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Abstract

Purpose – Scrum is a development methodology that has been rapidly gaining popularity over the last decade particularly for software development teams. The Scrum master is sometimes viewed as a servant leader of the Scrum team. The purpose of this paper is to investigate to what extent Scrum masters actually make use of servant leadership and how this impacts on the team's effectiveness via mediating processes.
Design/methodology/approach – The research followed a quantitative approach. An online questionnaire was prepared and completed by 71 Scrum team members (excluding Scrum masters) and 22 Scrum masters in more than ten organizations based in Western Cape, South Africa.
Findings – Scrum masters in this sample extensively used the servant leadership approach, but those who are also appointed as formal team leaders are seen to be considerably better servant leaders by team members. There is a moderately strong correlation between servant leadership of the Scrum master and team effectiveness. It was found that high levels of psychological safety do not necessarily translate into team performance.
Research limitations/implications – Research was only performed at the unit level of analysis and not the team or organizational level. This was a cross-sectional study and variations over time were not considered.
Practical implications – The results confirm the importance of servant leadership skills when identifying and developing Scrum masters, appointing the formal team leader role in Scrum teams and implementing Scrum practices effectively.
Originality/value – As could be established, this is the first time that the role of servant leadership in Scrum teams was formally investigated.

Keywords Trust, Servant leadership, Psychological safety, Team effectiveness, Team leadership, Scrum master

Paper type Research paper

1. Introduction

Scrum is an Agile software development methodology (Agile manifesto, 2001), that has been rapidly gaining popularity over the last decade (Schwaber and Sutherland, 2017). One of the three formal roles defined in the Scrum methodology is the Scrum master role who is facilitator, coach and coordinator of the team. The role of the Scrum master is intriguing as it is key to the success of the Scrum team, yet it offers "neither authority nor an attractive title" (Watts, 2013, p. 21). The Scrum master helps the team to become high performing by, amongst others, promoting the team's adherence to Scrum practices (e.g. events, artefacts, roles, rules). Yu and Petter (2014) found that adherence to Scrum practices plays an important part in the effectiveness of the Scrum team.

The Scrum team is cross-functional, which means that its team members have different functional expertise. It is also self-organizing/self-managing as the team "manage their own workload, shift work among themselves based on need and best fit, and participate in team decision making" (Highsmith, 2004). The team consequently has a high level of autonomy (Moe *et al.*, 2009). Due to the application of the Scrum methodology the boundaries of the team are fairly well-defined. The optimal size of the Scrum team is seven to nine people, excluding the Scrum master and Product owner unless they are also completing development tasks (Schwaber and Sutherland, 2017). Teams typically remain together for some time.

Even though the Scrum team shares many of the above-mentioned characteristics with other teams, few studies on team effectiveness in Agile software development teams have used models from the field of general team leadership. One such model by Kozlowski and Ilgen (2006)

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is based on the idea that inputs to the team influences team processes (e.g. trust); leading to positive outputs such as team effectiveness. Leadership is one of the variables that can improve the functioning of team processes (Kozlowski and Ilgen, 2006).

Greenleaf (1977) introduced the concept of servant leadership 40 years ago, defining a servant leader as someone that seeks to serve first and then to lead. Servant leaders want to help their followers "grow healthier, wiser, freer, more autonomous, more likely themselves to become servants" (Greenleaf, 1977, p. 27). The Scrum master arguably is in the position to be the servant leader of the Scrum team.

Smith *et al.*'s (2004, p. 89) argued that compared to transformational leadership, servant leadership "tends to cultivate a static approach to the external environment." Servant leadership was therefore thought to be less suited to high change environments, as one would classify the software development environment. However, as far as could be established, there are no studies available that specifically investigated the prevalence and influence of servant leadership in software development teams. Moreover, few researchers have investigated the influence of servant leadership on team effectiveness via mediating team processes such as trust and psychological safety (Hu and Liden, 2011; Schaubroeck *et al.*, 2011). In this research, the focus is on the role and influence of the Scrum master's servant leadership on the software development team's effectiveness and the mediating influence of trust and psychological safety.

