The new genesis of knowledge:

Shared leadership for knowledge development

Abstract

Today's issues, like sustainable growth, are demanding for leaders, employees, knowledge and organisational innovation. Leadership literature until now is restrained by a hierarchical bias. This study takes an Ecologic System Model, and tests the contribution of shared leadership, self-directive employeeship, and knowledge as intermediate capability, in relation to profit, society and planet.

Directive leadership and followership showed no relationship contrary to shared leadership and self-directive employeeship, where employeeship scored much higher than leadership. 'Making the difference' is determined by employeeship style, and not by leadership style. For societal performance only self-directive employeeship showed effect, completely mediated by knowledge.

The results reinforce the Resources Based View, with knowledge as mediating capability. Leadership and employeeship might develop towards sharing direction and meaning between employees and other stakeholders. This might imply cooperation and co-creation instead of competition. Self-directive employeeship and shared leadership can be the ingredients for knowledge creation and adaptive organisations.

Keywords: knowledge, innovation, sustainability, shared leadership, dynamic capabilities, self-direction

1. Introduction

How can organisations prepare for and adapt to the knowledge economy? Do organisations make the turn towards knowledge as one of their most important dynamic capabilities? Demands for organisations and for society are growing more and more complex and diverse, and require perhaps new knowledge and appropriate competences of leaders and employees. This study may give some direction to the development of leaders and employees and the creation of knowledge in order to contribute to performance of organisations.

Today's performance of an organisation needs to be measured by People, Planet and Profit as pointed out to be in the demand for integrated reporting and development in market requirements. Since the sixties we saw competition on price and cost efficiency, cooperation on quality in production, diversification and focus on service for the client, and renewal of businesses by co-makership and innovation (Bolwijn & Kumpe, 1989; Volberda, 1992). This development sequence of pioneering, growth, diversification and renewal (Holling, 1973) seems to reiterate in this century at a societal level by an increasing pressure for shareholder value and the rising attention to sustainability and corporate social responsibility. The interwoven nature and the transitional character of today's issues like healthy ecosystems, inclusive society and sustainable growth make the context of doing business complex. Irresponsibility towards the environment and exclusive privileges have upset the social, ecologic and economic balance (Wijffels, 2012). This is reflected in products, processes, and markets, which bear intrinsically features of sustainability issues, that cannot be immediately examined in the product, like for instance credence. Future economic value comes from more complex attributes that will take business into the realm of wicked problems (Camillus, 2008).

Rittel and Webber (Camillus, 2008; Conklin, 2005; Rittel & Webber, 1973) deepened comprehension of the increasing complexity of these issues with the term 'wicked problems'. A wicked problem is tough to describe, the solution is not true or false, and it causes new problems, the problem changes over time, is essentially unique, has innumerable causes and umpteen frames of reference, the actor is responsible for the attempts to cope with the issue, and the problem is never solved. In fact, it's the social complexity of wicked problems as much as their technical difficulties that make them tough to manage (Leijnse, 2006; Volberda & Van den Bosch, 2004b). At the same time technological abilities and information flows are enormous, which enables new ways of work and the rise of new business concepts and stretched views on leadership, like High Performing Organisations, multi-dimensional organisations, servant leadership, shared leadership and social innovation. It seems that organisations have to achieve on all frontiers and have to master all the required knowledge. Knowledge and generating new knowledge becomes more and more a determining factor for success (Clippinger, 1999; Grant, 1996; Von Krogh, Nonaka, & Rechsteiner, 2012; Weggeman, 1997).

How can companies tame, since they can't solve, such problems and achieve on all those frontiers? Wicked phenomena, like sustainability, require continuously new knowledge and a seemly leadership style (Peterson, 2009; Von Krogh, et al., 2012). But leadership literature until now is restrained by a 'centralized bias' (Gourlay, 2006) . In their review about leadership and organizational knowledge creation Von Krogh, Nonaka and Rechsteiner (2012) summarise that the focus is clearly on centralized leadership and future research should elaborate leadership at different levels in relation to knowledge creation and performance. Although leadership also can be applied to an employee level,

we prefer employeeship (Bertlett, Johansson, Arvidsson, & Jern, 2012) for the subordinate levels and leadership for the upper echelons. This implicates that different leadership styles are mirrored by discerning employeeship styles. There are well written cases about new leadership styles (Pearce, Manz, & Sims, 2009), and knowledge often takes part in it, however, highlighting employeeship and a more quantitative research into (new) styles of management and its effect on knowledge as a dynamic capability is needed (Peterson, 2009).

The purpose of this study is to test the effectiveness of leadership styles and employeeship styles, and knowledge as a capability, related to profit, people and planet. It will contribute to a view on management and its influence on generating knowledge and performance. The background of the role of knowledge and the views on leadership are found in section 2. In section 3 we present the conceptual model, including its hypotheses. Method and results are described in section 4 and 5 respectively, followed by a discussion about research findings, implications for practice and outlook for future developments and research.

