, Lane, & Brechu, 1999; Wilson & Grey-Taylor, 1995).

Skills. Some studies suggest that SMTs' success is highly reliant on having a team of highly skilled experts in multiple areas (Druskat & Pescosolido, 2002; McCalman, 1998). Prior research suggests that when team members lack the necessary skills, they tend to harbor low expectations (Nicholls et al., 1999) and become defensive to protect their job and reputation (Hoda et al., 2013). Lack of skills can also prevent team members from exercising autonomy,

which is the key operational characteristic of SMTs (Mcnair et al., 2011). One study found that teams with higher level and a variety of skills are less likely to rely on support from external leaders (Cohen & Ledford, 1994). A key consideration concerning skills is the time and resources necessary to develop them (Banai et al., 2000; Druskat & Pescosolido, 2002; McCalman, 1998).

Particular attention focused on studying the impact of multiskilled individuals on SMTs' performance. Several studies have shown that having individuals with multiple skills helps teams improve their flexibility and enhance collaborative processes (McCalman, 1998; Powell & Pazos, in press; Wageman, 1997). Prior studies have also documented specific strategies for skill development that include training (Druskat & Pescosolido, 2002; Macy, Farias, Rosa, & Moore, 2007) and rotating roles (Macy et al., 2007). Although increasing skill redundancy may initially slow down the team, a study found that team efficiency improved in the long run through faster problem solving and reduced bottlenecks (Moe, Cruzes, Dybå, & Engebretsen, 2015).

Teamwork Skills. Several qualitative studies mention teamwork skills as another important performance driver in SMTs (Banai et al., 2000; Elmuti, 1996; Hoda et al., 2013; Powell & Pazos, in press; Weis, 1992). Evidence from this review reveals the lack of teamwork skills as a critical performance barrier despite the presence of exceptional technical expertise (Fazzari & Mosca, 2009; Wilson & Grey-Taylor, 1995). Specific documented teamwork skills that affect SMTs' performance include the ability to lead, communicate, and conduct meetings effectively (Banai et al., 2000; Hoda et al., 2013). On the contrary, when teams exhibit individualistic behaviors such as divide and conquer, they incur process loss and miss the opportunity to work together synergistically (Hawkins, 2013; McBeth, 1998). In one quantitative study, Leach et al. (2005) found that teamwork competencies mediate the relationship between team autonomy and manager-rated team performance. Stevens and Campion (1994, 1999) suggested that team competencies can be influenced by selection procedures and training programs. Training has also been identified as an essential step toward the successful development of teamwork skills (Strydom, 2002).

Resistance to change. Studies show that when transitioning to an SMT structure, resistance to change is common (Liebowitz & Holden, 1995; Strydom, 2002). While some employees will openly resist SMT implementation, others may do it less overtly (Weis, 1992). Reported reasons for resistance include a preference for structure, fear of the unknown, lack of experience, lack of job security, low team orientation, and aversion to increased workload (Kim & McNair, 2010; Mcnair et al., 2011; Thursfield, 2015). A clear explanation of the SMT philosophy and benefits has been successfully used

to help reduce resistance (Roufaiel & Meissner, 1995). Another reportedly successful strategy is to bring dissenting employees on benchmarking trips to other companies so that they can directly see the impact of SMT (Roufaiel & Meissner, 1995).

Work experience. Numerous studies identify work experience as a factor influencing performance in SMTs. Lack of experience has been recognized as an obstacle to achieving full autonomy in team-based structures (Pais, 2010; Conchúir, Holmström, Ågerfalk, & Fitzgerald, 2009; Mcnair et al., 2011). Several studies have found that as teams acquire experience, they are more likely to gain autonomy and reduce their dependency on managers (Cohen & Ledford, 1994; Conchúir et al., 2009). Experience has also been associated with increased contextual understanding of the work and improved ability to develop innovative solutions (Eseryel & Eseryel, 2013) as well as greater ability to anticipate changes and estimate the project timeline (Hoda, Noble, & Marshall, 2011). As a result, team members with long work experience typically become the leaders (Eseryel & Eseryel, 2013), mentors (Hoda et al., 2013), or coaches (Moe et al., 2015) within the SMT. However, in some cases, work experience may also inhibit the team member's ability to change. For instance, one study found that team members with extensive experience in hierarchical organizations are more likely to revert to old business practices when transitioning to nonhierarchical structures (Hoda et al., 2013). There is also evidence that if the tasks assigned to teams change drastically over time, increased experience does not benefit performance (Thursfield, 2015).