2. Servant leadership and team effectiveness in Scrum

Greenleaf (1977, p. 85) suggested that servant leadership has practical application within teams, arguing that the leader of a successful business "will need to evolve from being a chief into the builder of the team." At the time, the importance of servant leadership was driven by "the revolution of expectation among young people" that led companies to create more meaningful jobs (Greenleaf, 1977, p. 85). Greenleaf argued that the practice of servant leadership would eventually create flatter hierarchical structures within organizations. It is within this organizational context that that the Scrum methodology was created and is still evolving.

Spears (1995) distilled servant leader characteristics from Greenleaf's writings, such as listening, empathy, healing, awareness, persuasion, philosophy, conceptualization, foresight, commitment to development of people and building community. The writings on servant leadership by Spears and other prominent authors in the 1980s and early 1990s were largely anecdotal, and it was only after Farling *et al.* (1999) called for empirical research that the situation started to change (Parris and Peachy, 2013). Authors such as Laub (1999), Russell and Stone (2002), Liden *et al.* (2008) and Van Dierendonck and Nuijten (2011) subsequently operationalized servant leadership, using variations of Spear's ten characteristics.

Although there is not unanimous consensus on the definition of servant leadership or its characteristics (Parris and Peachy, 2013), Van Dierendonck (2011) notes that authors have identified characteristics, which are central to servant leadership. Servant leadership is described as a people-oriented approach in which servant leaders are not motivated by the need for power, but by serving followers, acting beyond one's self-interest, caring for followers, creating development opportunities, increasing followers' autonomy and encouraging them to think independently, making room for participative decision making and using persuasion rather than coercion.

Van Dierendonck (2011) also asserts that servant leaders see serving and leading as complementary tasks, which is aligned with the collaboration style of leadership favored by Scrum and Agile (Moe *et al.*, 2009). The traditional role of project manager is replaced by the Scrum master role of being more of a facilitator/coach. According to the Schwaber and Sutherland (2017), the team leadership role is normally not assigned to a specific team member as a position of formal authority, but is shared by the team. Shared leadership is

therefore an important building block of an effective Scrum team (Karhatsu *et al.*, 2010), and the Scrum master has an important role to play in creating the preconditions where this can flourish (Carson *et al.*, 2007).

Cooke and Hilton (2015, p. 72) define team effectiveness as "a team's capacity to achieve its goals and objectives." The capacity to achieve goals and objectives leads to improved outcomes for the team members (e.g. team member satisfaction and willingness to remain together) as well as outcomes produced or influenced by the team." Servant leadership has been found to increase the effectiveness of the team (Irving, 2005) and of its leaders (Hu and Liden, 2011; Schaubroeck *et al.*, 2011). Schaubroeck *et al.* (2011) demonstrate that team performance is also influenced by trust and psychological safety, with team performance being "fully mediated through trust in leader variables and the team psychological states" (Schaubroeck *et al.*, 2011, p. 6). In a systematic literature review focusing on empirical servant leadership research in different organizational contexts, Parris and Peachy (2013) found support for the notion that servant leadership improves the team's effectiveness by creating a "trusting, fair, collaborative, and helping culture" (Parris and Peachy, 2013, p. 387). McAllister (1995) created a conceptual framework that differentiates between cognition-based and affect-based trusts. Affect-based trust is defined as "emotional bonds between individuals" founded on communicating "genuine care and concern for the welfare of the other party" (McAllister, 1995, p. 26). Cognition-based trust is about performance in dimensions such as competence, reliability and dependence. Dirks and Ferrin (2002) encourage researchers that use trust as a mediating variable to consider the multiple dimensions (affective and cognition) within the same study.

However, these are not the only variables that influence team effectiveness. According to the team effectiveness model of Kozlowski and Ilgen (2006, p. 111), team composition is one of the factors that "shape, leverage and align team processes". Pearce and Conger (2003) proposed that team characteristics such as proximity, team size, diversity, maturity and ability could influence whether shared leadership develop within new product development (NPD) teams.

Psychological safety occurs when team members have a shared perception that the interpersonal climate of the team supports risk-taking and learning (Edmondson, 1999). Within Scrum teams learning is seen as one of the pre-requisites for self-organizing teams and the Scrum master plays an important role in creating the right environment for learning to take place (Moe *et al.*, 2009). Hoda *et al.* (2009) believe that the effectiveness of Agile software teams (such as Scrum teams) depends on their success in becoming self-organized.