2. Knowledge, leadership, and employeeship at a closer look

2.1. Knowledge

Definitions of knowledge differ in categories to which knowledge is attributed. Some definitions grasp knowledge by summing up some of the categories like: belief, rule, scheme, model, script, skill, network, ability, discourse, story, routine or proposition[1] (Berends & Weggeman, 2002). We concord with the works of Nonaka and Takeuchi (1995) who cite Plato: knowledge is a 'justified true belief', where belief means a

[1] Note that stored data or information is not seen as knowledge. Data must have place in a rationale to become knowledge (Berends & Weggeman, 2002).

representation of the world and justified and true refer to reliability and validity. However, not every representation of the world can be tested, a lot of it is lying in assumptions or belief systems. Therefore Polanyi (1966) introduced the term tacit knowledge, implicit justified true belief. This reasoning builds upon the distinction between 'know that' and 'know how' from Gilbert Ryle (1949).[2]

Sometimes knowledge is very pragmatic (Does it make sense, is it useful) and sometimes it has a social perspective: knowledge as a 'collectively accepted system of belief' (Berends & Weggeman, 2002). The latter also bears a power issue: does everyone have the same chances to put forward his opinion and does only the power of the argument count (Habermas, 1984)? These interpretations represent the main scientific pre-assumptions and paradigms of science. For the goal of this study we use the empirical pragmatic point of view of knowledge as a justified true belief.

One of the features of knowledge is its relational nature. 'Knowledge is beliefs and commitment, action and goal, meaning and context' (Nonaka & Takeuchi, 1995). This innate relation with the system, not to confuse with the social definition of knowledge as a collectively accepted system, is the distinction between data or information and knowledge. By definition information must be recognised to be correct (Balconi, et al., 2007) as a representation of the real world to become knowledge. It only has meaning in relation to the environment or market. If one forgets this relation and one doesn't have a relation with the environment it doesn't mean anything (Gibson, 1977). Besides the aspect of meaning, expertise lies is in the system. The issues come from the system and

[2] Later Gorman (2002) discerned also know what, know when, know how and know why, and also know who (Johnson, Lorenz, & Lundvall, 2002) was added. These distinctions show overlap and are not seen as a clear grading criterion (Balconi, Pozzali, & Viale, 2007)

when a client asks the newly appointed supermarket assistant to hand over the sugar from the upper shelf left side, the knowledge comes from the environment. Polanyi (1966) and Nonaka and Takeuchi (1995) discern two types of knowledge: explicit and tacit. To cope with wicked problems a third possibility is proposed: new knowledge (Nonaka & von Krogh, 2009; Peterson, 2009).

Explicit knowledge can be codified, by articulation, standardization, medium (paper, machine) or acquisition. Codification depends on the economic advantage of it. Much knowledge isn't codified, but can still be explicit. The code means the correspondence between physical and symbolic entity; the perfect codification is one that expresses isomorphia of meaning (Balconi, et al., 2007). Because of the requirement of completeness and intersubjectivity, absolute codification is impossible. There is a degree of codification, dependent on when it is applicable for a certain group. After knowledge has been made explicit it can turn out to be a commodity good.

Tacit knowledge concerns skills, know how (Nelson & Winter, 1982) which cannot be made explicit, for instance the taste and intuition of the brewer. 'We know more than we can tell' said Polanyi (Polanyi, 1958). Attributes of products can be copied, but knowledge in people is much more difficult to codify. People in organisations often have unaware search and problem solving heuristics and to enhance this knowledge it requires socialisation and a learning environment (Peterson, 2009), which will take some time and comes near to a capability according to the Resource Based View (Barney, 1991a; Wernerfelt, 1984).

But, to cope with wicked problems, the most needed knowledge is new knowledge. It is hard to imagine how existing knowledge can properly produce or deliver sustainability or contribute to issues which come by the same existing knowledge. All existing knowledge must be suspected (Peterson, 2009), because wicked problems can only be addressed by new knowledge, which highlights the strategic value of new knowledge. 'The significant problems we face cannot be solved at the same level of thinking we were when we created them' (Einstein, attributed). New knowledge arises largely from new paradigms or new mental models. This is a fully open process with more parties than the usual partners in the supply chain. The problem with sustainability is that so little practice is available and success remains to be shown. In fact, by definition, success of new knowledge remains to be shown, or made plausible by empirical quantitative research (Peterson, 2009).

2.2. Leadership

Organisations are characterised by their communication in the form of decisions (Luhmann, 1984). According to Luhmann (1984) every system is tuned and held together by communications, and organisations have a special type of that communication: decisions. The decisions represent and determine, like DNA, what the organisation really is, which make decisions an important focal point for discerning leadership styles or employeeship styles. To give an overview of relevant leadership theories, we will consecutively discuss the person involved (who), the method (how), the content (what), the process (when), and the reason (why), concerning decisions.

Essentially there are two main styles in leadership: a directive, often hierarchical, and a participative, more democratic style (Verkerk, 2004). Hierarchical and democratic refer to where leadership comes from: who are involved as leaders. Does it come from one

person, the linking pin in the hierarchy, or are more groups involved? Hernandez et al. (2011) discerned in their illuminating overview of leadership theories five loci as the source from where leadership arises: leader, context, follower, collectives or dyads. Although the latter four loci clearly are groups of people, the reviewed theories deal with the attribution of leadership from these groups to persons in the hierarchy, while hierarchy is presupposed. Literature about policy making by employees or employeeship is rare (Bertlett, Johansson, & Arvidsson, 2011).