Team-Level Input Variables

Team-level input variables are characteristics that are attributed to the team as a collective. The review revealed the following team-level variables: external leadership, peer control, task characteristics, team autonomy, and team-level diversity.

External leadership. External leaders are those who provide direction from outside of the team and help manage team boundaries but who are not involved in the team's day-to-day activities (Morgeson, 2005). There is an inherent paradox concerning the role of the external leader in a team that by definition self-manages (Manz & Sims, 1987). Prior studies address that paradox by pointing out that the autonomy associated to SMTs requires a transformation of the traditional function of the external leader from a directing into a supporting role that paves the way toward more decentralized interactions (Druskat & Pescosolido, 2002; Hoque, Davis, & Humphreys, 2004; Powell &

Pazos, in press; Shaw, 1964). A reportedly successful style of leadership that facilitates longitudinal team development in SMTs is one that adapts the approach to the level of team maturity (Ayas, 1996; Powell & Pazos, in press). Luciano, Mathieu, and Ruddy (2013) explored the particular role of the leader through team empowerment. They observed that the positive relationship between external leadership and team performance was mediated by team empowerment. A passive leader who does not provide guidance and support creates increased uncertainty in the team (Luciano et al., 2013). There is evidence that successful external leaders of SMTs actively encourage the autonomous state of the team (Morgeson & DeRue, 2006; Wageman, 1997). Successful leadership approaches to promote team autonomy have included encouraging team members to engage in self-reflection, self-criticism, and self-reinforcement (Mcnair et al., 2011; Short, 1993). External leaders help build empowered teams by facilitating processes such as conflict management (Druskat & Pescosolido, 2002), team communication (Bernstein et al., 2016; Wageman, 1997), team development (Druskat & Pescosolido, 2002), and decision making (Yeatts & Seward, 2000). Qualitative results have also shed light on conditions that help SMTs thrive such as having external leaders who provide training (Batt, 2001; Hoda et al., 2011), resources (Hoda et al., 2011; Morgeson & DeRue, 2006; Powell & Pazos, in press), and rewards and recognition (McCalman, 1998; Morgeson & DeRue, 2006; Wageman, 1997). Team success also relies on the external leader's full awareness of the team context (Short, 1993) and needs (Druskat & Wheeler, 2003).

External leader intervention has been an area of focus in past research. There is general agreement that excessive intervention has adverse consequences for SMTs and can compromise the team's sense of ownership and lead to attribution error (Wageman, 1997). Role confusion has been associated with increased external leader intervention (Wilson & Grey-Taylor, 1995), which in turn limits team autonomy and reduces their sense of ownership (Druskat & Pescosolido, 2002). Inadequate interventions include closely monitoring team actions, running the meetings for the team, assigning responsibilities, and overriding the team's decisions by dealing directly with customers (Wageman, 1997). Leader intervention is productive when solicited by the team (Rolfsen & Langeland, 2012) or when it helps deal with a particular problem (Irani, Choudrie, Love, & Gunasekaran, 2002). External leaders can also experience tension associated with their role when they receive criticism from the teams for providing too much guidance and from top management for not providing enough (Cordery, Mueller, & Smith, 1991; Druskat & Pescosolido, 2002; Goodman et al., 1988; Walton, 1982).

