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Full Length Research Paper

Innovation team composition: The enabling role of the individual emotive outlook

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Despite increased attention to innovation teams in the workplace, composition criteria for implementation success remain unclear. This paper aims to provide a multi-disciplinary perspective on the psychological characteristics of innovation team members. This pragmatic, mixed-method convergent parallel design study examines and compares the emotive outlook profiles and patterns of successful and unsuccessful innovation project implementation teams in the financial service industry. The data generated for this study were obtained from a multi-national company operating in nine African countries and three Namibian institutions, with a total study sample of 169 participants. Quantitative results were obtained through assessments, namely the EQ-i2, 16PF5 and the StrengthScope®. The TESI and the Emotional Style Questionnaire were also used, but produced no significantly different results. Semi-structured interviews and focus group discussions produced qualitative findings. The results suggest that individuals in innovation teams have specific emotive outlook profiles. More specifically, the results suggest that successful implementation depends more on the individuals' intra-psychological strengths than on a specific team profile. The study findings underscore the fact that intra-psychological strengths, that is, mental acuity, emotional self-management awareness and emotional intelligence, rather than team dynamics and interpersonal qualities, characterize successful innovation teams. The key practice implications relate to team selection. The knowledge contribution of this study is the prioritization of the emotive outlook constructs for emotionally and intellectually fit members of innovation implementation teams.

Key words: Emotive outlook, intra-psychological strength, cognitive abilities, emotional self-management, emotional intelligence, innovation team composition, context, mixed-method convergent parallel design.

INTRODUCTION

Increased competitive pressures on organizations as well as rising market demands necessitate continuous

innovation (Anderson et al., 2014). The demand for supplementary innovation approaches, such as open,

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societal, and business model innovations is expected to increase, along with “the pressure to accelerate time-to-market” of new innovations (Tsakalerou, 2016). However, timeous commercialization of innovation ideas compounds these pressures and thus remains a crucial issue for organizations (Govindarajan and Trimble, 2010).

Crossan and Apaydin (2010, p.1165) acknowledge that if “implementation is delayed, badly managed or aborted, the innovation would fail to deliver the results an organization is expecting”. Although teams are often considered as the vehicle for achieving implementation objectives, it appears problematic to identify which psychological characteristics of an individual or a team increases the probability of successful implementation (Drach-Zahavy and Somech, 2001). This paper focuses on the emotive outlook of individual team members as a criterion for incremental innovation team composition. It is proposed that emotive outlook is an intra-psychological source and driver of the innovation process at individual and team level. We argue that the innovation performance of organizations is embodied in the collective emotional strength of innovation team members. Much of the research literature describes the success of an innovation team “as the degree to which the team accomplished its goal or mission” (Devine and Phillips, 2001, p. 521). Success also implies that team members apply themselves willingly and deliberately (Kratzer et al., 2005).

This study proposes a conceptual framework that incorporates individual-level analysis and contextual factors at the team and organizational levels that can impact innovation outcomes. This framework contributes to the innovation literature by examining team composition from a multi-disciplinary perspective, and by focusing on emotive outlook. We define emotive outlook as a person’s emotional disposition and subsequent behavioral manifestations, when faced with intra-psychological, interpersonal, team, or organizational challenges. This paper asks whether the emotive outlook profiles of individual team members act as the emotional drivers of teams and therefore determine the success of innovation projects.

Scholarly methodology and research design have been applied to explain the development of the emotive outlook framework; results are presented through discussion and validated against already existing literature and research. By identifying the limitations of this study, the researchers can point out possible future research areas. The study offers recommendations and concludes with an overview of practical implications.

Conceptualizing emotive outlook

West and Anderson (1996) propose an input-process-output model of group innovation. This model considers the team or group composition and the organizational

context as input variables. They also propose that group processes, such as a task orientation and support to the group, impact on innovation outputs. Examples of outputs are effectiveness and the number of innovations (West and Anderson, 1996). For the purpose of this research, emotive outlook is conceptualized as an input variable into group processes and subsequent innovation outputs. There are several complexities associated with teamwork (Dunin-Kępicz and Verbrugge, 2010), including the fact that “team composition is the configuration of member attributes” (Bell, 2007, p.595).

LaFasto and Larson (2001, p. 14) postulate that the most pressing challenges for innovation teams involve their members’ “emotions, values, personal styles and preferences and not cognitive issues”. Although researchers have suggested that individual personality characteristics, such as agreeableness, extraversion and openness to new experiences are important in innovation teams (Goffin and Mitchell, 2014; Kichuk and Wiesner, 1998; Pearsall and Ellis, 2006), it remains unclear how to propose innovation team composition criteria from the reported studies. A considerable body of research supports the important role of emotional intelligence (EI) in teams (O’Boyle et al., 2011). Chang et al. (2012) suggest that higher EI levels in teams improve team performance. However, less attention has been paid to the role of EI in innovation teams. It is therefore important to fully understand the way in which individual behavioral characteristics and dynamics impact on team outcomes (Du Chatenier et al., 2010; Scott and Bruce, 1994).

The Affective Events Theory (AET) argues that there is reciprocity between workplace events, employee emotions, and subsequent performance (Ashkanasy and Ashton-James, 2005). The study review of the literature suggests that viewing innovation teams from both the affective neuroscience and multi-disciplinary perspectives could optimize their composition and implementation capacity (Gazzaniga et al., 2009; Hodgkinson and Healey, 2014). Management and behavioral scientists increasingly recognize the impact of people’s emotions on their thoughts and behaviors, including decision-making, performance, attentiveness and team behavior (Ashkanasy and Ashton-James, 2005; Barsade and Gibson, 2007; Offermann et al., 2009; Tsakalerou, 2016). Barret (2017) explains that individual emotions reflect the accumulated information derived from previous experiences, which subsequently influence behavior. Therefore emotions play an important role in team composition. However, current research has insufficiently considered emotions as a criterion for innovation team composition (Anderson et al., 2004; Crossan and Apaydin, 2010; Hülshager et al., 2009; Shane and Ulrich, 2004).

Current definitions of incremental innovation teams seem to emphasize planning, application, financing, and multi-functionality, as well as certain skills that ensure the execution of their directives (Aldag and Kuzuhara, 2015;

Table 1. Emotional style dimensions with complementary perspectives.

Emotional style dimensions (Davidson and Begley, 2012)	Description
Resilience	Ability to recover quickly from distress by being flexible, positive, constructive, and confident in one's own abilities to solve future challenges (Algoe and Fredrickson, 2011; Davidson, 2004; Fletcher and Sarkar, 2012; Fredrickson, 2003; Davidson and Begley, 2012; Ong et al., 2006)
Outlook	Outlook is considered as positivity, characterized by a certain realism and emotional regulation. It can range from being optimistic to being pessimistic. (Davidson, 2003; Davidson and Begley, 2012; Fox, 2012; Forgas and East, 2008; Moekenmeyer et al., 2012; Prati et al., 2003)
Social intuition	This implies responsiveness, or the lack thereof, in relationships and conversations. (Davidson and Begley, 2012)
Self-awareness	This implies an awareness of one's own bodily reactions to specific emotions or emotional cues, based on self-awareness or the lack thereof. (Fredrickson, 2003; Davidson and Begley, 2012)
Sensitivity to context	From an interpersonal perspective, this implies alertness to social behavioral cues and the suitability and social acceptability of emotional displays. (Davidson and Begley, 2012; Prati et al., 2003)
Attention	This is the tendency of a person to focus, despite distractions (emotionally, physiologically, psychologically, and environmentally) (Davidson and Begley, 2012; Fredrickson and Branigan, 2005)

Source: Summary of authors reviewed.

Garud et al., 2015; Katzenbach and Smith, 1993). From a conceptual point of view, this research considers a framework based on the theory of affective neuroscientists Richard Davidson and Sharon Begley (2012), which offers concomitant insights from neuroscience into people's emotional orientation and emotional styles. Davidson and Begley (2012) define emotional style as consisting of six dimensions that present "a consistent way of responding to the experiences of our lives". Given the applicability of the model to innovation team composition, the present study investigates and explores the six dimensions through an industrial psychology lens. Anchored by two central points of disciplinary departure, this study presents concise summary (Table 1) of Davidson and Begley (2012) findings, which are complemented by perspectives drawn from the existing literature on management, behavioral science and neuroscience.

Conceptual framework

The conceptual framework considers emotions as foundational to all behaviors, arguing that an individual's emotive outlook impacts on the performance outcome of his or her innovation team. The work of numerous scholars in affective neuroscience as well as behavioral and management studies is acknowledged (Anderson et al., 2004; Antoni and Hertel, 2009; Ashkanansy and Ashton-James, 2005; Burger and Staake, 2010; Curado et al., 2015; De Jong and Den Hartog, 2007; Dyer et al.,

2011; Davidson and Begley, 2012; Gilson et al., 2015a; Goffin and Mitchell, 2014; Hughes and Terrell, 2007; Hülshager et al., 2009; Kaufmann, 2015; Lehmann-Willenbrock et al., 2013; Miron-Spektor et al., 2011; Perretti and Negro, 2007; Sekerka and Fredrickson, 2008; Somech and Drach-Zahavy, 2011; Stanley and Burrows, 2001; Sun et al., 2017; Von Krogh et al., 2000; West and Anderson, 1996). This paper proposes that successful innovation is influenced by conceptual, emotional and contextual factors. The contextual factors are observable "surface-level compositional" and demographic factors, such as experience, age, current team composition criteria and skills; emotive outlook, brain chemistry, and psychological and personality traits, among other characteristics, are the "deep-level compositional" factors (Somech and Drach-Zahavy, 2011). The authors recommend Bell (2007) for an in-depth discussion of such factors.

METHODOLOGY

Although the literature acknowledges that team composition is important for successful innovation implementation, there is a lack of sufficient and clear team composition criteria (Fleming, 2004; LaFasto and Larson, 2001; Tikas and Akhilesh, 2017).

Bell (2007) confirms that the subject of optimal team composition, based on team member characteristics, has not been sufficiently studied. There is increasing concern that innovation will remain a process of generating ideas, unless execution improves (Dyer et al., 2011; Klein and Knight, 2005). Crossan and Apaydin (2010, p.14) argue "that often [an] unrecognized gap exists between the adoption (decision to implement or use) of innovation and actual

implementation". Additional complexities appear when additional or new team members are recruited (Mello and Ruckes, 2006). There is a growing practice in African organizations of so-called "just-in-time teams" (Hughes and Terrell, 2007, p. 15), which aim to use the talents of individuals in a contextually appropriate way (Hill et al., 2014). At the same time they rely on the strengths of all members to meet task requirements (Gilson et al., 2015b). We therefore included examples in this study on the team dynamics of such just-in-time teams.

"Mindset differences" in innovation teams present another challenge to management (Sun et al., 2017), giving rise to questions about the composition of innovation implementation teams. Although behavior is shaped by several contextual factors, an emotionally and intellectually fit individual can be viewed as foundational to the performance of innovation projects. The research problem that this study addresses is the gap in the literature on guidelines for optimal innovation team composition.

The study adopts a mixed-method convergent design to arrive pragmatically at the proposed emotive outlook framework. This study uses a side-by-side comparison of quantitative and qualitative data to demonstrate the convergence and divergence of the proposed results. Mixed-method research methodologies are increasingly used for business and management studies. Additional insights are often derived from the complementary nature of qualitative and quantitative research methodologies and the triangulation of different data sources (Bryman, 2006; Creswell and Clark, 2011; Jick, 1979; Venkatesh et al., 2013).

Study sample

Data were gathered using a critical case sampling scheme. In addition, the sampling approaches for the quantitative and qualitative strands were respectively judgmental and purposive. The target population was drawn from 28 commercial banks and six non-bank institutions within the financial services industry in Namibia and South Africa. The participating organizations accentuated innovations as a strategic service differentiator or customer retention driver. They consisted of a Southern African-listed insurance-based company (referred to as the "International Case"), which identified nine participating countries (Botswana, Kenya, Lesotho, Namibia, Nigeria, South Africa, Tanzania, Uganda, and Zambia), and three independent Namibian institutions (referred to as the "National Case"). The sample consisted of 110 participants for the qualitative strand and 113 for the quantitative strand (223 in total). The Executive Offices and Human Resources Departments of the respective organizations identified the participants and divided them into successful and unsuccessful groups. This division was based on previous successful and unsuccessful innovation project participation, and *not* on specific personality traits. Successful innovation project team outcomes were defined as both useful and acceptable to an internal or external customer (Antoni and Hertel, 2009). All of the participants were permanently employed by their respective organizations, had been members of a team that implemented a project, and were knowledgeable about innovation and championing an innovation project. Computer literacy was required for completion of the online assessments. There were no other requirements relating to gender, age, years of service, or hierarchical position.