Another distinction, which goes along the same dividing line, is the one between directive and participative leadership. How leadership is executed, one way directive or multi-directional participative, addresses the topic of sources and targets for information, or the psychological mechanism how leadership is transmitted: by cognition, affection, action or trait (Hernandez, et al., 2011). Both classifications are about communication: How is the message communicated, by power or by trust (Verkerk, 2004) which is sender oriented, and how is it transmitted to the loci (oriented to the motivation target of the receiver).

Besides the who and the how of leadership, content is a part of it. What is the message? The content can be oriented towards short term practices, i.e. performance, or towards long term future, i.e. change. The first one often is captured by the term transactional leadership or management, with the components: goals (cognitive), compensation and benefits (affective), and leadership behaviour (action) from tell and sell and delegation to coaching (Hersey & Blanchard, 1977). Leading change for the future is often taken as leadership in contrast to management (Mintzberg, 2004) and called transformational leadership (Bass, 1985; Burns, 1978) with components like vision (cognitive),

appreciation and expectation (affective), and modelling the values and beliefs through action.

When are decisions taken in the processes of organisation? The leadership process determines the when: The sequence of decisions. According to the theory of the firm (Williamson, 1964) also referred to as positioning school (Mintzberg, Ahlstrand, & Lampel, 1998) it starts with determining product-market-combinations, followed by design of the organisation scheme, process descriptions, job descriptions and as a last step hiring people. According to the Ecological System Model in Figure 1 (Crielaard, 2008a) it goes the other way round, with employee-market-connection, followed by resources competences and company capabilities, activities, performance or products, and succession of new environments as seen by the Resource Based View (Barney, 1991b; Teece, Pisano, & Shuen, 1997; Wernerfelt, 1984). The focal point of time is: In what order is the sequence of decisions? When does organising find place: in a counter-clockwise manipulated order or following a more natural emerging process (Mintzberg & Waters, 1985)?

A last[3] perspective on leadership is the reason of leadership. Why does leadership exist? The Maslow pyramid sometimes is explained by power and possession (respectively: survival and sex, safety, self-love, status, smug) (Kets de Vries, 2009). On the other hand stewardship can colour the pyramid in positive terms (respectively: steady state, sanity, social belonging, self-esteem, servant leader) (Collins, 2001; Greenleave, 2002). Here the raison d'etre of leadership is explained by the personality of the leader. There is also an

[3] We skip the where-question and the which-tools-question, because geographic cultural differences and technological innovations are still under rapid developments and are not mature enough to fit them into the discussion.

organisational argument for leadership, which resembles McGregor's (1960) distinction between perceiving employees as X-subordinates who are motivated by authoritative direction and control or perceiving employees as Y-cooperates, who are self-managed. Key question is: do we need leaders to order and organise or can we trust the future of the company to the employees?

The differences in styles are not all black and white, but more or less, with umpteen combinations in between. In this study we will use the distinction between directive and participative leadership. Their equivalents in employeeship will get attention in the next paragraph.

2.3. Shared leadership, employeeship

To investigate leadership at different levels in the organisation in relation to knowledge and performance (Von Krogh, et al., 2012), we highlight the discussion around shared leadership, distributed leadership, followership, or employeeship, which all indicate an increasing role for employees.

Sociotechnical systems deal with the growing role of employees (Achterbergh & Vriens, 2009; de Sitter, 1994; Emery & Trist, 1972), organised in autonomous workgroups; in fact it is an organisation design theory and practice about joint optimisation of technological performance and the quality of people working together in teams. Other sources for autonomous workgroups are the worm of Gibb (1954), who formulated the notion of distributed leadership (Bolden, 2011; Gronn, 2000), and literature about the wisdom of teams and self-managed teams (Katzenbach & Smith, 1992). Other terms in use are followership (Van Vught, Hogan, & Kaiser, 2008), collective leadership (Denis, Lamothe, & Langley, 2001), collaborative leadership (Rosenthal, 1998), co-leadership

(Heenan & Bennis, 1999), emergent leadership (Beck, 1981), and the concept of shared leadership (Pearce & Conger, 2003). Common in these approaches is a shift in focus from the individual heroic leader to a systemic perspective, whereby leadership is an emerging collective social process by multiple actors (Uhl-Bien, 2006). For an extended discussion we refer to the review article of Bolden (2011) who questions if new concepts like shared or distributed leadership are really genuine alternatives or are they simply 'the emperor's new clothes'?