Evidence suggests that external leaders play a major role in facilitating social relationships and interaction within the team (Druskat & Wheeler,

2003; Levi & Slem, 1995; Mcnair et al., 2011). Trust in the leader has been cited as an important aspect of SMT success (Banai et al., 2000; Druskat & Wheeler, 2003). Fredendall and Emery (2003) found that approaches based on leadership initiating structure strengthen the relationship between work group structure (self-directed vs. traditional team structure) and productivity.

Peer control. Peer control is a mechanism used to direct individual behavior toward organizational goals by using social influence (Leifer & Mills, 1996). Without the continuous direct supervision of managers, peer pressure can be used as a control mechanism to support SMT performance (Banai et al., 2000; Druskat & Pescosolido, 2002). Through a quantitative study, Stewart, Courtright, and Barrick (2012) found that peer control is significantly and positively related to team performance. Their research found that team members help regulate nonproductive individuals when team rewards depend on peer evaluation. On the contrary, peer pressure may inhibit autonomy when strict norms or rigid standards are imposed (Rolfsen & Langeland, 2012).

Task characteristics. Several studies have identified the characteristics of the job as an important factor influencing SMTs' success (Bernstein et al., 2016; Levi & Slem, 1995; Powell & Pazos, in press). Notably, our review of prior findings suggests that not all tasks are equally suited for SMTs. Quantitative studies found that SMTs work best when executing tasks with high uncertainty (Cordery et al., 2010), high task novelty (Haas, 2010), high technology novelty (Patanakul, Chen, & Lynn, 2012), high task innovativeness (Patanakul et al., 2012), high task interdependence (Langfred, 2005; Wageman, 2001), and low task routineness (De Jong et al., 2004; Rousseau & Aubé, 2010). Research also found that tasks designed to have variety, identity, significance, and autonomy result in higher levels of performance (Cohen et al., 1996). Quantitative research also found that tasks with increased levels of identity and significance lead to higher levels of performance in SMTs (Cohen et al., 1996).

Qualitative studies further support the argument that the nature of the task affects SMT performance. Two studies confirmed that for complex and uncertain tasks, an SMT work structure facilitates the team's ability to perform (Powell & Pazos, in press; A. D. Smith & Offodile, 2008). Similarly, Wilson and Grey-Taylor's (1995) study observed that SMTs are more likely to succeed with complex jobs than with simple or repetitive ones. When teams are presented with challenging, holistic, and significant tasks, they are more likely to feel a sense of accomplishment (Banai et al., 2000; Bernstein et al., 2016; Pais, 2010; Roufaiel & Meissner, 1995). On the contrary, one

study determined that when the tasks are simple and unambiguous, key elements of SMT design such as the multiplicity of skills and job rotation become superfluous and are no longer value-added (Sexton, 1994).

Team autonomy. Team autonomy is an intrinsic element and an indispensable component of any successful SMT (Banai et al., 2000; Lee & Xia, 2010; Powell & Pazos, in press; Rolfsen & Langeland, 2012; A. D. Smith & Offodile, 2008). Nonetheless, there are some cases in which specific contextual factors may prevent teams from achieving the desired level of autonomy. Previously reported factors influencing the lack of autonomy include scarcity of skills or experience (Conchúir et al., 2009), lack of management support (Cook et al., 2001; Druskat & Pescosolido, 2002; McCalman, 1998; Powell & Pazos, in press; Strydom, 2002; Yeatts & Seward, 2000), inadvertent interference by management (Scribner, Sawyer, Watson, & Myers, 2007), resistance to take over managerial roles (Pais, 2010; Hoque et al., 2004), implicit influence of organizational norms (Doorewaard & Brouns, 2003), rigid organizational structure (Roufaiel & Meissner, 1995; Scribner et al., 2007), and excessive peer control (Rolfsen & Langeland, 2012). Based on prior qualitative studies, some SMTs are autonomous only in name but not in practice (Druskat & Pescosolido, 2002; Hoque et al., 2004). One study found that when autonomy is revoked, team members become resentful if they are held accountable for problems that are beyond their control (Hoque et al., 2004), and they are more likely to feel frustration and self-defeat (Scribner et al., 2007).