3. Research model of servant leadership and team effectiveness in Scrum teams

From the preceding discussions, a conceptual research model was developed (Figure 1). The Schaubroeck *et al.* (2011) model was simplified and adapted to be more in line with that of Kozlowski and Ilgen (2006) by adding team composition and categorizing independent variables either as "Interventions" or "Team Processes." Trust in the Scrum master and team psychological safety were seen as team processes and servant leadership of the Scrum master was seen as a team leadership intervention. Team composition was added as an intervention as aspects such as team size and methodological purity of the Scrum approach are potentially important variables that may affect the performance of Scrum teams (Schwaber and Sutherland, 2017). Team performance and effectiveness is seen as equivalent terms in this research.

In Figure 1, it is argued that when the Scrum master uses servant leadership it influences team performance through the mediation of the team's trust in the Scrum master and team psychological safety. Team composition may influence some of the above variables.

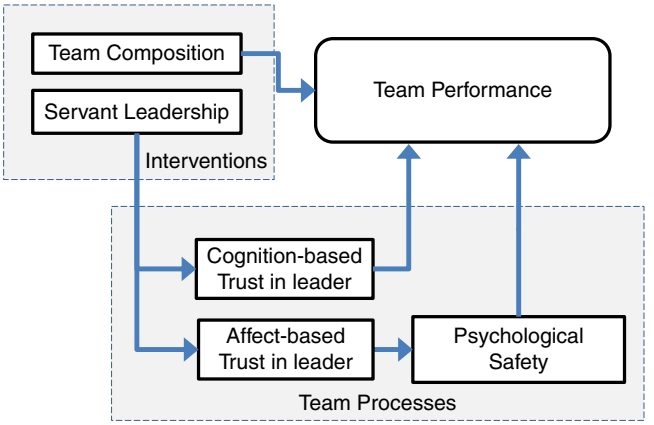

Figure 1.
Conceptual model of servant leadership in Scrum teams

4. Research method

One questionnaire was compiled for Scrum team members to complete and another for Scrum masters. Scrum team members and Scrum masters were invited to complete the questionnaire anonymously.

Sample description

The Scrum team members ($n = 93$), who participated in this research, are from up to 17 companies in the Western Cape, South Africa. Formal contact was established with six organizations to obtain participants, whereas an additional 11 Scrum team members participated in their individual capacity, apparently representing different organizations. The companies represented in this research are active in software development in various industries such as telecommunication, web services, banking, insurance and education in the Western Cape. Almost a third ($n = 30$) of the participants came from a single company. Seventy-three of the respondents are Scrum team members (excluding Scrum masters) and twenty-two are Scrum masters.

5. Measurement instruments and analyses

Van Dierendonck and Nuijten (2011) developed the Servant Leadership Survey from a conceptual model that included 8 characteristics of servant leadership consisting of dimensions, and was used to assess servant leadership. In developing the measuring instrument, a CFA produced support for the 8-factor model ($\chi^2 = 600$, df = 397, CFI = 0.94, TLI = 0.93, SRMR = 0.06, AIC = 17,148 and RMSEA = 0.05 (Green *et al.*, 2015). The Cronbach α reliability scales (i.e. internal consistency) were all found to be high at 0.7 and higher (Green *et al.*, 2015).

The measurement instrument for trust was developed by McAllister (1995). The trust scale consists of two dimensions, cognition- and affect-based trust. The Cronbach α for affective trust and cognition-based trust are 0.92 and 0.94 respectively (McAllister, 1995).

Edmondson (1999) developed a psychological safety measurement instrument. A Cronbach α of 0.82 was obtained from this research (Edmondson, 1999).

The team effectiveness questionnaire was developed by Larson and La Fasto (2001), yielding a Cronbach α coefficient of 0.85, which was also confirmed by Dannhauser (2007).

Correlations between constructs and dimensions were assessed by calculating Pearson's correlation coefficients (r). ANOVA analyses were performed to assess the significance of statistical differences between various sub-groups within the rest of the

team sub-sample. A variance-based structural equivalence modeling was performed using partial least squares (PLS) to investigate the extent to which the data fit the research model (Figure 1).

In all instruments, references to "manager" and "team leader" were replaced with "Scrum master" as the Scrum master does not necessarily fulfill the role of team leader and is not a manager.