Data collection

Qualitative data collection

The qualitative data were collected through semi-structured interviews (innovation champions) and focus group discussions (members of innovation teams). The data were initially separated

into data for the International and National Cases, using schedules refined through a preliminary exploration (Swart-Opperman and April, 2015).

Quantitative collection

The included assessments were pilot tested for relevance in the evaluation of emotive outlook (Swart-Opperman and April, 2015). They were also selected on the basis of relevance to organizational contexts, online administration features, high levels of validity and reliability, and comprehensive research histories (Cattell et al., 2006; JvR Psychometrics, n.d.; Strengthscope® Technical and User Manual, 2011; Hughes et al., 2014). The emotional style questionnaire (Davidson and Begley, 2012) was included because it is the only available assessment that specifically measures emotional style. Individual emotive outlook profiles were assessed using three instruments: the 16PF5 (The Sixteen Personality Factor Questionnaire, fifth edition, South African English Version), the EQ-1 2.0® (Emotional Quotient Inventory) and the Emotional Style Questionnaire (Davidson and Begley, 2012). The emotive outlook patterns or profiles of the different teams were assessed using the StrengthScope®, developed by James Brook and Dr. Paul Brewerton (StrengthScope® Technical and User Manual, 2011) and the Team Emotional and Social Intelligence Survey (TESI®). The TESI was developed by Marcia Hughes, Henry Thompson, and James Terrell in 2006 (Hughes et al., 2014 for a detailed description).

Data analysis procedures

Quantitative data analysis

Both descriptive and inferential statistics were considered appropriate. IBM SP55 Statistics 23, a software package specifically designed for the social sciences, was used to perform statistical analyses. We applied the non-directional *t*-test best suited to smaller sample sizes to carry out an inferential statistical analysis and non-parametric tests, including the Mann-Whitney U-test. The descriptive statistics reported effect sizes (ES), specifically (1988). The benchmarks "small," "medium" and "large" (Vogt et al., 2014) in this study indicate practical significance and the impact of the evidence on the phenomena studied (Coe, 2002; Onwuegbuzie and Leech, 2004).

Qualitative data analysis

Based on the recommendations of Rabiee (2004), Harding (2013), and Saldaña (2014) as well as Miles et al. (2014), the analysis followed six distinctive steps; these involved data preparation, first cycle coding, second cycle coding resulting in sub-categories and categories, and the aggregation of categories into sub-themes and themes. Following these steps provided the analysis with a data-grounded audit trail (Carcary, 2009). Personal reflection formed an important part of the process to address the researchers' filters. Coding of responses was inductive and undertaken from a phenomenological perspective. An external reviewer framed the focus group coding with the help of the network functions of ATLAS.ti. Network views allowed the researchers to take different perspectives on the data, check their assumptions, and confirm both linkages and the over-arching intuitive and deductive logic of the qualitative analysis (Friese, 2014).

RESULTS AND DISCUSSION

The results suggest that individuals in innovation teams

Table 2. Proposed framework: Emotive outlook for emotionally/intellectually Fit team member in innovation implementation teams.

Proposed emotive outlook category	Proposed priority	Emotional style constructs (Davidson and Begley, 2012)
Emotional management (self)	A	Self-Awareness
Mental acuity	B	Focus
Self/ reality orientation	C	Outlook
Emotional fitness/ Change agility	D	Resilience
Social sensitivity	E	Social Intuition
Social fitness	F	Sensitivity to Context

have definite emotive outlook profiles that interact with contextual factors. Specifically, the results suggest that successful implementation by such teams is more dependent on the individual's intra-psychological strengths than reported collective team strengths. The merged results are presented as a framework for prioritizing emotive outlook categories to strengthen innovation team composition (Table 2).

The empirical data (Tables 3, 4, 5 and 6) reveal that cognition (abstract reasoning, critical thinking skills, and focus) as well as intra-psychological strengths (emotional intelligence, realistic self-perception, emotional self-awareness, self-expression, a preference for independent behavior, and self-regard) are differentiators of success for innovation team members. Interpersonal relationships within teams are of lesser importance, confirming the views of Jordan and Troth (2004), Offermann et al. (2004) and Prati et al. (2003) that "allowable levels of emotional display" (Prati et al., 2003) and the "level of performance" of members of task-focused teams "takes precedence over their satisfaction" (Prati et al., 2003, 24).

For the purposes of this framework, the proposed emotive outlook categories have been defined and discussed. First, an individual's emotional awareness and intra-psychological ability to manage emotional cues and triggers is termed: *emotional self-management*. We show that this is an important differentiator, indicating whether individual team members are likely to contribute toward their teams' success. This study furthermore reveals the role of emotional self-awareness as a differentiator for successful team members, based on honesty in self-appraisals and the acknowledgement of weaknesses. The validity of this assertion is based on higher emotional intelligence scores and accurate self-perceptions.

Mental acuity, proposed as the second priority, is the ability to be mentally focused and mindful, despite emotional or situational distractions. The findings of the study suggest that mental acuity could be an important factor to consider in innovation team composition, based on the higher levels of reported abstract reasoning and focus of successful team members. The empirical data show that critical thinking, as a sub-theme of mental acuity, is a group strength for successful teams, whose members derive energy from systematic and objective problem-solving.

Overall, the findings of this study indicate that a detailed orientation is a thinking strength of unsuccessful team members. They tend to undertake detailed analyses even when the circumstances change and a more flexible approach would be more beneficial to completion of a project. While continuous analysis energizes team members with a detailed orientation, it is generally not conducive to successful innovation. A lack of focus was also reported: some team members were easily distracted, compromising project completion and team success. According to our qualitative findings, the ability to pay attention to the job at hand amidst emotional and situational distractions is an important success criterion.

Next, the construct of *self/reality orientation*, posited as positivity and an uplifting emotion, reflects emotional fitness and empowerment. However, successful team members were realistically positive, supported by higher levels of emotional intelligence, feelings of self-regard, self-confidence, and optimism as emotional strengths. This study reveals the role of emotional self-awareness as a differentiator for successful team members, based on honesty in self-appraisals and the acknowledgement of weaknesses.

The fourth priority, *emotional fitness/change agility*, implies emotional energy and the resulting capacity to endure despite facing obstacles. Our results suggest that feelings of confidence, as well as personal accountability, may lead to higher resilience. Another consideration is that the cumulative effect of the individuals' resilience could construe resilience as an emotional driver for the team. Successful team members are perceived as unwavering, a trait considered desirable.

Lastly, *social fitness* implies that a team member is emotionally fit to engage in socially appropriate conversations and interactions. *Social sensitivity* is emotional adeptness, coupled with appropriate emotional sensitivity in social situations. The quantitative and qualitative results are presented below.

Quantitative results

The completion rate of the questionnaires was 59% for the unsuccessful groups and 58% for the successful groups, representing 75 participants. The statistical and

Table 3. Summary of quantitative results.

Individual profile: Descriptors for successful teams			
Reasoning	16PF5	Cohen's <i>d</i> moderate to large	0.64
Total EQ- <i>i</i> ²	EQ- <i>i</i> ²	Cohen's <i>d</i> moderate	0.49
Self-perception	EQ- <i>i</i> ²	Cohen's <i>d</i> moderate to large	0.57
Self-regard	EQ- <i>i</i> ²	Cohen's <i>d</i> moderate	0.43
Emotional self-awareness	EQ- <i>i</i> ²	Cohen's <i>d</i> moderate to large	0.65
Self-expression	EQ- <i>i</i> ²	Cohen's <i>d</i> moderate to large	0.59
Emotional expression	EQ- <i>i</i> ²	Cohen's <i>d</i> moderate	0.55
Independence	EQ- <i>i</i> ²	Cohen's <i>d</i> moderate	0.60

Table 4. Team A (unsuccessful team members) and Teams B (successful team members): 16PF5.

16PF global factors									
Group	N	Mean	Mean difference	Std. Deviation	df	Parametric T-test (Sig 2-tailed)	Non-parametric Mann-Whitney U	Cohen's <i>d</i>	
								SD pooled	Effect size
Reasoning	A	27	5.63		52.00				
	B	27	6.63	-1.00	1.45	0.02*	0.03*	0.64	Moderate to large

*Significant at $p < 0.05$.**Table 5.** Team A (Unsuccessful Team Members) and Team B (Successful Team Members): EQ-*i*².

EQ- <i>i</i> ²									
Scale group	N	Mean	Mean difference	Std. Deviation	df	Parametric T-test (Sig 2-tailed)	Non-parametric Mann-Whitney U	Cohen's <i>d</i>	
								SD pooled	Effect size
Total EQ- <i>i</i> ²	A	27	92.47		73.00				
	B	27	99.65	-7.17	14.59	0.04*	0.07	0.49	Moderate
Self-perception	A	27	94.08		73.00				
	B	27	102.81	-8.73	14.66	0.02*	0.01*	0.57	Moderate to large
Self-regard	A	27	98.63		73.00				
	B	27	105.59	-6.96	15.90	0.07	0.04*	0.43	Moderate

Table 5. Cont'd.

Emotional self-awareness	A	27	91.95	-9.13	13.28	73.00	0.01*	0.01*	0.65	Moderate to large
	B	27	101.08		14.70	71.83				
Self-expression	A	27	93.71	-10.15	16.13	73.00	0.01*	0.01*	0.59	Moderate to large
	B	27	103.86		14.54	82.57				
Emotional expression	A	27	94.76	-7.67	13.56	73.00	0.02*	0.02*	0.55	Moderate
	B	27	102.43		14.44	72.41				
Independence	A	27	94.87	-9.83	17.01	73.00	0.01*	0.01*	0.60	Moderate
	B	27	104.70		15.58	72.73				

*Significant at $p < 0.05$.

Table 6. Team A (unsuccessful) and Team B (successful): StrengthScope®.

Identified strengths	Potential weaknesses	
	Team A (unsuccessful)	Team B (successful)
Emotional cluster		
Self-confidence	Optimism; emotional control; self-confidence; Resilience	-
Relational cluster	-	Leading Empathy
Execution cluster		
Flexibility; results focus; self-improvement	-	Decisiveness
Thinking cluster		
Detail orientation	Critical thinking	Common sense

practically-significant differences between successful and unsuccessful team members are presented in Table 2. Only the significant results are presented in Tables 3 and 4. Non-significant differences were reported for the Emotional Style Questionnaire (Davidson and Begley, 2012) and for the TESI. A summary of the reported

StrengthScope® results are presented in Table 5, as the instrument did not lend itself to calculating significance.

Qualitative results

The innovation champions (in senior and top

management positions) were interviewed face-to-face (12) or by telephone (8) about their experiences and perceptions of the emotional behaviors of innovation team members. The data were audio recorded and transcribed verbatim. The interviews lasted 45 to 80 min.

Initially, some of the innovation champions

Table 7. Summary of qualitative results.

Primary themes			
Individual Sense-making: Innovation drivers	-Market forces -Employer brand identity -Innovation formation -Organizational context -Sustainability -Talent	Internal focus for sense-making - Individual perception - View of company's approach -View of customer approach -View of innovation process	External focus for sense-making - Experience of role of external market - Changing customer profile - View on innovation in Africa - View on innovation in financial services industry
Innovation identity	-Role of team -Format of teams -Actual selection criteria	-Emotional behaviors -Mindset of champion -Goals	-Team dynamics -Team structure interaction -Perceived success
Innovation enablers	Emotional prompts -Uplift emotions of company/spirituality of organizational realities	-Sensitivity for customer's reality (customer centricity) - Knowledge sharing	Structural/Systemic prompts -Technology -Talent optimization -Supportive HR structures
Innovation disablers	Emotional prompts -Culture and mindset models -Post-merger blues of organizational realities	-Toxic leadership behaviors -Toxic emotions -Lack of innovation behaviors -Negative sense-making of innovation	Structural/SYSTEMICPROMPTS -Technology -Unclear focus -Company knowledge of innovation -Company innovation processes and procedures -Perceived operational realities
Emotional enablers	-Emotive outlook -Innovation mentality -Culture supportive of change	-Leaders encourage innovation -Individual and group efficacy	
Conversations	-Storytelling on innovation successes and failures		-Innovation scripts embedded in all communications
Generation Y	-Technologically astute -Eager to contribute	-Time pressure due to overload	

were categorized as champions of successful or unsuccessful projects; this was ceased in response to organizational sensitivities. Sixteen focus group discussions, divided into nine successful and seven unsuccessful groups (74 participants), took place, with nine held face-to-face and seven via audio-conferencing. The average number of participants per focus group was 4.6. The discussions lasted between 45 minutes and 2.5 hours, with an average duration of 1.5 h.