Team-Level Diversity

Skill diversity. This team-level variable represents the level of heterogeneity of task-relevant skills among individuals. As SMTs typically perform complex tasks, prior research has established the importance of having a team that possesses a broad set of competencies (Jackson, 1992; Jehn, Northcraft, & Neale, 1999). However, a mixed methods study by Wageman (2001) did not find a significant relationship between skill diversity and SMT team performance. This result may be further explained by the qualitative findings. Although evidence from some qualitative studies show that skill diversity in SMTs contributes to performance (Camelo-Ordaz, Fernández-Alles, & Martínez-Fierro, 2006; K. J. Smith, Rubenson, & Beebee, 2002), differences in professional background can create a counter effect by inhibiting collective decision making due to differences in status, knowledge, language, value, expectation, and power (De Leede & Stoker, 1999; Mcnair et al., 2011). Some reported key factors that help the SMT build on the complementary skills while

countering some of the negative impact of differences in background include acknowledgment of the importance of each other's role in the team, ability to communicate and understand people from different backgrounds (Hoda et al., 2013), role modeling by external leaders, scaffolding, and extensive communication and integration (Mcnair et al., 2011). Last, a prior study also showed that the team's ability to handle skill diversity develops as the team matures (Hoda et al., 2013).

Organizational-Level Input Variables

Factors at the organizational level associated with SMT success include corporate culture, corporate policies, national culture, organizational goals, organizational structure, training, resources, and rewards.

Corporate culture. Successful implementation of SMTs has also been attributed to cultural characteristics. Favorable cultural attributes include corporate values promoting autonomous behaviors, accountability, team orientation, continuous learning, risk taking, and change (Druskat & Pescosolido, 2002; Hawkins, 2013; Heffron & Rerick, 1997; Levi & Slem, 1995; Phakathi, 2002; Roufaiel & Meissner, 1995; Short, 1993; Yates & Finikiotis, 2010). One quantitative study found that when increased autonomy is granted to teams, having a quality-oriented organizational culture does not lead to improved team performance (Sethi & Sethi, 2009). However, they found that a culture that encourages employees to take risk tends to produce more novel products when teams are more autonomous (Sethi & Sethi, 2009). Some studies have also suggested that cultural change might be necessary when implementing SMTs' structures (Roy, 2003; Yates & Finikiotis, 2010).

Based on the qualitative studies, retaining a traditional top-down management culture during SMT implementation can negatively influence success (Pais, 2010; Denison, 1982) and prevents the team from self-organizing (Hoda et al., 2011).

Corporate policies. Several studies found that highly prescriptive corporate policies can prevent creative solutions from emerging by limiting employee discretion and flexibility (Cohen & Ledford, 1994; Doorewaard & Brouns, 2003; Rolfsen & Langeland, 2012), leading to decreases in SMT performance (Roy, 2003). Phakathi (2002) found that team members may hesitate to take risks to avoid violating the organizational norms. Two quantitative studies confirm the qualitative findings above. Tata and Prasad (2004) found that formalization, the extent to which the organization has explicit norms, significantly moderates the relationship between self-management and team

effectiveness such that SMTs are more effective under lower levels of organizational formalization. Moravec, Johannessen, and Hjelmas (1998) uncovered incompatibility between team strategies and formalized bureaucracies as reasons behind the unsuccessful implementation of SMTs. Some studies provide evidence of successful approaches to establishing norms and policies, including focusing on broad issues such as procedures for admitting new members, general meeting quorum, set up job expectations (Banai et al., 2000), and role assignment (Bernstein et al., 2016).