6. Research results

The correlations from Pearson correlation analysis for Scrum team members (excluding Scrum masters) are summarized in Table I. Variables 2–9 in Table I represent the eight dimensions of servant leadership (Van Dierendonck and Nuijten, 2011). "Pureness of Scrum" captures the number of Scrum practices followed by each represented team and can be seen as the team composition variable. Other variables are the two types of trust (variables 10 and 11), psychological safety and team effectiveness.

The means in Table I show that team members view their Scrum masters generally to be servant leaders (variables 4–11). The mean values of both cognition-based trust ($M = 5.8$) is affect-based trust ($M = 5.3$) is be high. Cognition- and affect-based trust inter-correlate strongly ($r = 0.75$; $p < 0.001$), and with team effectiveness. Moderately significant correlations exist between psychological safety and several of the variables. All servant leadership dimensions, except forgiveness and courage, correlate moderately to strongly with team effectiveness ($p < 0.05$). Pureness of Scrum' moderately correlates with humility ($r = 0.42$; $p < 0.001$) and standing back ($r = 0.35$; $p < 0.01$), but does not correlate statistically significantly with psychological safety.

A one-way ANOVA analysis was performed to compare the variables for the conditions where the Scrum master was also the team leader ($n = 34$) and where the Scrum master was not the team leader ($n = 37$). The ANOVA results show that allocating the Scrum master role to the team leader has a statistically significant positive influence on team effectiveness, both trust dimensions and the experience of servant leadership ($p < 0.05$). Contrary to expectations, it was found that team proximity and team size did not have a statistically significant influence on team variables.

The research model (Figure 1) was tested using PLS Analysis and the results are summarized below:

(1) Standardized root mean square residual (SRMR) is 0.072, which is less than 0.08 and therefore considered a good fit (Hu and Bentler, 1999).

(2) The VIF collinearity statistics of variables are all below 6, which is less than 10 that is acceptable limit according to Hair *et al.* (1995).

(3) The *t*-values of all path coefficients were statistically significant (i.e. > 1.96) except for the following:

- pureness of Scrum to team effectiveness coefficient; and
- psychological safety to team effectiveness coefficient.

The results obtained from the Scrum masters' feedback are presented in Table II.

Table indicates a strong correlation between cognition-based trust and the psychological safety ($r = 0.72$; $p < 0.001$). But there are no statistically significant correlations between affect-based trust and psychological safety or between affect-based trust and team effectiveness. There is a strong correlation between psychological safety and team effectiveness ($r = 0.70$; $p < 0.0001$).

Pureness of Scrum team correlates moderately negatively with psychological safety ($r = -0.42$; $p < 0.05$) and pureness of Scrum and team effectiveness ($r = -0.46$; $p < 0.05$).

Table I.
Scrum team member views (excluding scrum masters): Pearson's correlations

Variable	Mean	Variable number 1	2	3	4	5	6	7	8	9	10	11	12
1. Pureness of Scrum	3.8												
2. Empowerment	4.7	0.27*											
3. Accountability	5.0	0.23	0.62***										
4. Standing back	4.2	0.35**	0.74***	0.47***									
5. Forgiveness	2.6	−0.11	−0.16	0.03	−0.03								
6. Courage	4.1	0.06	0.41***	0.24*	0.28*	0.09							
7. Authenticity	4.2	0.32**	0.74***	0.50***	0.71***	−0.02	0.43***						
8. Humility	4.6	0.42***	0.85***	0.48***	0.76***	−0.23	0.35**	0.80***					
9. Stewardship	4.4	0.21	0.72***	0.47***	0.73***	−0.04	0.47***	0.78***	0.76***				
10. Affect-based trust	5.3	0.18	0.77***	0.51***	0.71***	−0.10	0.46***	0.77***	0.82***	0.80***			
11. Cognition-based trust	5.8	0.27*	0.77***	0.60***	0.62***	−0.34**	0.33**	0.67***	0.81***	0.71***	0.75***		
12. Psychological safety	5.5	0.19	0.36**	0.29*	0.15	−0.37**	0.20	0.18	0.25*	0.18	0.26*	0.35**	
13. Team effectiveness	3.4	0.27*	0.42***	0.33**	0.45***	−0.13	0.12	0.38**	0.51***	0.51***	0.44***	0.57***	0.25*

Notes: $n = 71$. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Lastly, Table III shows a comparison between adherence to a number of Scrum practices of teams represented in the Scrum master and rest of the team sub-sample. The percentages are mostly similar with the exception of "lessons learnt" Scrum practice, where 73 percent of the teams represented in the Scrum master sub-sample implemented the "lessons learnt" practice compared to only 51 percent of the rest of the team sub-sample teams.