The first line-by-line cycle coding process resulted in 460 codes for the International Case interviews, and 300 codes for the focus group discussions. A similar result was achieved in the National Case, with 365 codes for interviews, and 423 codes for focus group discussions. The codes were reduced during the second cycle of coding, when codes with similar meanings were grouped into sub-categories, reducing the number of codes for International Case interviews to 15 and for focus group

discussions to 11 categories, grouped into four themes and 15 sub-themes respectively. The National Case was grouped into 4 themes and 15 sub-themes and had 10 categories with 10 sub-categories. The coding produced seven primary themes: (1) innovation drivers; (2) innovation identity; (3) innovation enablers; (4) innovation disablers; (5) emotional enablers; (6) conversations, and (7) generation Y (Table 7). Examples related to individuals' interpretation of innovation and views of their companies' and the industry's approach to innovation.

Emotional and systemic cues were reported, followed by emotive outlook and emotional prompts. The contextual factors identified as impacting team outcomes are leadership, a team's perceived support, and organizational culture (Anderson et al., 2004; Curral et al., 2001; Subramanian, 2012). These findings were reported using an analogy to convey the assertive force of the qualitative dimensions of the study. It is suggested

that direct observable drivers and constraining factors, such as employer brand and participants' professions, should be easily identifiable.

Less easily observable enablers and disablers at the organizational level are reported and presented as emotional- (positivity and innovation mentality), structural- (technology and human resources structure) or systemic prompts (work routines and innovation processes). The next level reflects team-level factors lie deeper and are more difficult to observe, as they are often dominated by organizational events. At the deepest level, team contexts are created by factors such as sense-making processes, conversation scripts, Generation Y, company soul or spirituality, and management manners. For example, Generation Y participants expressed a need to be valued for their technological astuteness within a team. We suggest that these factors can shape a team's performance and be seen as differentiators for innovation success.

The emotive outlook categories

Emotional management/self

Emotional self-awareness clearly strengthens self-control, thus supporting the argument that interpersonal management is a competence (Du Chatenier et al., 2010; Tsakalerou, 2016). The literature confirms that emotionally intelligent individuals are more willing than others to share knowledge that can positively influence organizational innovation (Cherniss, 2001; Goh and Lim, 2014; Prati et al., 2003; Tsakalerou, 2016).

In addition, Jordan and Troth (2004, p.211) argue that individuals with higher levels of EI seem to "... perform better on tasks than teams whose members [have] lower levels of emotional intelligence ...". Côté and Miners (2006) make the similar observation that EI predicts job performance. Results obtained by Barsade and Gibson (2007) as well as Quoiback and Hansenne (2009) are consistent with our findings that emotional management and thus emotional control positively impact team performance. Efenbein, Druskat, Sala and Mount (2006) highlight the fact that emotionally intelligent team members are more skilled at communication and conflict resolution, which can in turn enhance team performance.

Conversely, the study findings indicate that unsuccessful group members are energized by egotistical needs for self-improvement, self-enhancement, and the pursuit of self-interest. This corroborates Burger and Staake (2010), who find that members who are "too egotistical" have a negative impact on the output of innovation teams. Unsuccessful team members attach importance to self-improvement and self-enhancement; the feedback they receive from others is therefore very important. Feedback also increases their vulnerability and can negatively impact their emotional control.

Mental acuity

Based on the meta-analysis of 19 studies, Devine and Phillips (2001) arrive at a finding similar to the finding of this study. They conclude that "team-level cognitive ability may be a better predictor of performance for ad-hoc teams facing a relatively complex task with a finite life span" (Devine and Phillips, 2001, p.525). Archibald et al. (2013) assert that innovation team members have a certain "cognitive readiness", consisting of capabilities, task knowledge and disciplinary expertise, while Hülshager et al. (2009) and Tikas and Akhilesh (2017) link task orientation and thus focus to improved team performance.

Anderson et al. (2004, p.150) list general intelligence, different thinking styles, "task-specific knowledge," and "ideational fluency" as organizational determinants that facilitate innovation at the individual level. In addition, Du Chatenier (2010) highlights the importance of intellectual discernment in distinguishing facts from trivial information for team members. Jordan and Troth (2004) insightfully observe that team members' emotional control and intelligence can improve problem solving and output of their teams. The literature refers to this as "team-level focus". We postulate that the cognitive abilities of individual team members are aggregated into the reported team strength (Tikas and Akhilesh, 2017).

Du Chatenier et al. (2010) describe such a focus as the ability to "control and coordinate", while Tikas and Akhilesh (2017) call it "total dedication towards achieving [its] targets". In addition Côté and Miners (2006) report a positive correlation between cognitive and emotional intelligence. However, Scott and Bruce (1994, p.601) make the opposite point, arguing that a "... systematic problem-solving style had a direct negative effect on innovative behavior". Archibald et al. (2013) label the tendency to over-analyze and strive for perfection as a "cognitive constraint," while Miron-Spektor et al. (2011) affirm the negative impact that attentiveness-to-detail can have on the performance and risk-orientation of team members.

The quantitative and qualitative results of this study are not convergent on mental acuity, as the quantitative results measured a different aspect of focus. Our qualitative results indicate that participants were easily distracted by either emotional or situational cues; especially in the unsuccessful teams members lost interest quickly, excusing themselves before the meetings were actually over. Also, they lacked interest in the team goals and became disengaged and non-participative.

Self/Reality orientation

Although the proposed priority implies that the role self/reality orientation as an innovation driver for

successful teams is subordinate, this result is in line with Quoibach and Hansenne (2009), who positively relate optimism and mood regulation to team outputs. Conversely, Anderson et al. (2004) note that a negative mood is a “mood state” that can facilitate innovation at the individual level. In addition, Barsade and Gibson (2007) maintain that negative emotions “may enhance negotiating outcomes”, especially “discrete negative emotions”.

The qualitative findings of this study corroborate the view that realistic positivity is a characteristic of successful team members. This supports the views of Whetten and Cameron (2016), Barsade and Gibson (2007), and Lin and Huang (2010) that stronger feelings of self-regard, self-esteem, and self-efficacy, together with resilience, can improve individual and team performance. Moenkenmeyer et al. (2013, p.636) confirm self-confidence “to be a crucial prerequisite for successful engagement in innovation projects”. In addition, Anderson et al. (2004) list self-confidence as a facilitator of innovation at the individual level; in the present study self-confidence surprisingly features as an identified emotional strength and driver for unsuccessful teams.

The qualitative findings reveal a tendency towards a negative outlook, which may have affected the self-confidence and task outputs of unsuccessful team members. Lerner and Keltner (2000) as well as Quoibach and Hansenne (2009) note that negativity adversely affects team judgments and outputs.

Emotional fitness/change agility

Several studies report on emotional fitness and change agility. Emotionally fit behaviors include overt and suggested displays of resilience, emotional independence, and self-directedness with a preference for independent decision-making. For example, Anderson et al. (2004) argue that a tolerance for ambiguity increases resilience and enhances innovation at the individual level. It has been postulated that an internal locus of control (referred to by Brooks and Goldstein (2004, p. 3) as a “resilient mindset”) contributes to team success. Reivich and Shatté (2002) propose a “resilience quotient” and couple resilience with emotional regulation, optimism, focus, and self-efficacy. The emotional independence of resilient team members enables them to distinguish “between rejection of his[her] idea and rejection of him[her] as a person while [remaining] engaged” (Hill et al. 2014, p. 30). It is interesting that Moenkenmeyer et al. (2012) propose “innovator resilience potential” as the ability to enhance a person’s recovery from project failure experiences. This study highlights the fact execution that is, focusing on the results and flexibility can energize unsuccessful teams. We are aware that when the focus of team members changes constantly, due to increased flexibility, they are

likely to appear less resilient. The reported qualitative findings corroborate this point: team members’ inner conflicts and despondency, which are reported as resulting from their flexibility orientation, lead to feelings of non-achievement.

Social sensitivity

Although social sensitivity and interpersonal relationships rank as a low priority, members of successful teams were both socially and emotionally sensitive (as reflected in their higher EI scores). Jordan and Troth (2004) as well as Quoibach and Hansenne (2000) support the lower prioritization of social sensitivity, asserting that a too-strong focus on the emotions of others can result in poorer team performance.

Mayer, Salovey and Caruso (2004) argue that higher levels of EI demonstrate “verbal, social, and other intelligence”, thus implying improved interpersonal relationships. The current findings show that the self-awareness (inner-directedness) and emotional self-management of successful team members can enhance their awareness of others’ emotions, which impacts on team outcomes. While Lin and Huang (2010) associate the social intuition of team members with “relational capital”, Whetten and Cameron (2016) argue that effective and accurate responses to the emotional cues of others, that is, social intuition, lead to improved social interactions. However, the results of the present study are non-significant in the area of overall group emotional- and social intelligence; we believe that this finding reflects the nature of innovation teams, which are generally ad-hoc and short-lived. This could be explained based on the claims of Elfenbein et al. (2006), who postulates that these types of intelligences develop over time during the team formation process.

The most striking result was that neither group reported relational strengths as drivers. It is possible that team members did not know each other well enough; the relatively short duration and ad-hoc nature of innovation teams may have prevented the development of deeper team relationships (Jordan and Troth, 2004). This result is contrary to the view of Kratzer et al. (2005), who argue that moderate friend relationships as well as not merely task-related communications have a positive impact on the output of innovation teams. Although our reported qualitative observations support the notion that members of successful teams are interpersonally sensitive, the quantitative results confirm that the intra-psychological functioning of individuals has a bigger influence on the success of innovation implementation teams (Christensen and Raynor, 2003).

Social fitness

This category had the lowest priority as a success

differentiator for innovation team members. Although more value was attached to being intra-psychologically strong, this study revealed higher EI scores for members of successful teams, implying that members of successful teams tend to be socially fit, with more “social astute[ness]” (Du Chatenier et al., 2010). Examples include the team members’ ability to express themselves assertively and to form self-perceptions through independent thinking, rendering themselves less dependent on others. It seems possible that EI team members will have positive attitudes toward their teams (Offerman et al., 2004).

Pearsall and Ellis (2009) discovered a link between members’ assertive behaviors and successful team outputs. Similarly, the qualitative findings of this study confirm that members of successful teams are experienced as open-minded, respectful in their communication, and thus ‘assertive’. They also behave constructively toward other team members through by displaying uplifting and positive emotions and thereby encourage each other. This finding corroborates Ruef (2002, p.578) observation that “the balance of tensions toward and away from innovation is largely determined by aspects of an individual’s relational context: the strength of diversity and the content of network ties.” It can therefore be argued that members with weaker existing relationship ties can have a positive influence on innovation and problem-solving behaviors. Jordan and Troth (2004) affirm the potential positive or negative effect of existing team relationships on team outcomes.

In the case of the present study, the quantitative and qualitative results diverge. The quantitative results confirm the importance of intra-psychological strengths, while the qualitative findings favor appropriate socially-adapted behaviors.

CONCLUSION AND RECOMMENDATIONS

The purpose of this study is to contribute to the current debate on criteria for innovation team composition and thus to enhance “team-level innovation capability” (Tikas and Akhilesh, 2017). The findings detailed earlier clearly show that the outcomes of innovation teams are influenced by the emotional disposition of team members, described as their ‘emotive outlook’. The proposed conceptual framework also provides insights on “phenomena and influencing environmental factors on teams” (Burger and Staake, 2010), by focusing on team composition at the individual, group, and organizational levels. The emotion categories captured within the framework do not stand alone, but create a synergy. This confirms that the principle of “the functional complementarity of emotionality and rationality” is specifically important for incremental innovation teams (Ashforth and Humphrey, 1995) (Figure 1).

To create an environment conducive to success,

innovation implementation teams should have relatively controlled emotional expression. As the team members’ past successful experiences have strong associative power to predict success, it is recommended that team members who have experienced unsuccessful team outcomes be paired with team members who have succeeded and can influence outcome expectations (West and Anderson, 1996; Barret, 2017).

The proposed emotive outlook framework (Table 7) can provide guidance for the selection of emotionally and intellectually fit team members for innovation implementation. It can also offer predictive value and “a prescription for action” (Barret, 2017) in relation to the incremental outcomes of innovation teams. Clearly, emotive outlook also reflects the innovation work behaviors that individuals engage in during innovation projects (De Jong & Den Hartog, 2007; Miron-Spektor et al., 2011).

In view of the unique identities of innovation implementation teams, the implied level of group efficacy (the overall disciplinary expertise and emotional and cognitive fitness of members) and performance norms that govern the acceptance of group membership, the framework detailed above can serve as a guideline for recruitment. Organizations are also advised to re-evaluate organizational approaches that can impact on innovation directly, such as human resources practice, alternative views on the availability of relevant talent, technology, and organizational routines.

In conclusion, it seems like the proposed emotive outlook framework is generally implicitly supported by the extant literature. This study further corroborates and formalizes these implications by providing a concrete framework from which guidelines for innovation team composition can be derived.