National culture. National culture also plays a role in the success of SMT implementation (Nicholls et al., 1999). Prior studies show that team members from countries with high power distance are likely to place a high value and status on management roles. This value system is inherently counter to the nonhierarchical nature of an SMT (Moe et al., 2015; Nicholls et al., 1999; Roufaiel & Meissner, 1995). Kirkman and Shapiro (2001) found a significant negative relationship between team level of power distance and team productivity. One study determined that implementing SMTs in a high power distance culture may be viewed as an effort to diminish the status of management, making it hard to gain acceptance (Roufaiel & Meissner, 1995). A study conducted in Mexican companies argues that SMT members from a high power distance culture are less willing to learn from their SMT peers (Nicholls et al., 1999). To address these issues, executives made workers aware of the problems facing the company to gain moral commitment, which helped reduce status-based power and encourage a culture of power sharing between managers and employees (Nicholls et al., 1999).

Collectivism is a cultural characteristic by which people base their identities on their social relationships and place importance on group decisions (Hofstede, 1980). An SMT work structure is more aligned with the values of a collectivist culture than those of an individualistic one (Nicholls et al., 1999). A quantitative study by Kirkman and Shapiro (2001) found that team collectivism is significantly and positively related to team productivity. Nicholls et al. (1999) argued that individuals from collectivist cultures are more likely to welcome shared responsibility because they see individual risks being reduced through collaboration (Nicholls et al., 1999). They also found that resistance to teams fully mediates the relationship between team collectivism and team effectiveness. Kirkman and Shapiro found that people who are low in collectivism are more likely to resist working in teams due to negative feelings about collaboration.

The reduction of structure and rules necessary to accommodate an SMT structure is in conflict with a culture of low tolerance for ambiguity and high preference for structure (Nicholls et al., 1999; Rafferty & Tapsell, 2001).

Cheng, Chua, Morris, and Lee (2012) found that low levels of uncertainty avoidance enhance SMT performance in the initial stage of the team task. SMTs with low uncertainty avoidance tend to be more comfortable when there is no clear structure or leader.

Organizational goals. Wageman (2001) found that goal clarity is a significant predictor of task performance in SMTs. Gonzalez et al. (2014) found that team autonomy has a positive indirect relationship with team performance through organizational goal clarity when performance feedback is high, and negative when performance feedback is low. Even though SMTs are afforded with freedom to set their goals, one study showed that they rely on feedback from the organization to make sure that they align their effort to the accomplishment of the organization's goals (Kluger & DeNisi, 1996). The clarity of organizational goals helps teams set team-level goals that align with organizational goals leading to higher performance (Chen & Kanfer, 2006; Hu & Liden, 2011; Locke & Latham, 1990, 2013).

Several qualitative studies show that having explicit team goals leads to improved SMT performance (Pais, 2010; Heffron & Rerick, 1997; Lee & Xia, 2010; Mcnair et al., 2011; Rolfsen & Langeland, 2012; Scribner et al., 2007; A. D. Smith & Offodile, 2008). This relationship is stronger when individual and organizational goals are aligned (Bazirjian & Stanley, 2001; Bernstein et al., 2016; De Leede & Stoker, 1999; Moe et al., 2015; Scribner et al., 2007; Wageman, 1997). Other studies have uncovered that laack of clear goals impedes SMT performance (Elmuti, 1996; Heffron & Rerick, 1997; Kim & McNair, 2010; Moe, Dingsøyr, & Dybå, 2010) and may lead to frustration in the team (e.g., Kim & McNair, 2010).

Organizational structure. Many organizations have recognized that the hierarchical organizational structure can constrain collaborative processes and influence performance in SMT (Roufaiel & Meissner, 1995; K. J. Smith et al., 2002). A hierarchical structure typically restricts communication, flow of knowledge, and empowerment (Hoda et al., 2011; Roufaiel & Meissner, 1995). Flatter organizational structures are more conducive to SMT success when compared with hierarchical structures (Bernstein et al., 2016; Strydom, 2002; Weis, 1992; Wilson & Grey-Taylor, 1995).