7. Discussion and implications

The results imply that Scrum masters in this sample extensively use servant leadership, which contradicts Smith *et al.*'s (2004) assertion that servant leadership is not suited for high change environments such as software development. What was probably not considered by Smith *et al.* (2004) was the possibility of a formal role (e.g. the Scrum master) within a methodology (such as Scrum) that could provide a framework within which servant leadership could successfully deliver under dynamic and uncertain conditions. With this knowledge, software organizations could consider the various dimensions of servant leadership used in this research as a starting point for selecting, training and development of Scrum masters.

The high levels of psychological safety in both sub-samples suggest a favorable climate for learning (Rozovsky, 2015), yet from the results presented in Table III one may infer that less learning took place in the teams represented in the rest of the team members' sub-sample than in the teams that the Scrum master belonged to. According to Edmondson (1999) team learning behavior mediates between psychological safety and team performance, and this difference in learning may therefore explain why psychological safety correlates stronger with team effectiveness for Scrum masters than the rest of the team sub-sample. The statistically insignificant path between psychological safety and team effectiveness that was found in PLS analysis of the Figure 1 model, may be interpreted as another indication that learning was lacking in teams represented in the rest of the team sub-sample. This result implies that

Variable	Mean	1	2	3	4
1. Pureness of Scrum	4.5				
2. Affect-based trust	5.7	0.22			
3. Cognition-based trust	5.5	−0.28	0.18		
4. Psychological Safety	5.5	−0.42*	0.28	0.72**	
5. Team effectiveness	3.3	−0.46*	0.12	0.43*	0.70**

Notes: $n = 22$. *$p < 0.05$; **$p < 0.001$

Table II.
Scrum master Pearson correlations

Scrum practice	Percentage of teams that follow Scrum practice: Scrum master sub-sample (%)	Rest of team sub-sample (%)
Lessons learnt are regularly captured and resulting actions lead to improvements in the way we work	73	51
A Sprint planning meeting is held prior to every Sprint	77	72
We have daily Scrum meetings	91	87
After each Sprint we hold retrospectives	64	56
We make extensive use of the product backlogs, sprint backlogs and burn-down charts	64	58
A common definition of "Done" is agreed by members of the team	64	61

Table III.
Comparison of adherence of teams to specific Scrum practices (Scrum master vs the rest of the team sub-sample)

organizations could therefore be making a worthwhile investment by assisting Scrum teams to improve their learning. This is also an area that requires the focused attention of the Scrum master.

The PLS results confirmed that cognition- and affect-based trust in the Scrum master play a mediating role between the leadership behavior of the Scrum master and the perceived effectiveness of the team. As suggested by Moe *et al.* (2010), trust was therefore found to be an important determinant for success of the Scrum team. One of the inherent assumptions of the Schaubroeck *et al.* (2011) model is that servant leadership correlates stronger with affect-based trust than with cognition-based trust. This is not supported by the results of this study.

It was expected that adherence to Scrum practices would have a significantly positively impact on effectiveness and other team processes (Yu and Petter, 2014) (Watts, 2013). However, the PLS assessment of Figure 1 model shows no significant path between pureness of Scrum and team effectiveness for the rest of the team sub-sample. To the contrary, the feedback from Scrum Masters shows a moderately negatively correlation between pureness of Scrum and team effectiveness variables ($r = -0.42$) and between pureness of Scrum and psychological safety variables ($r = -0.46$). This result is surprising as the Scrum master is supposed to promote the use of Scrum practices in the team (Schwaber and Sutherland, 2017). It is therefore proposed that organizations train and support their Scrum masters to help them realize the benefits of Scrum practices.

The results show that team members generally reacted positively to Scrum masters that were more than coaches and facilitators, but who also led their teams. It seems that a positive cross-pollination took place between the two roles of Scrum master and team leader, which enhanced the Scrum master as servant leader. The traditional approach to team leadership therefore became more empowering and some of the preconditions for shared leadership (Carson *et al.*, 2007) may have been met as a consequence (Moe *et al.*, 2009). The results suggest that focusing solely on the structure of the Scrum team could be missing the point (Stef, 2013). Instead, the focus should be on the team processes such as leadership, psychological safety and trust, and the outcomes such as team effectiveness. The results indicates that merging the Scrum master and team leader roles could have a positive impact on effectiveness of the Scrum team and may in fact assist the team to become more self-organized over time.