LIMITATIONS

Like any study, this study has certain limitations. Firstly, the lack of validated instruments to specifically assess emotive or emotional outlook necessitated the use of five instruments. As one of the instruments assessed emotional intelligence, it is important to note Barrett’s (2017) comment that, “there is still no generally acceptable definition or measure of EI” (p. 180). Secondly, research fatigue among participating organizations, pressing business opportunities and priorities, and the time needed for interviews and focus group meetings, resulted in non-attendance of participants and continuous rescheduling of activities. The findings of this study may not be transferable to industries other than the banking/financial services industry, as variables impacting on innovation are context-specific. The sample was limited in several ways; sample characteristics could have negatively influenced sample sizes, *p*-values, and effect-size measures

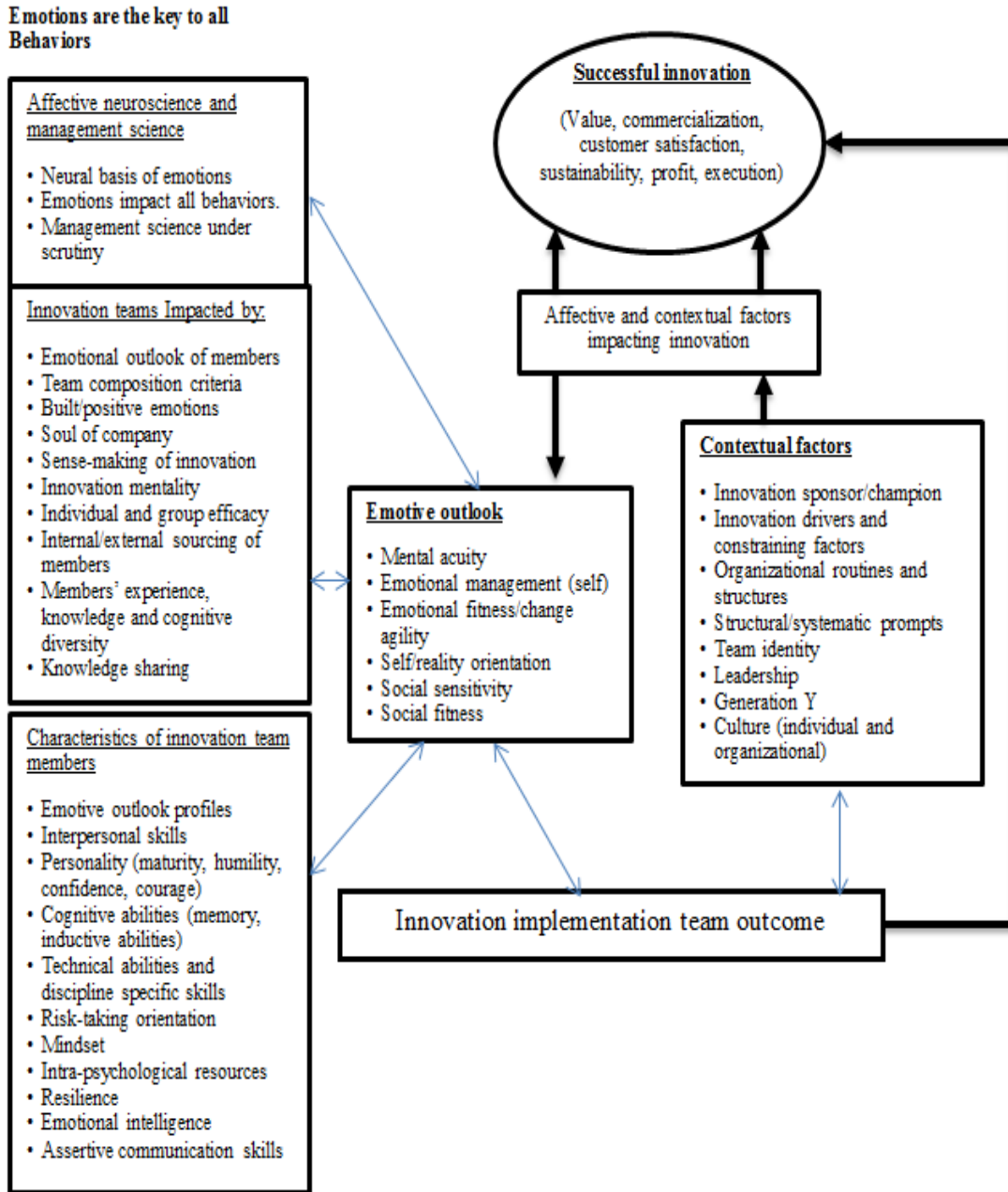


Figure 1. Conceptual framework: Innovation team composition.

(Onwuegbuzie and Leech, 2004). In addition, the geographical spread of the participants made it difficult to travel to the various countries involved, which posed a limitation for qualitative data collection. As a result, some of the interviews and focus group discussions were conducted telephonically or via audio conferencing, which may have affected the richness of the information gathered. Lastly, personal researcher biases can never be eliminated completely; as Onwuegbuzie and Leech (2004) note: "bias and prejudice will always be a concern and limitation".

AREAS OF FUTURE RESEARCH AND PRACTICE IMPLICATIONS

The areas of future research fall mainly within the discipline of industrial psychology, although multidisciplinary research would also be valuable. As the results are promising, researchers are encouraged to validate the proposed emotive outlook framework for innovation implementation team members in industries other than the banking/financial services industry. Furthermore there is a need to explore any differences

that exist in the emotive outlook profiles of innovation teams in companies that focus on radical innovation (McDermott and O'Connor, 2002).

An understanding of generational profile differences and their “generational impacts” (Gilson et al., 2015a) could shed light on the impact of team dynamics on successful outcomes. It would also be useful to focus on Generation Y employees (Mello and Ruckes, 2006), given that they “represent [company workforce] growth and evolution” (Mello, 2015). Building on the recommendation of Du Chatenier et al. (2010), the proposed framework could be validated for open innovation teams, as continuing shortage of key and critical skills is likely to increase its use as a preferred choice for innovation implementation. In addition, the applicability of the proposed framework to virtual innovation teams – as a developing area for innovation implementation (Gilson et al., 2015b) could be investigated. Further work is needed to test the theory that companies within the financial services industry should consider adopting a “fast-followers” mindset (Williamson and Yin, 2014), instead of being trendsetters or cutting-edge innovators.

As self-, organizational, and ethnic culture influence the emotional experiences of people, interesting insights might be gained through the investigation of cultural differences in emotive outlook profiles of innovation team members. Research methodology remains an evolving area, specifically data reduction from codes to themes inherent in the qualitative data. We therefore encourage the provision of additional insights to qualitative researchers on the evaluation of their unique data, as well as ways of approaching the reasoning process with regard to inductive, deductive, or abductive coding approaches.

The practice implications relate mainly to member selection and the composition of innovation teams. Human Resources professionals are encouraged to pay attention to and possibly review current organizational assessment and selection practices when recruiting or allocating members to innovation teams. Innovation practices could be strengthened and supported by innovation-friendly recruitment, selection, training, development, talent management, and performance management, as well as remuneration practices.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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REFERENCES

- Aldag RJ, Kuzuhara LW (2015). *Creating high performance teams: Applied strategies and tools for managers and team members*. New York: Routledge.
- Algoe SB, Fredrickson BL (2011). Emotional fitness and the movement of affective science from lab to field. *American Psychologist* 66(1):35-42.
- Anderson N, De Dreu CKW, Nijstad, BA (2004). The routinization of innovation research: a constructively critical review off the state-of the-science. *Journal of Organizations* 25:147-173.
- Anderson N, Potočnik K, Zhou J (2014). Innovation and creativity in organizations: A state-of-the-science review, prospective commentary, and guiding framework. *Journal of Management* 40(5):1297-1333.
- Antoni C, Hertel G (2009). Team processes, their antecedents and consequences: Implications for different types of teamwork. *European Journal of Work and Organizational Psychology* 18(3):253-266.
- Archibald RD, Di Filippo I, Di Filippo D, Archibald SC (2013). Unlocking a project team's high-performance potential using cognitive readiness: A research study report and call to action. *PM World Journal* 2(xi):1-46.
- Ashforth BE, Humphrey RH (1995). Emotion in the workplace: A reappraisal. *Human Relations* 48(2):97-125.
- Ashkanasy NM, Ashton-James CE (2005). Emotion in organisations: A neglected topic in psychology, but with a bright future. In GP Hodgkinson, JK Ford (Eds). *International Review of Industrial and Organizational Psychology*. Chichester: John Wiley Sons. pp. 221-268.
- Barret LF (2017). *How emotions are made: The secret life of the brain*. London: Macmillan.
- Barsade SG, Gibson DE (2007). Why does affect matter in organizations? *The Academy of Management Perspectives* 21(1):36-59.
- Bell ST (2007). Deep-level composition variables as predictors of team performance: A meta-analysis. *Journal of Applied Psychology*, 92(3):595-615.
- Brooks R, Goldstein S (2004). *The power of resilience: Achieving balance, confidence and personal strength in your life*. New York: McGraw-Hill.
- Bryman A (2006). Integrating quantitative and qualitative research: How is it done? *Qualitative Research* 6(1):97-113.
- Burger N, Staake T (2010). From micro to nanosystems: An exploratory study of influences on innovation teams. *International Journal of Business and Economic Sciences* 2:286-297.
- Carcary M (2009). The research audit trial-Enhancing trustworthiness in qualitative inquiry. *Electronic Journal of Business Research Methods* 7(1):11-20.
- Cattell RB, Cattell AKS, Cattell HEP (2006). 16PF. South African version. User's manual (2nd ed.). Johannesburg: Jopie van Rooyen & Partners SA (Pty) Ltd.
- Chang JW, Sy T, Choi JN (2012). Team emotional intelligence and performance: Interactive dynamics between leaders and members. *Small Group Research* 43:75-104.
- Cherniss C (2001). Emotional intelligence and organizational effectiveness. In C Cherniss & D Goleman (Eds). *The emotionally intelligent workplace*, San Francisco: Jossey-Bass. pp. 3-26.
- Christensen CM, Raynor ME (2003). *The innovator's solution: Creating and sustaining successful growth*. Boston: Harvard Business School Press.
- Coe R (2002). It's the effect size, stupid. What effect size is and why it is important. Paper presented at the Annual Conference of the British Education Research Association, University of Exeter, England: 12–14 September.
- Côté, S, Miners CTHJ (2006). Emotional intelligence, cognitive intelligence, and ob performance. *Administrative Science Quarterly* 51(1):1-28.
- Creswell JW, Clark VLP (2011). *Designing and conducting mixed method research* (2nd ed.). Los Angeles: Sage.
- Crossan MM, Apaydin M (2010). A multi-dimensional framework of organizational innovation: A systematic review of the literature.