The discussion between Pearce, Conger and Locke (2008) sharpens the saw about what is at stake. Shared leadership describes contexts in which leadership and influence is distributed across teams (Pearce & Manz, 2005) and is defined as: "a dynamic, interactive influence process among individuals in groups for which the objective is to lead one another to the achievement of group or organizational goals or both. This influence process often involves peer, or lateral, influence and at other times involves upward or downward hierarchical influence"(Pearce & Conger, 2003). According to Locke, what should not be shared are mission and vision, leaders as the primary source of motivation, selection, and promoting change, which all belongs to the top leader. Someone has to make clear what must be changed and someone has to have the final say to prevent anarchy, chaos, paralysis and group consensus where the essence is watered down and becomes meaningless. CEOs should listen to anybody – inside or outside the company – and in the end the CEO has to make the final choice. The reason for this is to prevent organizational chaos and anarchy. Organizations need a clear sense of purpose and mission (Pearce, et al., 2008). Opposite Pearce and Conger expound that visions are shaped by multiple parties, in their view management teams and senior executives. A vision shaped collectively is possible and more powerful than imparted from above;

actually, position power may backfire: disappearing of knowledge, compliance instead of consensus and activities to undermine the position power. Pearce and Conger 'view an expanded role for "followers" in the leadership process' while Locke supports 'empowerment (delegation) as long as the followers act in consonance with the vision, core values, and goals of the organization'(Pearce, et al., 2008). The fundamental distinction is that the influence process is more than downward on subordinates; it is sharing among a broader range of individuals instead of one (Pearce, et al., 2009). Leadership is almost per definition a social process, others are needed. It is not one person in charge and others follow. In our view, as given in the citation, Locke confuses shared leadership with delegation.

The discussion still has a centralised bias (Von Krogh, et al., 2012). A co-existence with hierarchical top-down leadership is presupposed and framed by an underlying ontology that shared leadership and followers are a part of leadership (Drath, et al., 2008). While leadership may be distributed, power often is not (Hatcher, 2005); Day et al. (2009) suggest that distributed leadership comes from external demands or from intentional intervention of formal leaders, or even is an instrument to reform the organisation (Hargreaves & Fink, 2008), and legitimisation of domination (Gordon, 2010). The issue is whether the existence of a shared leadership theory is a distinctive concept (Fairhurst & Grant, 2010), although Bennet et al (2003) define leadership as 'an emergent property of a group or network of interacting individuals', and Alvesson and Svenningsson (2003) question the existence of leadership and suggest the possibility of non-existence of leadership as a distinct phenomenon.

Recent trends in speed of delivery, availability of information, complexity and changing roles in organisations underscore the importance of shared leadership and reduce the likelihood that a single person has all the required leadership skills and competencies (Carson, Tesluk, & Marrone, 2007). Gronn (2000) pleaded to fundamentally reframe leadership as fluid and emergent, rather than a fixed phenomenon. The ones with the knowledge, skills and abilities are in charge (Carson, et al., 2007). Again, as with leadership, the question is: who takes the decisions (Luhmann, 1984) and masters the content for the decision (Luhmann, 1984).

Besides this discussion restrictions of the current research are: limitation within organisational boundaries instead of networks, a focus on the holders of the formal positions, most research is confined to schools or nursery, most research is qualitative and not focused on contribution to outcome (Bolden, 2011). The search for the essence of (shared) leadership might improve when research should focus on other factors as leadership (Kelly, 2008), for example knowledge (Peterson, 2009), sense-making and meaning (Louis, Mayrowtz, Smiley, & Murphy, 2009), trust (Verkerk, 2004), or 'leadership development' instead of leader or management development (D. V. Day, 2000). It also reflects the reality of leadership in many workplaces. What is needed at this stage in the field's development is more empirical research to explore how best to operationalise and test shared leadership (Pearce, et al., 2008). The concept of shared or distributed leadership needs much more research on the former topics to be truly successful and be able to move beyond adolescence to maturity (Bolden, 2011).

To be clear on the levels of leadership as discussed above, we use the term employeeship, self-direction at lower levels, and keep the term leadership for the upper echelons.

Employeeship is defined by its three most important elements: responsibility, loyalty and initiative (Møller, 1994) besides other things like productivity, relations, quality and commitment to organisational goals, although Bertlett et al (2011) pay more attention to 'the behaviour that constitutes the dynamic process of mutual work relationships between two or more employees, based on task and social abilities'. Taken the two together we define employeeship as how people have initiative, responsibility and ability in their work situation. The discerned employeeship styles are followers, who need recognition and work according assignments following rules and procedures, and self-directive cooperates, who determine their goals, work processes and learning.

3. Conceptual model, research model and propositions

'Thus far, .. leadership literature have not been extended to work on organizational knowledge, prompting an important question: How does leadership impact on knowledge creation in organizations?' (Von Krogh, et al., 2012). To tackle wicked problems new knowledge is needed, and, according to Petersons framework for aligning knowledge and leadership to performance (2009), creating new knowledge requires shared leadership. New knowledge arises largely from new paradigms or new mental models, in which shared leadership and employeeship play important roles, which need to be developed and tested (Bolden, 2011; Pearce, et al., 2008). In our research model the effectiveness of leadership styles, employeeship styles and knowledge, as an intermediate factor, is tested in relation to performance.