As with any research, there are some limitations to this study. The survey was only performed at the unit level, and not the team and organizational level where there may still be opportunities (Kozlowski and Klein, 2000). The study was cross-sectional and did not show how results change over time (i.e. longitudinal). The team effectiveness ratings are based on team members' perceptions, rather than more objective measures of team effectiveness. The sample was relatively small, particularly the Scrum master sub-sample, and a third of the participants were working in Scrum teams at the same company. One should thus be cautious when making generalized conclusions based on this sample. This research looked at the focused leadership of the Scrum master, but in practice leadership is shared among the various members of the Scrum team.

As far as could be established, this paper presents the first research on servant leadership in software development teams in general and specifically with regard to Scrum teams. Several significant findings were presented with research and practical implications. This research confirms the importance of the Scrum master's servant leadership skills to team's effectiveness. At a time when the Scrum methodology is more and more applied outside of software development environment, the results presented in this paper, show the potential benefits of the methodology, and in particular the leadership role of the Scrum master, to a wide variety of teams operating in other dynamic environments.

References

Agile manifesto (2001), "The Agile manifesto", available at: www.agilemanifesto.org/iso/af/manifesto.html (accessed May 26, 2018).

Carson, J., Tesluk, P. and Marrone, J. (2007), "Shared leadership in teams: an investigation of antecedent conditions and performance", *Academy of Management Journal*, Vol. 50 No. 1, pp. 1217-1234.

Cooke, N. and Hilton, M. (Eds) (2015), *Enhancing the Effectiveness of Team Science*, 1st ed., The National Academies Press, Washington, DC.

Dannhauser, Z. (2007), "Relationship between servant leadership, follower trust, team commitment and effectiveness", unpublished PhD dissertation, University of Stellenbosch, Stellenbosch.

Dirks, K. and Ferrin, D. (2002), "Trust in leadership: meta-analytic findings and implications for organizational research", *Journal of Applied Psychology*, Vol. 87 No. 1, pp. 611-628.

Edmondson, A. (1999), "Psychological safety, trust and learning in work teams", *Administrative Science Quarterly*, Vol. 44 No. 1, pp. 350-383.

Farling, M., Stone, A. and Winston, B. (1999), "Servant leadership: setting the stage for empirical research", *Journal of Leadership Studies*, Vol. 6, pp. 49-62.

Green, G., Rodriguez, R., Wheeler, C. and Baggerly-Hinojosa, B. (2015), "Servant leadership: a quantitative review of instruments and related findings", *Servant Leadership: Theory and Practice*, Vol. 2 No. 2, pp. 76-96.

Greenleaf, R. (1977), *Servant Leadership: A Journey into the Nature of Legitimate Power & Greatness*, Paulist Press, Mahwah, NJ.

Hair, J.F. Jr, Anderson, R.E., Tatham, R.L. and Black, W.C. (1995), *Multivariate Data Analysis*, 3rd ed., Macmillan, New York, NY.

Highsmith, J. (2004), *Agile Project Management: Creating Innovative Products*, 2nd ed., Addison Wesley, Boston, MA.

Hoda, R., Noble, J. and Marshall, S. (2009), "Organizing self-organizing teams", paper presented at ACM conference, Cape Town.

Hu, J. and Liden, R. (2011), "Antecedents of team potency and team effectiveness: an examination of goal and process clarity and servant leadership", *Journal of Applied Psychology*, Vol. 96 No. 4, pp. 851-862.

Hu, L.T. and Bentler, P.M. (1999), "Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternative", *Structural Equation Modelling*, Vol. 6 No. 1, pp. 1-55.

Irving, J. (2005), "Servant leadership and the effectiveness of teams", unpublished PhD dissertation, Regent University, Virginia Beach, VA.

Karhatsu, H., Ikonen, M., Kettunen, P., Fagerholm, F. and Abrahamsson, P. (2010), "Building blocks for self-organizing software development teams", paper presented at IEEE conference, San Juan.

Kozlowski, S. and Ilgen, D. (2006), "Enhancing the effectiveness of work groups and teams", *Psychological Science in the Public Interest*, Vol. 7 No. 3, pp. 77-124.