- Journal of Management Studies 47(6):1154-1191.
- Curado C, Oliveria M, Gastaud AC, Maçada NF, Nodari, F (2015). Teams' innovation: getting there through knowledge sharing and absorptive capacity. *Knowledge Management Research & Practice* pp. 1-9.
- Curral LA, Forrester RH, Dawson JF, West MA (2001). It's what you do and the way that you do it: Team task, team size, and innovation-related group processes. *European Journal of Work and Organizational Psychology* 10(2):187-204.
- Davidson RJ (2003). Affective neuroscience and psychophysiology: Toward a synthesis. *Psychophysiology* 40:655-665.
- Davidson RJ (2004). Well-being and affective style: Neural substrates and biobehavioral correlates. *Philosophical Transactions of the Royal Society of London Series B* 359:1395-1411.
- Davidson RJ, Begley S (2012). The emotional life of your brain. How its unique patterns affect the way you think, feel and live-and how to change them. London: Hodder & Stoughton Ltd.
- De Jong JP, Den Hartog DN (2007). How leaders influence employees' innovative behavior. *European Journal of Innovation Management* 10(1):41-64.
- Devine DJ, Phillips JL (2001). Do smarter teams do better: a meta-analysis of cognitive ability and team performance. *Small Group Research* 32(5):507-532.
- Drach-Zahavy A, Somech A (2001). Understanding team innovation: The role of team processes and structures. *Group Dynamics: Theory, Research, and Practice* 5(2):111-123.
- Du Chatenier E, Verstegen JAAM, Biemans HJA, Muller M, Omta OSWF (2010). Identification of competencies for professionals in open innovation teams. *R&D Management* 40(3):271-280.
- Dunin-Kępicz B, Verbrugge R (2010). Teamwork in multi-agent systems: A formal approach. Chichester: John Wiley 244p.
- Dyer J, Gregersen H, Christensen CM (2011). The innovators DNA. Mastering the five skills of disruptive innovators. Boston: Harvard Business Review Press.
- Elfenbein HA, Druskat VU, Sala F, Mount G (2006). Team emotional intelligence: What it can mean and how it can affect performance. In: Druskat V, Sala F, Mount G (Eds). *The link between emotional intelligence and effective performance.*, Mahwah: Lawrence Erlbaum. pp. 165-184.
- Fleming L (2004). Perfecting cross-pollination. *Harvard Business Review* 82(9):22-23.
- Fletcher D, Sarkar M (2012). A grounded theory of psychological resilience in Olympic champions. *Psychology of Sport and Exercise* 13:669-678.
- Forgas JP, East R (2008). On being happy and gullible: Mood effects on skepticism and the detection of deception. *Journal of Experimental Social Psychology* 44:1362-1367.
- Fox E (2012). *Rainy brain, sunny brain: The new science of optimism and pessimism.* London: Arrow Books.
- Fredrickson BI (2003). The value of positive emotions. *American Scientist* 91:330-335.
- Fredrickson BL, Branigan C (2005). Positive emotions broaden the scope of attention and thought-action repertoires. *Cognition and Emotion* 19(3):313-332.
- Friese S (2014). *Qualitative data analysis with ATLAS.ti.* (2nd ed.) London: SAGE Publications Ltd.
- Garud R, Tueftscher P, Van de Ven AH (2015). Business innovation processes. In Shalley CE, MA Hitt J Zhou (Eds), *The Oxford handbook of creativity, innovation, and entrepreneurship.* New York: Oxford University Press pp.339-352.
- Gazzaniga MS, Ivry RB, Mangun GR (2009). *Cognitive neuroscience: The biology of the mind* (3rd ed.). New York: WW Norton.
- Gilson LL, Lim HS, Litchfield C, Gilson PW (2015a). Creativity in teams: A key building block for innovation and entrepreneurship. In CE Shalley, MA Hitt, J Zhou (Eds), *The Oxford handbook of creativity, innovation, and entrepreneurship.* New York: Oxford University Press.
- Gilson LG, Maynard MT, Young NCJ, Vartiainen, HM (2015b). Virtual teams research: 10 Years, 10 themes and 10 opportunities. *Journal of Management* 41(5):1313-1337.
- Goffin K, Mitchell R (2014). *Innovation management: Strategy and implementation using the pentathlon framework,* Second Edition Hampshire: Palgrave Macmillan.
- Goh SK, Lim KY (2014). Perceived creativity: The role of emotional intelligence and knowledge sharing behaviour. *Journal of Information & Knowledge Management* 13(4):1450037.
- Govindarajan V, Trimble C (2010). *The other side of innovation: Solving the execution challenge.* Boston: Harvard Business Review Press.
- Harding J (2013). *Qualitative data analysis from start to finish.* 1st Edition. Thousand Oaks: Sage.
- Hill LA, Brandeau G, Truelove E, Lineback K (2014). *Collective genius. The art and practice of leading innovation.* Boston: Harvard Business Review Press.
- Hodgkinson GP, Healey MP (2014). Coming in from the cold: The psychological foundations of radical innovation revisited. *Industrial Marketing Management* 43(8):1306-1313.
- Hughes MJD, Terrell JB (2007). *The emotionally intelligent team. Understanding and developing the behaviors of success.* San Francisco: Jossey-Bass 224 p.
- Hughes MJD, Thompson HL, Terrell JB (2014). *Team emotional and social intelligence survey. User's manual: Collaborative Growth, LLC.*
- Hülshager UR, Anderson N, Salgado JF (2009). Team-level predictors of innovation at work: A comprehensive meta-analysis spanning three decades of research. *Journal of Applied Psychology*, 29(4):128-145.
- Jick TD (1979). Mixing qualitative and quantitative methods: Triangulation in action. *Administrative Science Quarterly* 24(4):602-611.
- Jordan PJ, Troth AC (2004). Managing emotions during team problem solving: emotional intelligence and conflict resolution. *Human Performance* 17(2):195-218.
- JvR Psychometrics (n.d.). MHS Training developed by Multi-Health Systems Inc. EG-I 2.00. Johannesburg, South Africa.
- Kaufmann G (2015). The mood and creativity puzzle. In CE Shalley, MA Hitt J Zhou (Eds), *The Oxford handbook of creativity, innovation, and entrepreneurship.* New York: Oxford University Press pp.141-158.
- Katzenbach JR, Smith DK (1993). *The wisdom of teams. Creating the high-performance organization.* Boston: Massachusetts: Harvard Business Press.
- Kichuk SL, Wiesner WH (1998). Work teams: Selecting members for optimal performance. *Canadian Psychology/Psychologie Canadienne* 39(1-2):23-32.
- Klein KG, Knight AP (2005). Innovation implementation: Overcoming the challenge. *Current Directions in Psychological Science* 14(5):243-246.
- Kratzer R, Roger TH, Leenders AJ, Van Engelen LOML (2005). Informal contacts and performance in innovation teams. *International Journal of Manpower* 26(6):513-528.
- LaFasto F, Larson C (2001). *When teams work best. 6000 team members and leaders tell what it takes to succeed.* Thousand Oaks: Sage.
- Lehmann-Willembrock N, Chiu MM, Lei Z, Kauffeld S (2013). The upward spirals in team processes: Examining dynamic positivity in problem solving teams. *ESMT Working Paper.* European School of Management and Technology pp. 1-46.
- Lerner JS, Keltner D (2000). Beyond valence: Toward a model of emotion-specific influences on judgment and choice. *Cognition and Emotion* 14(4):473-493.
- Lin TC, Huang CC (2010). Withholding effort in knowledge contribution: The role of social exchange and social cognitive on project teams. *Information and Management* 47:188-196.
- McDermott CM, O'Connor GC (2002). Managing radical innovation: an overview of emergent strategy issues. *The Journal of Product Innovation Management* 19:424-438.
- Mayer JD, Salovey P, Caruso DR (2004). Emotional intelligence theory, findings and implications. *Psychology Inquiry* 15(3):197-215.
- Mello JA (2015). *Strategic human resource management* (4th ed.) Stamford: Cengage Learning.
- Mello AS, Ruckes ME (2006). Team composition. *The Journal of Business.* 79(3): 1019-1039. Stable URL: <http://www.jstor.org/stable/10.1086/5000668>.
- Miles MB, Huberman AM, Saldaña J (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). Los Angeles: Sage.
- Miron-Spektor EL, Erez M, Naveh E (2011). The effect of conformist and attentive-to-detail members on team innovation: Reconciling the

- innovation paradox. *The Academy of Management Journal* 54(4):740-760.
- Moekenmeyer G, Hoegl M, Weiss M (2012). Innovator resilience potential: A process perspective of individual resilience as influenced by innovation project termination. *Human Relations* 65(5):627-655.
- O'Boyle EH, Humprey RH, Pollack JM, Hawver TH, Story PA (2011). The relation between emotional intelligence and job performance: A meta-analysis. *Journal of Organizational Behavior* 32:788-818.
- Offermann, LR, Bailey JR, Vasilopoulos NL, Seal C, Sass M (2009). The relative contribution of emotional competence and cognitive ability to individual and team performance. *Human Performance* 17(2):219-243.
- Ong AD, Bergeman CS, Bisconti TL, Wallace KA (2006). Psychological resilience, positive emotions, and successful adaptation to stress in later life. *Journal of Personality and Social Psychology* 91(4):730-749.
- Onwuegbuzie AJ, Leech NL (2004). Enhancing the interpretation of significant findings: The role of mixed methods research. *The Qualitative Report* 9(4):770-792.
- Pearsall MJ, Ellis APJ (2006). The effects of critical team member assertiveness on team performance and satisfaction. *Journal of Management* 32(4):575-594.
- Perretti F, Negro G (2007). Mixing genres and matching people: Study in innovation and team composition in Hollywood. *Journal of Organizational Behavior* 28:563-586.
- Prati LM, Douglas C, Ferris GLR, Ammeter AP, Buckley MR (2003). Emotional intelligence, leadership and team outcomes. *The International Journal of Organizational Analysis* 11(i):21-40.
- Quoibach J, Hansenne M (2009). The impact of trait emotional intelligence on nursing, team performance and cohesiveness. *Journal of Professional Nursing* 25(1):23-29.
- Rabiee F (2004). Focus-group interview and data analysis. *Proceedings of the nutrition society* 63:655-660.
- Reivich K, Shatte A (2002). *The resilience factor: 7 Keys to finding your inner strength and overcoming life's hurdles*. New York: Broadway Books. 352p.
- Ruef M (2002). Strong ties, weak ties and islands: Structural and cultural predictors of organizational innovation. *Industrial and Corporate Change* 11(3):427-449.
- Saldaña J (2014). *The coding manual for qualitative researchers*. Second Edition. London: Sage.
- Scott SG, Bruce RA (1994). Determinants of innovative behavior: A path model of individual innovation in the workplace. *The Academy of Management Journal* 37(3):580-607.
- Sekerka LE, Fredrickson BL (2008). Establishing positive emotional climates to advance organizational transformation. In NM Ashkanasy, CL Cooper (Eds). *Research companion to emotion in organisations*. Cheltenham: Edward Elgar Publications. pp. 531-545.
- Shane SA, Ulrich, KT (2004). 50th Anniversary Article. Technological innovation, product development, and entrepreneurship in *Management Science*. *Management Science* 50(2):133-144.
- Somech A, Drach-Zahavy A (2011). Translating team creativity to innovation implementation: The role of team composition and climate for innovation. *Journal of Management* 39(3):684-708.
- Stanley RO, Burrows GD (2001). Varieties and functions of human emotions. In RL Payne, CL Cooper (Eds), *Emotions at work: Theory, research and applications for management*. Chichester: John Wiley pp. 3-19.
- StrengthScope®. (2011). *Technical and user manual*. Strengths Partnership. West Essex: Strengths Partnership.
- Subramanian ID (2012). Determinant of Innovative Behavior in the Workplace: A Case Study of a Malaysian Public Sector Organisation. *American Journal of Social Issues and Humanities* 2(6):384-397.
- Sun H, Teh PL, Lin B, Ho K (2017). Team diversity, learning, and innovation: A mediation model. *Journal of Computer Information Systems* 57(1):22-30.
- Swart-Opperman C, April K (2015). Individual emotive outlook profiles. Successful and unsuccessful innovative Namibian teams. *Effective Executive* 18(3):31-61.
- Tikas GD, Akhilesh KB (2017). Team innovation capability: Role of "focus" and "intensity" in academic and industrial research teams in India. *The Business and Management Review* 8(4):179-187.
- Tsakalerou M (2016). Emotional intelligence competencies as antecedents of innovation. *The Electronic Journal of Knowledge Management* 14(4):207-219.
- Venkatesh V, Brown SA, Bala H (2013). Bridging the qualitative-quantitative divide: Guidelines for conducting mixed methods research in information systems. *MIS Quarterly* 37(1):21-54.
- Vogt WP, Vogt ER, Gardner DC, Haeffele LM (2014). *Selecting the Right Analyses for Your Data*. Quantitative, Qualitative and Mixed Methods. New York: The Guilford Press.
- Von Krogh G, Ichijo K, Nonaka I (2000). *Enabling knowledge creation. How to unlock the mystery of tacit knowledge and release the power of innovation*. New York: Oxford University Press.
- West MA, Anderson NR (1996). Innovation in top management teams. *Journal of Applied Psychology* 81(6):680-693.
- Whetten DA, Cameron KS (2016). *Developing management skills* (9th ed). New York: Pearson Education.
- Williamson PJ, Yin E (2014). Accelerated innovation: The new challenge from China. *MIT Sloan Management Review* 55(4):27-34.

Full Length Research Paper

Realizing energy management practices as a competitive strategy among manufacturing firms in Kenya: An alternative outlook

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The Kenya's Energy Management Regulations (2012) spells out a raft of actions that consumers of electricity and petroleum products can implement so as to enhance energy efficiency, reduction of energy costs and creation of surplus for distribution. However, few manufacturing companies have carried out implementation. The regulations create avenues for enforcements and promotion of energy management practices within the sector. With lack of coordination and capacity building, energy inefficiencies have continued unabated. The objective of the study was to determine the effect of implementation of energy management regulations on attaining competitive advantage among manufacturing firms in Kenya. Both qualitative and quantitative research approaches were used. A normative survey research design was considered with a target population of 1,459,870 employees drawn from manufacturing in Nairobi County, Kenya. A sample of 399 respondents was randomly selected. Self-administered questionnaire were used to collect primary data while empirical data was obtained from previous studies. Data analysis was done using descriptive statistics (mean, standard deviation, and frequency distributions). Inferential statistics included correlation for test of association, and regression for test of hypothesis. The results showed that implementing energy management regulations contributes 35.7% increase in firm competitive performance while holding other factors constant. The regression result showed that energy management regulations when implemented accounts for 18.6% change in competitive advantage; hence, there remains other factors to be investigated.

Key words: Practices, regulations, competitiveness, outlook.