To test these claims we use the Ecologic System Model (Crielaard, 2006a, 2008a) (Figure 1), showing economic (macro-) conditions and market dynamics as input to a community of employees, with their appropriate roles and individual competences. Onward it follows the Resource Based View in clockwise direction: roles and competences in an emergent

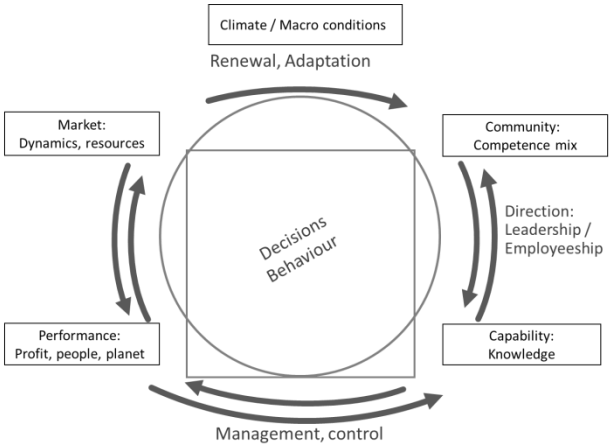

Figure 1: Ecologic System Model

process of development of capabilities, here knowledge, for the processes to deliver performance. It also discerns two styles of leadership and organising as described in section 2.2: directive hierarchical in a counter clockwise order and shared democratic leadership in clockwise sequence. Similarly for employees this corresponds with followers working according to commands, job-descriptions and procedures(counter clockwise), and, clockwise, cooperates who are self-directive, self-starting, independent and feel responsible for the complete process.

The central question of this research is: *which style of leadership and style of employeeship contributes best to performance, directly or via knowledge as an intermediate capability?*

Direction, capability and performance from this conceptual model are translated in the following research model. Figure 2 shows knowledge as an intermediate dynamic capability between leadership or employeeship and performance.

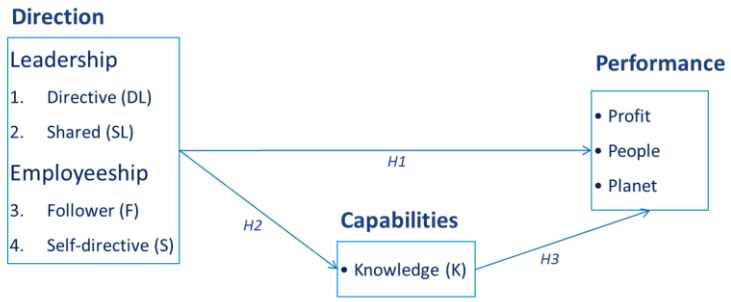

Figure 2: Research model linking leadership to knowledge and performance

Literature about High Performing Organisations (De Waal, 2010) and Shared leadership (section 2.3) suggest that participative leadership and self-directive employeeship styles contribute more to performance than directive styles. Therefore directive leadership and followership can be seen as the zero-hypothesis which have to be rejected.

Hypothesis 1.0: Directive leadership and followership have a positive relationship with profit, planet and people.

Hypothesis 1.1: Shared leadership and Self-directed employeeship have a positive relationship with profit, planet and people.

Concerning the relation to knowledge, Peterson (2009), Bolden (2011), and Pearce et al.(2008) claim that shared leadership and employeeship styles are suited for creating new knowledge and making progress in taming the wicked problems. The influence of directive leadership and followership can be seen as the zero-hypothesis.

Hypothesis 2.0: Directive leadership and followership have a positive relationship with knowledge.

Hypothesis 2.1: Shared leadership and Self-directed employeeship have a positive relationship with knowledge.

To show knowledge as a dynamic capability (Teece, et al., 1997) to be an intermediate factor for performance, knowledge must be significant for performance and the estimates for leadership and employeeship, controlled for knowledge, have to be lower than in hypotheses 1 (Baron & Kenny, 1986). As a consequence of hypotheses 1.0 and 2.0 directive leadership and followership are not applicable and the zero hypothesis is that knowledge doesn't have any influence on performance.

Hypothesis 3.0: Knowledge has no relationship with profit, planet and people.

Hypothesis 3.1: Shared leadership and Self-directed employeeship, controlled for knowledge, have a less positive relationship with profit, planet and people than in H1.1.

Hypothesis 3.2: Knowledge, controlled for both styles of leadership and both styles of employeeship, has a positive relationship with profit, planet and people.

4. Methods

4.1. Research group and data collection

Unit of analysis is an independent operating unit: a SME or an autonomous subsidiary belonging to a bigger organisation. The empirical research was conducted in the Netherlands at 49 profit organisations, divided in 55% part of the manufacturing industry, i.e. Metal&Machinery (6), Construction (4), Infra (7), Agrofood (3), Chemicals (5), Automotive (1), Printing (1), and 45% part of the service industry, i.e. R&D (3), consumer services (3), ICT (10), Insurance (3), economical services (3). The mean size of the organisations was 296 full-time employees, varying from 30 f.t.e. tot 850 f.t.e.

Several channels for approaching companies were used, which resulted in a convenience sample with sufficient variation.

The 251 respondents were equally divided in managers (51%) and cooperates (49%). Based on research requirements (Field, 2009), and to deal with inter-observer reliability and potential common method bias the questionnaires were separated and collected from multiple respondents per organisation. The number of respondents per organisation ranged from 3 to 6 (mean 5.1) per organisation. Students were present in the room for clarifying terms and to prevent mutual influence between respondents, when respondents filled in the questionnaires. Positive effect of this labour intensive method was a response rate of 95%.

To assure confidentiality, names of respondents and organisations are not revealed. Every organisation received a full report of their scores in relation to the mean scores with comments and a dedicated advice about possible management measures.