Kozlowski, S. and Klein, K. (2000), "A multilevel approach to theory and research in organizations: Contextual, temporal, and emergent processes", in Klein, K. and Kozlowski, S. (Eds), *Multilevel Theory, Research and Methods in Organizations: Foundations, Extensions, and New Directions*, Jossey-Bass, San Francisco, CA, pp. 3-90.

Larson, C. and La Fasto, F. (2001), "The team effectiveness questionnaire", in Northouse, P. (Ed.), *Leadership: Theory and Practice*, 2nd ed., Sage, Thousand Oaks, CA, p. 184.

Laub, J. (1999), "Assessing the servant organization; development of the organizational leadership assessment (OLA) model", unpublished PhD-dissertation, Florida Atlantic University, Boca Raton, FL.

Liden, R., Wayne, S., Zhao, H. and Henderson, D. (2008), "Servant leadership: development of a multidimensional measure and multi-level assessment", *The Leadership Quarterly*, Vol. 19 No. 1, pp. 161-177.

McAllister, D. (1995), "Affect-based and cognition-based trust as foundation for interpersonal cooperation in organizations", *Academy of Management Journal*, Vol. 38 No. 1, pp. 24-59.

Moe, N., Dingsoyr, T. and Dyba, T. (2010), "A teamwork model for understanding an agile team: a case study of a Scrum project", *Information and Software Technology*, Vol. 52, pp. 480-491.

Moe, N., Dingsoyr, T. and Kvangardsnes, O. (2009), "Understanding shared leadership in agile development: a case study", paper presented at IEEE conference, Honolulu, HI.

Parris, D. and Peachy, J. (2013), "A systematic literature review of servant leadership theory in organizational contexts", *Journal of Business Ethics*, Vol. 113, pp. 377-393.

Pearce, C. and Conger, J. (2003), *Shared Leadership: Reframing the Hows and Whys of Leadership*, 1st ed., Sage, Thousand Oaks, CA.

Rozovsky, J. (2015), "The five keys to a successful google team", available at: https://rework.withgoogle.com/blog/five-keys-to-a-successful-google-team/ (accessed May 26, 2018).

Russell, R. and Stone, A. (2002), "A review of servant leadership attributes: developing a practical model", *Leadership and Organization Development*, Vol. 23 No. 3, pp. 76-83.

Schaubroeck, J., Peng, A. and Lam, S. (2011), "Research report: cognition-based and affect-based trust as mediators of leader behavior influences on team performance", *Journal of Applied Psychology*, Vol. 96 No. 4, pp. 863-871.

Schwaber, K. and Sutherland, J. (2017), "Scrum guide", available at: www.scrumguides.org/docs/scrumguide/v2017/2017-Scrum-Guide-US.pdf (accessed March 21, 2018).

Smith, B., Montagno, R. and Kuzmenko, T. (2004), "Transformational and servant leadership: content and contextual comparisons", *Journal of Leadership and Organizational Studies*, Vol. 10 No. 4, pp. 80-91.

Spears, L. (1995), *Reflections on Leadership: How Robert K. Greenleaf's Theory of Servant-Leadership Influenced Today's top Management Thinkers*, Wiley, New York, NY.

Stef, F. (2013), "Team leaders and scrum masters", available at: http://mozaicworks.com/blog/team-leaders-and-scrum-masters/ (accessed May 26, 2018).

Van Dierendonck, D. (2011), "Servant leadership: a review and syntheses", *Journal of Management*, Vol. 27 No. 4, pp. 1228-1261.

Van Dierendonck, D. and Nuijten, K. (2011), "The servant-leadership survey (SLS): development and validation of a multi-dimensional measure", *Journal of Business in Psychology*, Vol. 26, pp. 249-267.

Watts, G. (2013), *Scrum Mastery: From Good To Great Servant Leadership*, Inspect & Adapt Ltd, Cheltenham.

Yu, X. and Petter, S. (2014), "Understanding agile software development practices using shared mental models theory", *Information and Software Technology*, Vol. 56 No. 1, pp. 911-921.

Further reading

Sarros, J. and Sendjaya, S. (2002), "Servant leadership: it's origin, development, and application in organizations", *Journal of Leadership & Organizational Studies*, Vol. 9 No. 1, pp. 57-65.

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