Training. Prior quantitative studies have failed to show a statistically significant positive influence of training on SMT performance (Yang & Guy, 2004; Spreitzer, Cohen, & Ledford, 1999; Wageman, 2001). However, most qualitative studies have identified training as a key success factor that helps enhance SMT performance through improved decision making and problem

solving (Andrés et al., 2015; Gates, Remmel, Adamson, & Hutt, 2000; Levi & Slem, 1995; Phakathi, 2002; Yates & Finikiotis, 2010). Additional qualitative studies also pointed out the lack of training as a barrier to SMT success (Druskat & Pescosolido, 2002; Giuliani, 1996; Nicholls et al., 1999).

Qualitative studies have also shown that after training, SMTs demonstrated an improved ability to solve problems and increased focus on the issues (Gates et al., 2000; Phakathi, 2002). Prior research has focused on the main features of training that can affect SMT effectiveness. Two studies argue that for training to be effective, it should start before the implementation of SMTs (Rafferty & Tapsell, 2001; Rogers, Metlay, Kaplan, & Shapiro, 1995). Additional elements of training that can be critical to SMT success from the perspective of the trainer include the need to explain the philosophy and benefits of the SMT (De Leede & Stoker, 1999; Moe et al., 2010; Rafferty & Tapsell, 2001; Spreitzer et al., 1999), clarify management's role in relation to the SMTs (Liebowitz & Holden, 1995; Perry et al., 2013), facilitate the elimination of old habits (Bernstein et al., 2016; Doorewaard & Brouns, 2003; Liebowitz & Holden, 1995; Strydom, 2002), and develop a level of competency in all aspects of the job (Druskat & Pescosolido, 2002; Nicholls et al., 1999; Roy, 2003; Yates & Finikiotis, 2010). Team building is another element (Fazzari & Mosca, 2009; Phakathi, 2002; Strydom, 2002; Wilson & Grey-Taylor, 1995) that will facilitate discussion of teamwork issues (Wilson & Grey-Taylor, 1995), such as procedures and criteria for selecting team members, preferred group size, performance measurement, tasks, roles (Wilson & Grey-Taylor, 1995), and team identity (Phakathi, 2002; Wilson & Grey-Taylor, 1995). Several studies argue that training should have continuity rather than being a one-time event (Bernstein et al., 2016; De Leede & Stoker, 1999; Irani et al., 2002; McCalman, 1998; Rolfsen & Langeland, 2012).

Resources. Team-level resources studied in the literature include material, labor, and informational resources that are made available to the SMT. Wageman (2001) did not find a significant relationship between resources (information and material) and team performance. In a later study, Yang and Guy (2011) reached the same conclusion.

The following qualitative findings give insight into why the quantitative studies did not yield significant results. Access to resources was identified as essential for SMTs to be successful, especially during the initial stages of team development (Irani et al., 2002; K. J. Smith et al., 2002; Wageman, 1997; Wilson & Grey-Taylor, 1995). External leaders should make sure SMTs are granted the necessary resources and technology (Hoda et al., 2013; Morgeson & DeRue, 2006; Wageman, 1997), equipment, space, tools, labor,

and materials (Bernstein et al., 2016; Morgeson & DeRue, 2006; Powell & Pazos, in press) to accomplish their work successfully. Access to resources supports better implementation of decisions and more innovative ideas (Roy, 2003; Short, 1993). Several factors preventing an effective use of resources include misalignment with the team's needs (Short, 1993), lack of team member's resource management skills (Druskat & Pescosolido, 2002; Giuliani, 1996), and corporate norms (Wageman, 1997).