4.2. Measurement and validation

The research uses a cross-sectional design (De Vaus, 2008). In order to test the model empirically, the factors as derived from literature were operationalised in a survey questionnaire, mostly using existing scales from previous research (Appendix 1). Because hard data on sustainability topics in SME's are an exception, we used the respondents' perception of the outcome variables. All questions were measured on a Likert scale from 1 – 7 and each part has been pretested.

For measuring leadership styles and employee styles we developed appropriate questions based on the stipulative definitions. The Cronbach α (Directive leadership .64, Shared leadership .59, Followership .49, Self-directive employeeship .74) and factor analysis

confirmed the constructs. Outcome indicators in this study are based on sustainability indicators from the Global Reporting Initiative (2000, 2006) and comprise the measurement of perceived performance on people(Cronbach α .76), planet(Cronbach α .85) and profit (Cronbach α .78) and confirmed by factor analysis. Also perceived results on knowledge were formulated as capabilities, based on previous research (Jacobs & Snijders, 2008; Weggeman, 1997). The constructs were confirmed by Cronbach α (.78) and factor analysis.

4.3. Method of data analysis

According to the data structure a multilevel analysis was executed to determine the relations in the conceptual model. To control for embedded company effects we took the company as a variable on a higher hierarchical level.

The multilevel regression analysis can be compared with an Ancova analyses where the hierarchical data structure is factored in. The covariance structure is not clear beforehand, so we took consecutive steps to build up models in order to compare the explaining power of the models. The explaining power was tested by a Chi-square statistic and represented by the -2 Log Likelihood (-2LL). When the value is lower than the earlier model and the X^2change is higher than the chi-square critical values with the calculated degrees of freedom, then the model is significant better. First we added random intercepts to the model and second we added random slopes in the multilevel regression analyses. Covariance mainly occurred concerning the intercepts, not in relation to the estimates (comparable with regression coefficients). In other words, the company as a variable causes a significant variability in the constant (the intercept) factor, but no significant variability in the estimate (the slope).

To test knowledge as an intermediate factor we executed the four Baron-Kenny steps(Baron & Kenny, 1986; Kenny, 2012).

5. Analysis and results

The scores in figure 3 indicate the estimates of the relationships between leadership, knowledge and profit. In all analyses the intercept, the company as control variable, was highly significant with a high estimate, which justifies the multi-level approach.

Concerning hypothesis 1 there is no relationship between directive leadership and profit (-.04, p=.67), nor between followership and profit (.08,p=.28), both making up the zero hypothesis. Between Self-directive employeeship and profit there is a significant relationship (.43***), whereas the shared leadership style is not significant, but as a best linear unbiased estimation (-15,p=.15) it might make sense to take shared leadership into account as a factor influencing profit, albeit negatively. In case of inconsistent mediation it might be that the mediator suppresses the initial variable, while there is a relationship. For the dependent variable profit, the zero-hypothesis 1.0 is rejected and hypothesis 1.1 is supported for the employeeship part; shared leadership indicates a negative influence.

Taking knowledge as the dependent variable (hypotheses 2) the zero hypothesis can be neglected, because there is no relationship of directive leadership or followership with knowledge. Both opposite two styles shared leadership and self-directive employeeship have a significant positive relationship with knowledge; from the two employeeship (.36***) turns out to have a much higher estimate than leadership (.14*). Hypotheses 1.0 is rejected and 1.1 is supported. According to Baron and Kenny step two, the initial variables, shared leadership and self-directive employeeship, are related to the mediator.

The third and fourth step of the Baron and Kenny steps for mediational analysis are taken together in one statistical analysis regarding hypothesis 3. Directive leadership (-.07,p=.42) and Followership (.09,p=.21) don't have any relationship with performance as a logical consequence of the former hypotheses; in fact, they are not applicable. Regarding shared leadership (-.20*) and self-directive employeeship (.30**) both show a lower estimate than in hypothesis 1, whereas knowledge (.38***) shows a highly significant high estimate. Hypothesis 3.0 is rejected and3.1 and 3.2 are supported; partial mediation by knowledge is demonstrated and knowledge and self-directive employeeship are the most important positive influencing factors for profit.

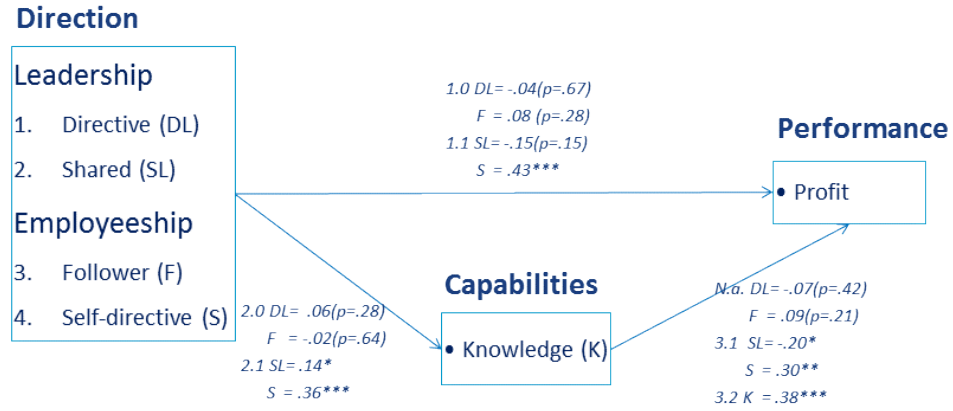

Figure 3: Results linking leadership to knowledge and profit

***p<.001, **p<.01, *p<.05

Concerning the output variable people, Figure 4 shows some peculiar differences. The total effect of directive leadership is significant and the effect of shared leadership is not. The indirect effect of directive leadership (.12, p=.10) is a little less than the total effect (.15*), but there is no relationship between directive leadership and knowledge, which indicates no mediation or a small partial mediation by knowledge caused by another variable beyond directive leadership causing knowledge and the outcome (Kenny, 2012). Followership doesn't have any relationship in these equations, nor does shared leadership. Self-directive employeeship however shows a total effect (.25**), which is