INTRODUCTION

Mlamo (2004) and Xiaohua (2013) identified accreditation, regulation, audits, and information sharing as the avenues of enhancing energy efficiency practices among business enterprises. The Energy Regulatory

Commission (ERC) in Kenya developed the Energy Management Regulations (2012) through the Energy Act 2006. The Act requires users of energy to put in place energy efficiency practices in all sectors. This means that

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all firms should develop energy performance benchmarks that can be graded upon. In addition, these benchmarks can be used to measure efficiency performance and is instrumental in enforcing compliance of established regulations. IEA (2017) recommends capacity building, behaviour change, promotion of energy management standards, awareness and policy development as contributing to firm energy efficiency.

In Kenya, sub-sectors such as sugar, starch, meat, dairy and the drinks industry are known to use more electrical and fossil energy at the core of their operations. Such energy resources are essential for boiling, evaporation, pasteurization, drying and cooling. With rising energy prices, firms ought to adopt certain measures to achieve further energy management levels and attain its competitiveness (Rademaeker et al., 2011).

Energy management standards, such as the use of tax and fiscal policies, are measures that can also be adopted in energy management endeavours. The current study aims to link the benefits of such efficiency endeavours to attaining competitive advantages, since previous studies anchor on environmental conservations, cost reductions and reduced energy demands (Cantore, 2011).

Energy management regulations in manufacturing firms

In Australia, energy management practices are compulsory for large energy using firms while in Denmark and Netherlands, it is a voluntary initiative (IEA, 2012). The Government of South Africa as cited by Abrahams et al. (2013) noted that the world energy assessment suggests a cost reduction of up to 35% over a period of 20 years, if the appropriate policies are implemented in support of existing energy management practices.

The National Environmental Policy (2013) observed that Kenya is dependent largely on electricity and petroleum sources of energy. The policy document recommends that in order for the country to be energy efficient; “the country’s energy policies must ensure a robust and efficient energy system that is secure and sufficient.” This therefore promotes industrial competitiveness and economic growth.

Energy audits when carried out can lead to huge savings of between 15 to 30%. As such, Kenyan Companies such as Spin Knit and British American Tobacco (BAT) have enjoyed savings of more than 25% in expenses (Makambo, 2012). The energy audits found that flower firms in Kenya enjoyed energy savings of between 3,500 to 40,000 kWh per year and cost savings of between KSh. 71,000 to Ksh.811, 000 if energy management practices are implemented. In this case, it can be argued that; if all manufacturing companies implement the same, then the overall savings for both cost and usage is vast. Carbon Trust (2011) also states

that energy management practice yields a cost savings of 5 to 25%.

Oimeke (2013) concurs that for firms to promote energy management practices, awareness and dissemination of information for efficient use of energy are imperative. He further recommended that companies can strengthen consultancy services, promote research and development in the field of energy management, formulate and facilitate implementation of pilot projects, and give financial assistance to institutions for promoting efficient use of energy, assist in the preparation of energy management educational curriculum, provide incentives for companies that make investment in energy management practices, collaborate with Kenya Bureau of Standards in importation of energy efficient technologies and participation in international co-operation programmes relating to energy management practices. These recommendations are further supported by Energy Regulatory Commission and Lewis et al. (2013) who proposed; introduction of building standards, setting energy management targets with industry, negotiating with industry players, research and development initiatives, all of which can be realized by enforcing the Energy Management Regulations of 2012.

Manufacturing sector in Kenya

The Kenya’s manufacturing sector is the third largest consumer of energy in Kenya (Moraa et al., 2011). This is the sector that leads all other sectors in electricity consumption and the second largest consumer of petroleum products should embrace energy efficient practices. The study further notes that continuous use of electricity and petroleum products has been rising, resulting in increased costs in terms of energy bills and production expenses (Moraa et al., 2011). The findings are supported by earlier studies carried out by Energy Regulatory Commission (ERC) (2016) in Kenya which noted that the shortage of fuel and high electricity prices remain the major problems to the manufacturing sector. The sector uses up to 35% of their total revenues on energy resources. The report also indicates that the country’s annual loss of energy due to inefficiencies is between 10 and 30% (ERC, 2016). Manufacturing processes involves conversion of raw materials into finished goods and in this case, there are opportunities to exercise energy management improvement in order to reduce costs and reduce environmental impact (Contet and Konig, 2012).

In Kenya, there is lack of persistent coordinated national strategy on energy management despite the Energy Management Regulations of 2012 being established (Mbogori et al., 2013; GOK, 2015). In a research commissioned by the Kenya Energy Regulatory Commission, it was revealed, “Energy management is a relatively new concept amongst engineers and facility

managers, with little known about the potential for saving energy and even less is done". This is despite the fact that the overall aim of energy management is to reduce consumption without affecting productivity or increase utility costs (Oimeke, 2013).

Energy Management Regulations (2012)

The Kenya Energy Regulatory Commission (ERC) published the Energy Management Regulations, 2012 to enable consumers carry out energy audits on their firms or households with guidance from licensed auditors recommended by Energy Regulatory Commission. The Energy Bill, 2015 contains a significant clause where the Energy Regulatory Authority is mandated with the authority to coordinate, develop and implement a prudent national energy management and conservation programme (GOK, 2015). This mandate enables the authority advice and conduct energy audits for purposes of advising consumers of electrical energy appropriately. The same bill also stipulates penalties for non-compliance such as; fine of not less than two hundred and fifty thousand shillings, or to a term of imprisonment of not less than nine months, or to both for failure to comply with the authority requests for energy utilization data of their premises. Energy users are also required to develop energy investment plan, conservations measurers, and implementation reports.

The audits are scheduled to take place every three years. The regulations require that the targeted companies have to set up a committee and appoint an Energy Officer in addition to developing and submitting organizational energy management guidelines to The Energy Regulatory Commission for approval. Companies are also required to submit audit reports and implementation plans to the commission for consideration. The Energy Management Regulations of 2012 highlights four key issues to be considered by energy management practicing firms.

The policy enumerates the following as initiatives to be undertaken by firms:

- i) That the owner or occupier shall develop an energy management policy for the facility.
- ii) That the owner or occupier shall within one year of classification file the energy management policy for every designated facility with the Commission for approval before implementation.
- iii) That the owner or occupier of a facility shall designate an Energy Officer for every designated facility, who shall be responsible for the development and implementation of energy management and conservation.
- iv) That the owner or occupier of a facility shall maintain records of information for every designated facility for a minimum period of five years from the date of occupation of the facility, which shall include – monthly and annual electricity, fuel and water consumption. It also includes;

Monthly production data or occupancy levels; and up to date building plans, infrastructure plans and floor area drawings.

In addition to the above requirements, Energy Regulatory Commission also imposed a fine of KES.1 million, a year imprisonment for the facility head or both if they delay in submitting the implementation report. Firms that delay to submit are to be fined also KES. 30,000 per day (Kosgei, 2015).

This refers to Policy Implementation, Energy Audits, Energy Investment Plan, and Energy Management Measures. These are all well-articulated in the energy (energy management) regulations, as designated under The Energy Act, 2006. The Act directs manufacturers and other consumers of electricity and petroleum products to adopt the energy management practices specified, failure to which, penalties will be enforced on non-compliant firms. The effect of not complying is a fine of KES. 1 Million or KES. 30,000 per day.

MATERIALS AND METHODS

The study was carried out in Nairobi County. The study adopted a mixed methods approach, with a descriptive survey research design. The descriptive survey method was used to gain tangible information using structured questionnaires. The questionnaires were administered through drop and pick. Both quantitative and qualitative data collected was analysed using both content analysis for qualitative and descriptive and inferential statistics for quantitative data. It was then presented using Tables. The study selected a random sample of 399 respondents from all the employees of the 14 companies chosen purposively. However, 314 respondents returned the questionnaires. This was considered appropriate since it was above appropriate threshold of 55.6% (Baruch, 1999). Reliability tests results was greater than the minimum accepted Cronbach's alpha coefficient of 0.70 which was the predetermined cut off point. This method enabled collection of facts and relevant information regarding the effect of energy management regulations on sustaining competitive advantage among manufacturing firms (Hussey and Hussey, 1997).

RESULTS AND DISCUSSION

Intensity of Energy Management Regulations (Chi-Square Goodness-of-Fit Test)

The study objective had 9 questions that the study sought to gather responses to. In order for the study to obtain adequate feedback from respondents, the 5-Likert scale items were presented to the respondents and their responses analysed and presented in Table 1.

From Table 1, membership to ERC and Implementation of Energy Management Regulations was statistically significant Chi-Square ($\chi^2 = 349.981^a$ at $p < 0.05$). This indicated that there was a statistically significant difference of agreement among manufacturing firms on whether membership to Energy Regulatory Commission

Table 1. Intensity of energy management regulations.

S/N	Variable	Test Statistics							
		SD(%)	D(%)	NS(%)	A(%)	SA(%)	Chi-Square	df	Asymp. Sig.
1	Member of ERC and Implementation of Energy Management Regulations	2(0.6)	25(8)	178(56.7)	96(30.6)	13(4.1)	349.981 ^a	4	0.000
2	Has Documented Policy with ERC		44(14)	140(44.6)	82(26.1)	48(15.3)	75.350 ^b	3	0.000
3	Has Energy Officer and Keeps Records of Energy Consumptions	11(3.5)	24(7.6)	138(43.9)	117(37.3)	24(7.6)	227.497 ^a	4	0.000
4	Carried At least One Energy Audit		62(19.7)	92(29.3)	113(36)	47(15)	33.592 ^b	3	0.000
5	Submitted Audit Report to ERC		88(28)	85(27.1)	92(29.3)	49(15.6)	15.096 ^b	3	0.002
6	Developed and Submitted Energy Management Investment Plan	7(2.2)	33(10.5)	99(31.5)	130(41.4)	45(14.3)	161.541 ^a	4	0.000
7	Reviews its Energy Management Investment Plan	12(3.8)	22(7)	152(48.4)	127(40.4)	1(0.3)	320.745 ^a	4	0.000
8	Prepared and Submitted Energy Management Implementation Report		57(18.2)	139(44.3)	106(33.8)	12(3.8)	118.484 ^b	3	0.000
9	Firm Audited and Awarded Compliance Certificate	23(7.3)	23(7.3)	149(47.5)	94(29.9)	25(8)	207.019 ^a	4	0.000

^a 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 62.8. ^b 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 78.5.

led to attaining competitive advantage among manufacturing firms, hence facilitating further analysis. The finding showed that manufacturing companies had diverse opinions on the contribution of membership to Energy Regulatory Commission in attaining competitive advantage, with majority of the respondents having a positive preference. As such, membership to Energy Regulatory Commission should be a consideration in attaining competitive advantage (Energy Regulatory Commission, 2012).

Documentation of policy with ERC was statistically significant Chi-Square ($\chi^2 = 75.350^b$ at $p < 0.05$). This indicated that there was a statistically significant difference of agreement among manufacturing firms on whether documentation of company energy management policy led to attaining competitive advantage among manufacturing firms, hence facilitating further analysis. The finding showed that manufacturing companies had diverse opinions on the contribution of documented energy

management policy in attaining competitive advantage, with majority of the respondents having a positive preference. The findings agree with UNIDO (2008) which noted that nations with an emerging and fast increasing manufacturing sector have a particular prospect to increase their competitiveness by applying energy-efficient best practices from the onset in their industrial facilities.

Having an Energy Officer that keeps records of energy consumptions was also statistically significant ($\chi^2 = 227.497^a$ at $p < 0.05$). This indicated that there was a statistically significant difference of agreement among manufacturing firms on whether presence of Energy Officer and record keeping on energy consumptions data led to attaining competitive advantage among manufacturing firms, hence facilitating further analysis. The finding showed that manufacturing companies had diverse opinions on the contribution of presence of Energy Officer and record keeping on energy consumptions data in

attaining firm competitiveness. The results showed that the presence of a company Energy Officer or staff that monitors energy expenses and consumption led to significant improvement in attaining competitive advantage among manufacturing firms. The study also noted that there was positive preference on the presence of a company Energy Officer or staff as a practice that can lead to attainment of competitive advantage through continued monitoring of energy consumptions. IEA, in its study of South Africa supports the current study finding by recommending capacity building and behaviour change among industry players to sustain energy management gains (IEA, 2017).