Rewards. A large number of studies have examined the role of reward systems on SMT success. Our findings revealed differential impacts based on the types of reward systems. Based on the scope of application, rewards are classified into individual, team, and organizational level. Quantitative studies evaluating the impact of team-based rewards on performance have led to inconsistent results. Wageman (2001) found that team-based rewards are significantly and positively related to team performance in SMTs. However, Yang and Guy (2004) found no relationship between team-based rewards and performance. Several qualitative studies further investigated the relationship between team-based rewards and performance. There was general agreement that team-based rewards have a positive effect on SMT performance (Ayas, 1996; Fazzari & Mosca, 2009; Kruse & Louis, 1997; Liebowitz & Holden, 1995; Powell & Pazos, in press; Short, 1993; Yates & Finikiotis, 2010). One qualitative study found that team-based rewards led to higher levels of performance when compared with mixed rewards (combination of both team- and individual-based; Wageman, 1997). Team-based rewards have been linked to an enhanced sense of shared ownership (Cohen & Ledford, 1994), whereas individual rewards can undermine the sense of shared ownership in SMTs (Goodman, 1982).

Fredendall and Emery (2003) observed that compensation method (individual vs. team vs. combination pay system) did not moderate the relationship between work group structure (SMTs vs. traditional teams) and team productivity. In a quantitative study, Spreitzer et al. (1999) did not find a significant relationship between performance-based pay and SMT team performance. Aside from team-based and individual rewards, qualitative studies have explored other reward systems that can help enhance SMT performance such as social incentives, performance-based rewards, skill-based rewards, horizontal advancement, and self-reinforcement (Banai et al., 2000; Morgeson & DeRue, 2006). SMT members feel rewarded by social incentives, such as by becoming an informal leader through gaining the respect of the team (Banai et al., 2000; Morgeson & DeRue, 2006) or by getting nominated by peers and leaders for recognition of performance or desirable behaviors (Fazzari & Mosca, 2009; Morgeson & DeRue, 2006; Wageman, 1997).

Although performance-based rewards have been successfully used by many organizations (Banai et al., 2000; A. D. Smith & Offodile, 2008), they may lead to frustration and even turnover when managers fail to provide access to resources (Hoque et al., 2004). Prior research also shows that people with deficient skills have opposed skill-based pay because they are afraid that others will take their jobs (Liebowitz & Holden, 1995). Some studies suggest that evaluating and rewarding using skill-based pay can become too complex to manage (Bernstein et al., 2016; McCalman, 1998).

Discussion and Conclusion

This review article integrates the findings from quantitative and qualitative research to provide a comprehensive view of the state-of-the-art knowledge on factors that influence the performance of SMT structures. Our analysis uncovered the most significant drivers of success, as well as the nuances of the interactions across a variety of contextual factors. This investigation revealed a close alignment between quantitative and qualitative findings. However, in some instances, only the qualitative findings show some evidence of the role of particular input factors, such as team-based rewards, performance-based rewards, and training in SMT performance, whereas the quantitative studies failed to show the corresponding statistical evidence. Qualitative studies helped provide a rich depiction of the complex and dynamic nature of SMTs. Qualitative findings also revealed descriptive and explanatory information behind conflicting or nonsignificant findings.

The analysis corroborates that successful implementation of SMTs requires a thorough understanding of input factors and an ability to manage those factors at different levels in the organization. Implementing SMTs without consideration of these factors will almost certainly lead to failure.

Competencies emerged as a critical factor for SMT structures. Essential competencies identified in this review include leadership, the ability to work in teams, and having a broad set of technical skills that enables job rotation within the team. Internal and external leaders also perform essential roles in SMTs by promoting team autonomy through mentorship, coaching, information, training, resources, and rewards. A major documented challenge encountered by both internal and external leaders is the difficulty balancing the promotion of the team's autonomous state while still providing some basic guidance and structure. This dilemma has led to role ambiguity in the leader and confusion within the team that negatively impacts SMT functioning. The leadership quandary also presents an opportunity for researchers to determine effective leadership models in SMT. For instance, future research should aim to determine the proper balance between autonomy and structure

and to identify appropriate leadership approaches in a variety of contextual conditions. Future research should also examine leadership from a longitudinal perspective that identifies suitable leadership strategies for the different stages of an SMT's life cycle. Another important factor at the team level is the presence of a shared leadership model. Specific approaches to sharing and coordinating responsibilities remain largely unexplored in the literature. The need for less conventional skills such as resiliency, ability to learn from mistakes, and attitudes toward risk has emerged from the qualitative literature. More research is needed to understand what training models are most appropriate for SMT structures.