completely mediated by knowledge (.43***; S = decimated and not significant). These results means that, concerning the outcome variable people, hypothesis 1.0 is rejected for followership, but not for directive leadership. Hypothesis 3.0 is rejected, but hypothesis 3.1 is only supported for the self-directive employeeship part, and hypothesis 3.2 is supported. It is questionable if directive leadership is not applicable in step 3.

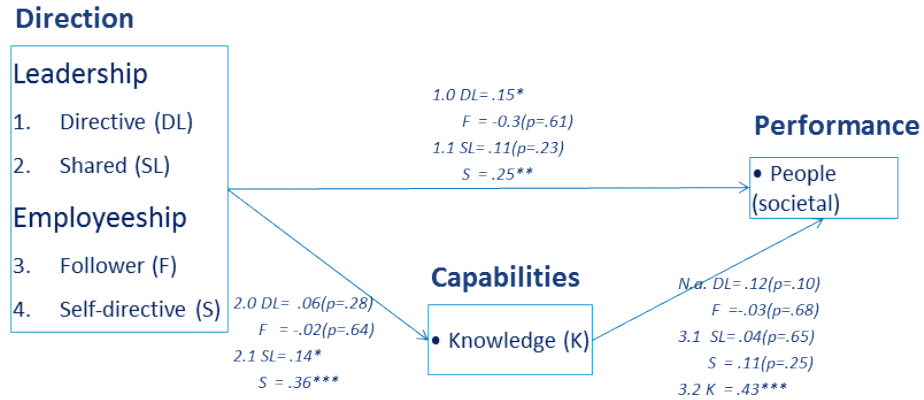

Figure 4: Results linking leadership to knowledge and people

***p<.001, **p<.01, *p<.05

The results for the dependent variable planet in Figure 5 show the same tendencies as with the dependent variable profit. Directive leadership and followership don't have any relationship in the equations. A difference is that now also shared leadership doesn't show a total or an indirect relationship with the outcome. Self-directive employeeship has a significant total effect (.33**), which is only mediated for a small part (.33** -/- .27*) by knowledge (.18[1]). Concerning the outcome variable planet, hypothesis 1.0 is rejected and 1.1 is supported for the employeeship part. Hypothesis 3.0 is rejected, hypothesis 3.1 is supported for the employeeship part and hypothesis 3.2 is supported.

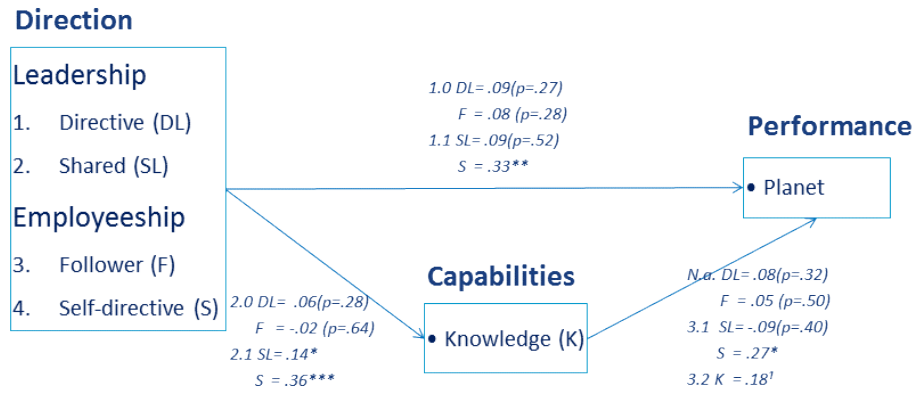

Figure 5: Results linking leadership to knowledge and planet

***p<.001, **p<.01, *p<.05, ¹p<.1

6. Conclusions and discussion

Knowledge shows to be the most important factor for performance in this study, and turns out to be an intermediate factor between direction and performance. Taken the conceptual model in Figure 1 this research shows as a consequence of this mediation a clockwise direction in achieving knowledge and results, and so it reinforces the RBV. To deepen this conclusion, it should be interesting for further investigation to test knowledge as an intermediate factor between other elements of the competence mix and performance.

This study also supports that knowledge requires shared leadership and self-directive employeeship. More and more knowledge and creating new knowledge is taken as the strategic factor of the utmost importance (Nonaka & von Krogh, 2009; Peterson, 2009). This research points out that, contrary to directive leadership and followership, it is shared leadership and self-directive employeeship, which are the ingredients for knowledge and strategic advantage.