Energy audits was statistically significant ($\chi^2 = 33.592^b$ at $p < 0.05$). This indicated that there was a statistically significant difference of agreement among manufacturing firms on whether conducting at least one energy audit led to attaining competitive advantage among manufacturing firms, hence facilitating further

analysis. The finding showed that manufacturing companies had diverse opinions on the contribution of carrying out at least one energy audit in attaining firm competitiveness, with the respondents showing a preference for such practice. This indicated that if manufacturing company carried out energy audits, the resultant effect is a significant improvement in attaining competitive advantage among manufacturing firms. Price and Wang (2007) as cited by (UNIDO, 2008) agrees with the study findings that energy audits remained as one of the key strategies in promoting energy management practice so as to enable the company control deviations that might impede organizational efforts in energy management efforts. Their study further stated that, collecting data on all major energy-consuming processes, collecting data on equipment and other related machinery in a plant, documenting technologies used in all production processes, and identifying opportunities for energy management improvement by a company assists in preparing detailed report with appropriate recommendations for the company to adopt. It concludes its report by supporting energy management audits as the essential first step in identifying opportunities that can contribute to an organization's energy management targets.

Submission of audit reports to ERC was statistically significant ($\chi^2 = 15.096^b$ at $p < 0.05$). This indicated that there was a statistically significant difference of agreement among manufacturing firms on whether submission of audit report to the ERC led to attaining competitive advantage among manufacturing firms, with the respondents showing a preference for such practice, hence facilitating further analysis. This indicated that the submission of such reports contributed a significant improvement in attaining competitive advantage among manufacturing firms. IEA (2017) agrees with the study findings and recommends that, "behaviour change can offer unique and hard to replicate competitive advantages and is necessary in a world of ubiquitous technology which can no longer be relied on to maintain a cutting edge". Hence, it becomes imperative that manufacturing companies in Kenya also become obligated in creating awareness among staff, training and present its yearly reports to Energy Regulatory Commission for verification and recommendations on how to better energy management efforts.

Having an energy management investment plan was statistically significant ($\chi^2 = 161.541^a$ at $p < 0.05$). This indicated that there was a statistically significant difference of agreement among manufacturing firms on whether developing and submitting energy management investment plan to Energy Regulatory Commission led to attaining competitive advantage among manufacturing firms, with respondents showing a preference for such practice, hence facilitating further analysis. This indicated that the submission of energy management plan to ERC

contributes a significant improvement in attaining competitive advantage among manufacturing firms. UNIDO, in its study findings carried out in the USA and Mexico further agreed with the study finding by stating that evaluations of energy management efforts and action plans helped firms to focus their attention on energy management and identify low-cost energy management options within a commonly agreeable investment benchmarks (UNIDO, 2008).

Review of energy management investment plan was statistically significant ($\chi^2 = 320.745^a$ at $p < 0.05$). This indicated that there was a statistically significant difference of agreement among manufacturing firms on whether reviewing energy management investment plan led to attaining competitive advantage among manufacturing firms, with respondents showing a preference for such practice, hence facilitating further analysis. This indicated that compliance in continued revision of energy management plan does contribute to improvement in attaining competitive advantage among manufacturing firms. Studies by UNIDO albeit agrees with the findings but recommends typical reviews of energy management practices by an independent third party and be updated as need arises in response to changes over time. UNIDO further argued that energy reviews should focus on company's energy usage and uses, its energy management measures, a timeframe for implementing energy management measures and expected results (UNIDO, 2008).

Having an energy management implementation report was statistically significant ($\chi^2 = 118.484^b$ at $p < 0.05$). This indicated that there was a statistically significant difference of agreement among manufacturing firms on whether preparing and submission of energy management implementation report led to attaining competitive advantage among manufacturing firms, with respondents showing a preference for such practice, hence facilitating further analysis. This indicated that the preparation and submission of energy management implementation report contributes a significant improvement in attaining competitive advantage among manufacturing firms. The study finding agrees with UNIDO which recommended that certification of compliant organization enhances the practice of energy management among manufacturing organizations (UNIDO, 2008). Hence, this should be a requirement among all manufacturing firms in Kenya.

Being awarded compliance certificate was statistically significant ($\chi^2 = 207.019^a$ at $p < 0.05$). This indicated that there was a statistically significant difference of agreement among manufacturing firms on whether firm auditing and awarding of compliance certificate led to attaining competitive advantage among manufacturing firms, with respondents showing a preference for such practice, hence facilitating further analysis. This indicated that auditing of manufacturing firms and awarding of

compliance certificate contributed to improvement in attaining competitive advantage among manufacturing firms. Natural Resource of Canada (2002) supports the study finding by noting firms should carry out energy audits since it remained a fundamental step in developing organizational energy management program. It further states that energy audit varies widely from one organization to another but the ultimate goal is to improve energy management and decrease energy costs. The guidelines acknowledge that external consultants usually carry out energy audits and organizations have a great opportunity in utilizing internal personnel. In its summary, Natural Resource Canada (2002) notes with great emphasis that energy audits enable a firm to verify effectiveness of its energy management opportunities.

The summary result for the study objective is supported by the Energy Management Regulations, 2012, which requires that all manufacturing companies enforce and adopt the Energy Management Regulation (Energy Regulatory Commission, 2012). Studies in Australia agrees with the current result by establishing that energy management practices are compulsory for large energy using firms while in Denmark and Netherlands, which is a voluntary initiative (IEA, 2012). The Government of South Africa (2004) report also points out that the world energy assessment leads to a cost reduction of up to 35% over a period of 20 years, if the appropriate policies are implemented in support of existing energy management practices. In Kenya, energy management practices also are a voluntary exercise since the governments seem to lack capacity in enforcing Energy Management Regulations, 2012; and this explains why the sector still incurs high cost on petroleum and electricity as shown in Table 4, with an average Expenses of 10.5% of their revenues.

The report by ERC (2016) shows that 268 company energy management policies were approved for implementation by the end of 2016. However, the current study findings show that most employees in manufacturing companies are “not sure” if it is being implemented in their companies. This implied that due to the stiff penalties of KES. 1 Million Levied if a company does not submit the guidelines for approval, most companies were fulfilling the requirement without the desire of implementation in their companies. This disagrees with the findings in Kenya which showed that the Kenya Energy Efficiency Accord launched in September 2011, saw 19 KAM member companies sign up voluntarily committing themselves to reduce their energy consumption of between 5 and 15% by 2016 with 10 more companies registering in 2012. However, by 2016 the consumption in the manufacturing sector had increased by 2.9% for electricity and 8.9 for petroleum products with a likelihood of more increase in consumption (KNBS, 2017).

The findings by Fischer (2013) support the results of the current study that in 2013, the U.S. was just 39%

efficient in energy use. This implies that 61% of the firms and households did not practise energy management and the same scenario is not different in Kenya. The current study findings are also supported by studies in South Africa (Mlamo, 2004) who established that energy management opportunities in Africa are often disregarded owing to the simple fact that users of such resources are unaware that they exist.

However, the study shows that a few companies that participate in the yearly energy management awards organized by Kenya Association of Manufacturers (KAM) are able to implement such guidelines (Kiema, 2014; Laurea, 2015). In addition, findings from a report presented by Sarah and Louise (2005) resolved that companies need to; provide an energy management policy to all staff, and promote awareness campaign on energy management practices which is not so, in the current situation in Kenya.

Correlation and regression analysis

The objective of the study was to determine the effect of implementation of energy management regulations on attaining competitive advantage among manufacturing firms in Kenya. The indicators of energy management regulations mean scores were used to test the first hypothesis. Respondents were also asked to indicate the extent to which energy management regulations had affected competitive advantage among manufacturing firms in Nairobi. The correlation results as shown in Table 2 revealed a moderate and positive relationship which showed that implementing energy management regulations has a positive effect on competitive advantage. The correlation result was statistically significant at $p = 0.05$.

The aggregate mean score of competitive advantage (dependent variable) was also regressed on the aggregate mean score of implementing energy management regulations (Independent variable) and the relevant results presented in Table 3. The regression results revealed a statistically significant relationship at 5% significance level between energy management regulations and competitive advantage (p -value = 0.05). The null hypothesis that (H01: Implementation of energy management regulations has no significant effect on attaining competitive advantage among manufacturing firms) was rejected since p -value was less than 5% significance level as shown in Table 3. The regression results showed that a one-percentage increase in energy management practices led to an increase of competitive advantage by 35.7% (coefficient of 0.357). This change is significantly beneficial to the manufacturing sector in attaining competitive advantage.

These findings are consistent with Kiema (2014) who noted that one unit of energy saved, corresponds to a saving of three units generated. The report further

Table 2. Correlation analysis.

Correlations		Dependent Variable-CA-Weighted Means for 9 Sub Variables	Objective 1: EMR-Weighted Means for 9 Sub Variables
Pearson Correlation	Dependent Variable-CA-Weighted Means for 9 Sub Variables	1.000	0.431
	Objective 1:EMR-Weighted Means for 9 Sub Variables	0.431	1.000
Sig. (1-tailed)	Dependent Variable-CA-Weighted Means for 9 Sub Variables	.	0.000
	Objective 1:EMR-Weighted Means for 9 Sub Variables	0.000	.
N	Dependent Variable-CA-Weighted Means for 9 Sub Variables	314	314
	Objective 1:EMR-Weighted Means for 9 Sub Variables	314	314

Table 3. Regression analysis.

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0.431 ^a	0.186	0.183	0.07766	0.186	71.309	1	312	0.000

^a Predictors: (Constant), Objective: Energy Management Regulations.

ANOVA ^b							
Model		Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	0.430	1	0.430	71.309	0.000 ^a	
	Residual	1.882	312	0.006			
	Total	2.312	313				

^a Predictors: (Constant), Objective: Energy management regulations.

^b Dependent Variable: Dependent Variable-Competitive advantage.

Coefficients ^a											
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	2.894	0.142		20.381	0.000					
	Objective: Energy Management Regulations	0.357	0.042	0.431	8.444	0.000	0.431	0.431	0.431	1.000	1.000

^a Dependent variable: Dependent variable-Competitive advantage.

Source: Research Data.

Table 4. Average Energy Expense (Petroleum and Electricity)

	Costs on Energy	σ
Annual Petroleum and Electricity Costs	10.5%	1.25797

indicates that in Kenya, energy costs and reliability has remained the biggest challenge to be overcome. The report also states that with the Kenya Association of Manufacturers (KAM) decision to establish Centre for Energy Management and Conservation (CEEC), gains in energy management are yet to be achieved. The Government of Kenya has also undertaken initiatives to address energy management issues. For instance, the Global Fuel Economy Initiative (GFEI) pilot study by the Energy Regulatory Commission provided recommendations and policy instruments to manage the national vehicle fleet and imports with regard to vehicle fuel economy (consumption litres per 100 km), and vehicle emissions (gCO₂/km) in the country (ERC, 2014).

Conclusion

The objective of the study was to determine the effect of implementation of energy management regulations on attaining competitive advantage among manufacturing firms in Kenya. The significant positive relationship between energy management regulations and competitive advantage implied that implementing energy management regulations had a significant influence on competitive advantage among manufacturing firms in Nairobi (Table 3). This showed that manufacturing firms stand to benefit competitively if they implement energy management practices in their firms.

These results are in agreement with International Project Management Office (OGPI) (2013) which argues that Kenya is yet to establish an Energy Research Institute or Energy research labs that can carry out energy use and energy management studies. This therefore puts the country at risk of not attaining its energy management initiatives despite the presence of energy management policy and institutions mandated to promote the same. On the same note, the government of Kenya has planned to set minimum energy management standards for certain machines and to increase awareness of energy management and related technologies so as to improve organizational energy management practices. However, this is yet to be realised fully as a pivotal strategy in enhancing energy management practices among the manufacturing firms in Kenya.

The Kenya Association of Manufacturers has taken up the role of promoting energy management practices through the Centre for Energy Efficiency and Conservation and has been providing training and energy audits on energy management to manufacturers in Kenya. It also oversees the yearly Energy Management

Awards (EMA), which recognizes major and attainable gains in energy management, energy and cost reductions among participating companies (Laurea, 2015). If the government support is not realized, then the manufacturers may not realize anticipated organizational performance and manufacturers will continue shifting base to other countries (Olingo, 2016).

Based on the overall study results obtained from the study results, the study concludes that there is a positive significant relationship between energy management practices in attaining competitive advantage among manufacturing firms. The dimensions of energy management practices (Energy Management Regulations, Company Energy Management Policy, Energy Efficient Technology and Energy Expenses) have a significant effect on competitive advantage and that there is need for deliberate, concerted effort by the manufacturing firms in enforcing energy management practices themselves so as to attain firm competitiveness and reduce the risk of business closure or migration to other countries (Olingo, 2016; Wakiaga, 2017).

RECOMMENDATIONS

While this study produced meaningful results, it was subject to several limitations that in turn provided avenues for further research. First, the study focused only on the direct and indirect effects of energy management practices on attainment of competitive advantage. In view of this, the study recommends that future studies can be conducted on the moderating effects of competitive advantage such as the macro-environmental factors such as inflation and taxation.