At the organizational level, key factors influencing SMT performance include the corporate structure, policies, culture, reward systems, and resources available. Our review revealed that a flatter organizational structure, reduced formalization, and an empowering culture that supports and facilitates autonomy provide the ideal organizational context for SMTs to thrive. Prior studies suggest that external leaders will not be able to succeed with SMTs unless the structure and culture of the organization are favorable. A change in culture toward increased responsibility and accountability was found to help propagate team member acceptance. Reward systems that are most conducive to success include team-based rewards, performance-based rewards, skill-based rewards, and social incentives. Access and ability to manage resources are also paramount to attaining high levels of SMT performance. Although qualitative studies found support for the utility of team-based rewards and performance-based rewards, more confirmatory research is needed to understand the impact of reward systems on SMT performance. There is an opportunity to explore innovative types of reward systems such as social incentives or horizontal career advancement.

An overarching theme pervading SMT research is the need for change management as a vital component of SMT implementation. Most of the barriers to success identified through the review consist of factors that prevent change during implementation of SMTs. These factors include resistance to autonomy, fear of the unknown, perceived job insecurity, preference for structure, and lack of trust in management. National cultural characteristics such as individualism, power distance, low tolerance for ambiguity, and uncertainty have also been identified as key barriers to change. When organizations fail to promote change, frustration can quickly mount within the team, often leading to a culture of blame. Benchmarking trips have been noted as a successful strategy for leaders and management to learn how to address these barriers. Training is another key component of change management that can support skill development, gain employee commitment, alleviate the fear of uncertainty, address misperceptions regarding job security,

describe the SMT structure, and promote a new way of thinking and behaving. Training can also help reduce resistance by increasing relevant knowledge and skills of team members.

Based on the systematic literature review, SMT implementation is influenced by the interaction of input factors at all three levels of analysis. Factors interact within and across levels of analysis (individual, team, and organizational) to influence SMT performance. For instance, factors at the individual-level including self-management skills, multiple technical skills, and teamwork skills are beneficial when teams handle highly complex and uncertain tasks at the team-level. In addition, SMTs working on complex and novel team-level tasks are likely to exhibit high levels of job satisfaction and sense of achievement at the individual-level.

SMT success is far from an overnight success story. Evidence suggests that developing and eradicating old habits takes time. All parties need to engage throughout the implementation process, including the team members, team leaders, external leaders, and upper management. As the team matures, they gain more capability to act autonomously and require less help from the external leaders. Over time, the norms and strategies they form will benefit the organization greatly.

This review also revealed some unintended consequences of SMT implementation. One likely outcome is the need to establish a compensation system that considers the multiplicity of skills and roles of SMT members. A second unintended consequence is an upsurge in stress for both team members and leaders associated with the transition into SMT structures (Hawkins, 2013; Roy, 2003). The well-being of team members is critical for SMT success; thus, future research should examine factors that can help manage stress in these work contexts. The third unintended consequence is the emergence of conflict within the team.

This research offers a very detailed depiction of the mechanisms that underlie SMT success. Implementation of SMTs in an organization requires an understanding of the key levers and the ability to create an environment that is conducive to sustained success. This review can serve as a guide for both practitioners and scholars by presenting essential input factors that affect SMT success, as well as evidence-based approaches to managing those factors. Findings from this review also reveal several unexplored paths to study the development of effective SMT structures.

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Author Biographies

Nina Cristina Magpili is a Ph.D. candidate at the Engineering Management and Systems Engineering Department, Old Dominion University, USA. Her areas of

interest include team building, team diversity, self-managing teams, virtual teams, sociotechnical systems, and positive psychology.

Pilar Pazos is an associate professor at the Engineering Management and Systems Engineering Department, Old Dominion University, USA. Her main areas of research include team-based work structures, collaborative learning, team training, performance management, and team decision making.