More important than leadership are the differences in employeeship. Regarding the scores at the outcome variable profit, ‘making the difference’ is determined by employeeship style, and not, as the vast amount of leadership literature suggests, by leadership style. The major difference is in contribution between followership and self-directive employeeship, where followership doesn’t show any contribution and self-directive employeeship has a high and significant estimate both, in creating profit as in creating the organisational capability knowledge. This raises some practical issues: Why do most MD-programmes focus on leadership for their contribution to results, instead of focussing on knowledge creation and involve all the employees in a Human Talent Development and organisation development programme?

Another striking point is the significant negative value of shared leadership in the contribution to performance. The alteration of the minus sign of the shared leadership factor in the discerned equations might explain a low significance in the total effect, while there is a relationship, albeit negative. Of course, workers are merely carrying out and realising the things to get done. But that doesn’t explain directive leadership being of no influence or shared leadership having a negative influence. Probably managers stand in the way of self-directive workers or distract them from performing. This is endorsed by parallel research on the same database, where internal hostility (non-cooperative employees and disturbance by managers) has a negative correlation with performance. Of course this distraction is not the case with the follower-style; what is indifferent cannot become more indifferent. This explanation probably is plausible, but it needs additional study.

With regard to the performance criteria people and planet, there are differences. For the outcome ‘people’ the influence of self-directive employeeship is almost completely mediated by knowledge, and directive leadership seems to be important and shared leadership not. The explanation could be that societal goals are the individual interests of one leader who directs his personal subjects into the organisation’s activities. The positive effect of self-directive employeeship and the non-effect of followership keep the same influence, but the subject is imparted by the directive leader and well adapted by the employees; it is certainly also in the proximity of their daily life. This might imply that societal values are the explaining factor beyond the influence of directive leadership, but other explanations are possible. Concerning the dependent variable ‘planet’, knowledge is less important and leadership doesn’t play any role. The main influencing factor is self-directive employeeship, which could mean that planet deals with not codified knowledge, despite the vast amount of sustainability certification tools (GRI, Breeam, ISO14001, CO2-stairway, SROI, Footprint etc.). This is in concordance with the implicit nature of wicked problems. This might hinder embedding sustainability into a business model or can we expect a differentiation strategy in dealing with sustainability?

Is there a hierarchical bias? In fact, all previous research about followership, distributed leadership, and participative leadership presupposes hierarchy and a decision-taking leader (section 2.3). It is seen by the lens of vertical leadership, like dispersion of responsibilities or reduced sense of stability and security, or as boundary management issues (Von Krogh, Nonaka and Rechsteiner, 2012). Organisations without hierarchy are not common in the mind of managers and employees. Does this mean that the conclusions in this study might even be stronger when organisations and respondents are more used to a practice of empowerment and self-directive employeeship?

Does participative leadership has to develop further to real shared leadership without any hierarchy? The problem with self-managed teams is that experiments in the past not always were very successful. Often the teams still had to cope with hierarchical micromanagement and forgot the connection with the market. Such a practise results in an internal orientation of managers and teams. Probably a shift in leadership style not only requires self-directive employeeship, but also needs adaptation of other components of the organisation. Self-direction of the employee needs probably information or direct contact with the market. Wherefrom do they get the clue for direction? This looks like a crucial difference with self-managed teams. And what does 'shared' mean: is it sharing and consensus between employees and leaders about the direction, or does it mean sharing the direction and meaning with other stakeholders too? This might imply more cooperation and co-creation with the market instead of competition. Then the question arises: What else can be shared? Mutual adaptation of processes, exchange of values and meaning besides product and price, ownership, joint spin offs, closing the cradle to cradle loop, and market development might be the case. Further development and research will shed light on shared business models.

Another issue, which comes along with the development of participative leadership into shared leadership, is the role of the leader or manager. What tasks do come up and what will be the unique value added by leaders when employees are self-directive? This study shows a clear contribution to knowledge development. Although the sample of organisations in this study is representative for the profit sector and a hierarchical bias may occur, the relationship between shared leadership and knowledge is significant and might indicate further developments. Examples of pure shared leadership organisations

are rare and more exploratory research is needed, to say more about the role of leaders and managers in shared leadership and self-directive employeeship organisations.

Finally we have some remarks about the generalisation of the findings. The research was conducted in Dutch companies. According to Hofstede (1980) The Netherlands have a strong egalitarian culture, which might influence the results towards shared leadership. This study needs to be done in other countries with a stronger power distance culture to exclude this context dependency. Another context dependency is the stability of the environment. Different leadership behaviours are necessary to support exploration or exploitation (Cools, 2005; Jansen, Vera, & Crossan, 2009; Lawrence, Lenk, & Quinn, 2009). Balancing ambiguity is possible in stable environments (Lawrence, et al., 2009), but when dynamism augments, organisations don't need more innovation, but less control (Crielaard, 2012). It also comprises the scope and depth of the developments: how radical is the change and how many people are involved. For a radical change the classic answer is the need for a turn around, but most fail. Probably this solution is too much connected with industrial mechanical business models. When wicked problems arise and dynamism augments we need something else. Further research is necessary, but in the meantime self-directive employeeship and shared leadership might be concepts in finding a real strategy for (radical, transitional) team centred change in order to cope with adaptive organisations and wicked issues.

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