ABBREVIATIONS

UNIDO, United Nations Industrial Development Organization; **ERC**, Energy Regulatory Commission of Kenya; **KAM**, Kenya Association of Manufacturers; **KNBS**, Kenya National Bureau of Statistics; **BAT**, British American Tobacco; **GOK**, Government of Kenya; **KES**, Kenya Shillings; **IEA**, Institute of Economic Affairs; **CEEC**, Centre for Energy Management and Conservation; **GFEI**, Global Fuel Economy Initiative; **EMA**, Energy Management Awards; **OGPI**, International Project Management Office.

CONFLICT OF INTERESTS

The author has not declared any conflict of interests.

REFERENCES

- Abrahams Y, Fischer R, Martin B, McDaid L (2008). Smart Electricity Planning: Fast-tracking our transition to a healthy, modern, affordable electricity supply for all pp.35-36. <https://90by2030.org.za/wp-content/uploads/2018/02/Smart-Electricity-Planning-March-2013.pdf>
- Baruch Y (1999). Response rate in academic studies-a comparative analysis. *Human Relation* 52(4):421-483.
- Cantore N (2011). Energy efficiency in developing countries for the manufacturing sector. A Working paper for the United Nations Industrial Development Organization. Vienna
- Carbon Trust (2011). Energy management: A comprehensive guide to controlling energy use. London.
- Contet P, Konig U (2012). Guide to Resource Efficiency in Manufacturing. Greenovade Belgium
- Energy Regulatory Commission (ERC) (2012). Legal Notice No. 102. Energy Act (No. 12 of 2006). Government of Kenya. Nairobi. Kenya
- Energy Regulatory Commission (ERC) (2014). Statement on Local Petroleum Pump Prices. Available from https://erc.go.ke/index.php?option=com_content&view=article&id=216:erc-statement-on-local-petroleum-pump-prices&catid=98&Itemid=579
- Energy Regulatory Commission (ERC) (2016). Development of A Fuel Economy Labelling and Feebate Programme for Motor Vehicles in Kenya. Final Draft Report. University of Nairobi Enterprises and Services Limited, Energy Regulations Commission. Nairobi, Kenya. https://erc.go.ke/index.php?option=com_docman&task=doc_download&gid=179&Itemid=429
- Fischer B (2013). Energy efficiency: Greentechmedia. Retrieved April 16, 2014, from <http://www.greentechmedia.com/articles/read/look-america-is-only-39-efficient>
- Government of Kenya (GOK) (2015). Draft National Energy and Petroleum Policy. Nairobi: Ministry of Energy and Petroleum. Available at https://www.erc.go.ke/images/docs/National_Energy_Petroleum_Policy_August_2015.pdf
- Government of South Africa. (2005). South Africa country report: Fourteenth Session of the United Nations Commission on Sustainable Development. SA. Retrieved from <http://www.un.org/esa/agenda21/natlinfo/countr/safrica/industry.pdf>
- Hussey J, Hussey R (1997). Business Research: A practical guide for undergraduate and postgraduate students. New York: Palgrave.
- Institute of Economic Affairs (IEA) (2012). Energy Management Programmes for Industry: Gaining Through Savings. Institute for Industrial Productivity. International Energy Agency. <https://www.iea.org/publications/freepublications/publication/policy/pathways/industry.pdf>
- Institute of Economic Affairs (IEA) (2017). Energy Management Systems and Programmes in South Africa. Industrial Energy Efficiency Project. IEA Workshop. Paris: 11-12 December 2017. www.iee-sa.co.za
- International Project Management Office (OGPI) (2013). National Round Table Forum on "Energy Accessibility & Efficiency in Kenya" Report. University of Alicante. ENRICH Project, retrieved from: www.enrich-project.eu
- Kiema M (2014). 10th Energy Awards celebrate over Sh10bn in energy savings. Retrieved 29/06/2015. <http://www.capitalfm.co.ke/eblog/2014/04/08/10th-energy-awards-celebrate-over-sh10bn-in-energy-savings/>
- Kosgei G (2015). Kenya Energy Audits. Kenya's Energy Future. Retrieved from <https://kenyaenergyfuture.wordpress.com/tag/kenya-energy-management-regulations-2012/>
- Laurea (2015). Kenya Country Report. Retrieved from: <https://www.laurea.fi/dokumentit/Documents/Kenya%20Country%20Report.pdf>
- Lewis O, Hogain S, Borghi A (2013). Building Energy Efficiency in European Cities <https://sokodirectory.com/2015/03/winners-of-the-energy-management-awards/>
- Makambo K (2012). Improving Competitiveness through Energy Management. Presentation to Kenya Flower Council. Nairobi. Rencon Associates Ltd. Available at http://www.kenyaflowercouncil.org/presentation_nov_2012/3-Presentation%20-%20Kenya%20Flower%20Council.pdf
- Mbogori LK, Dennis MK, Emmanuel OJ (2013). Energy Performance Baselines and Benchmarks & the Designation of Industrial, Commercial and Institutional Energy Users in Kenya. Ecocare International Ltd. Kenya. Available at [http://www.renewableenergy.go.ke/asset_uplds/files/B%20%26%20B%20Report%20v2_13%20Final%20\(1\).pdf](http://www.renewableenergy.go.ke/asset_uplds/files/B%20%26%20B%20Report%20v2_13%20Final%20(1).pdf)
- Mlamo PN (2004). Draft energy efficiency strategy of the republic of South Africa Department of Minerals and Energy. Pretoria, SA. Retrieved from http://www.compete-bioafrica.net/policy/energy_efficiency_strategy.pdf
- Moraa S, Etyang M, Mwabu G (2011). The Demand for Energy in the Kenyan Manufacturing Sector. *The Journal of Energy and Development* 34(2):265-276.
- Natural Resource of Canada (2002). Energy Efficiency Planning and Management Guide, Retrieved from: www.nrcan.gc.ca/sites/oe.nrcan.gc.ca/files/.../pdf/energy-audit-manual-and-tool.pdf
- Oimeki RP (2013). Policy, legal and regulatory framework for energy efficiency and conservation in Kenya. A conference presentation by the energy regulatory commission of Kenya at safari park hotel. Nairobi. Kenya. <http://www.esi-africa.com/wp-content/uploads/i/EAPIC/Pavel-ROimeke.pdf>
- Olingo A (2016). Cheap Imports, High Power Costs Pushing Manufacturers out of Kenya. *The Standard*. Retrieved on 4th April, 2017 from: <http://www.theeastafrican.co.ke/business/Cheap-imports-high-power-costs-push-manufacturers-out-of-Kenya>.
- Rademaeker K, Asaad S, Berg J (2011). Study on the competitiveness of the European companies and resource efficiency. <https://ec.europa.eu/docsroom/documents/5189/attachments/1/translations/en/renditions/pdf>
- Sarah B, Louise K (2005). Industrial energy management best practice programme for South Africa some advice and guidance on key components and effective action. Department of Minerals and Energy. Pretoria. Available at http://www.energy.gov.za/EEE/Projects/Industrial%20Energy%20Management/Best%20Practise%20Program/Implementing%20an%20energy%20management%20best%20practice%20programme_DT.pdf
- United Nations Industrial Development Organization (UNIDO) (2008). Policies for promoting industrial energy efficiency in developing countries and transition economies. Retrieved from <http://www.unido.org/index.php?id=o71852>.
- Wakiaga F (2017). Manufacturing Priority Agenda 2017. Driving Industrial Transformation for Job Creation and Inclusive Economic Growth- Kenya Association of Manufacturers. Nairobi, Kenya. Retrieved from <http://www.kam.co.ke/Docs/KAM-MPA-2017.pdf>

Full Length Research Paper

Does sustainability foster the cost of equity reduction? The relationship between corporate social responsibility (CSR) and riskiness worldwide

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The relationship between sustainable practices and a firm's financial performance is an open debate among academics, managers and investors worldwide. Despite large literature in the field of corporate social responsibility (CSR) and corporate financial performance (CFP), there is still a lack of unanimous consensus around the impact of sustainability on a firm's economic achievements. This study aims to analyse this relationship and fill some of the gaps within existing literature using two geographical samples, a European and a global one, proceeding to compare obtained results. Such analysis was performed employing an ex ante implied proxy for the cost of equity, which has been selected in order to overcome methodological weaknesses of previous studies. Results show that sustainability can reduce the cost of equity due to lower firm riskiness, as perceived by markets and investors. Geographical specificities, on the other hand, do not play a significant role. CSR practices have the potential to create a type of goodwill or moral capital for more sustainable firms that acts as protection when negative events occur, preserving shareholder value and reducing the firms' cost of equity.

Key words: Cost of equity, price earnings growth (PEG) ratio method, corporate social responsibility (CSR), EPS forecasts, riskiness.

INTRODUCTION

The relationship between corporate social responsibility (CSR) and firm performance is a strongly debated topic among academics, managers and policy-makers. According to majority of CEOs worldwide, for example, CSR is considered an "*important*" or "*very important*" task for their firms (UN Global Compact-Accenture, 2010). Nevertheless, the idea that stronger environmental, social

and governance (ESG) practices and improved financial performance are positively related is not yet universally endorsed (Di Giulio et al., 2011; Endrikat, 2015; Margolis and Walsh, 2003; Margolis et al., 2007; Murphy, 2002; Perrini et al., 2011).

There is still have a vast part of the world, including Africa, South America and the Middle East, unexplored in

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terms of CSR and its antecedents (Gruber and Schlegelmilch, 2015; Kühn et al., 2018; Munro, 2013). In the meantime, the open question still seems to be: “does CSR lead to value creation and, if so, in what ways?” (Cheng et al., 2014) or does more suitable CSR practices merely represent an additional financial burden for firms (Sharfman and Fernando, 2008)?

Taking off from the view of the firm as a nexus of relationships with various stakeholders (Boulding, 1956; Freeman, 1984; Wood, 2010), a series of pioneer researches have examined the benefits to be drawn from an improved co-existence between firms and the environment (Bragdon and Marlin, 1972; Chen and Metcalf, 1980; Nelson, 1994; Porter and Van der Linde, 1995; Spicer, 1978). This initial stream of research, based on the economic theory of stakeholder management, has indicated that sustainability can increase value for the firm by creating value for the stakeholders involved in and around it (Di Giulio et al., 2011; Post et al., 2002), financial benefits for shareholders, protection for the environment, compliance with lawmakers, improved reputation among consumers, surrounding communities and investors.

At this point, it is worth noting that the theory often incorporates CSR within the concept of reputation. In fact, following Barnett et al. (2006), reputation can be defined as “*observers’ collective judgment of a corporation based on assessments of the financial, social, and environmental impact attributed to the corporation over time*”. In this context, a firm’s reputation plays a crucial role in determining behavior (Wilson, 1985), reducing agency issues in the absence of formal contracts and firms cost and access to finance (Anginer et al., 2016; Jo and Na, 2012). However, empirical evidence concerning the benefits deriving from improved reputation on equity financing is relatively scarce.

Measuring the cost of equity capital and understanding how it can be affected by exogenous variables is crucial for both managers and investors, due to its impact on a firm’s value (Kempf and Osthoff, 2007). Indeed, the higher the perceived risk, the higher the returns required by investors (Himme and Fischer, 2014). Such line of studies has also greatly focused on the differences that pricing models present between developed and emerging economies, such as Africa and the Middle East (Hearn, 2009; Hearn and Piesse, 2015; Paulo, 2011).

According to Lozano (2013), sustainable investments that go beyond mere compliance towards a holistic view of CSR can generate lower costs of equity for firms, making it also interesting to understand whether investors reward firms that make higher CSR disclosures, given the growing importance of the “Socially Responsible Investing” (SRI) over the past twenty years. Following Richardson and Welker (2001), it seems clear that comprehensive and transparent disclosures of value-relevant information can behoove firms with superior

financial achievements.

This study aims to tackle the aforementioned methodological issue and fill the gap within existing literature that leaves European firms, as well as comparative data uncovered (Reverte, 2012). Starting from the commonly shared idea that the relationship between strong CSR commitment and corporate financial performance is positive and statistically significant (Heart and Ahuja, 1996; King and Lenox 2001, 2002; Klassen and McLaughlin, 1996), this work delves deeper into whether a superior level of governance, social and environmental sustainability influences a firm’s creditworthiness and reduces its cost of equity.

LITERATURE REVIEW

The popularity that CSR has gained over the past decades has given birth to a vast stream of academic works that study its nature and effects on firms. From a financial point of view, the starting point of most research studies has been the relationship between sustainability and the direct financial outcomes of firms implementing it. As previously mentioned, however, it is quite clear that no consensus regarding the effects of sustainable practices on financial performance has been reached (Endrikat, 2015; Margolis and Walsh, 2003; Margolis et al., 2007).

More specifically, various authors highlight a positive and statistically relevant connection between CSR and CFP (Dowell et al., 2000; Golicic and Smith, 2013; Hart and Ahuja, 1996; King and Lenox, 2001; Klassen and McLaughlin, 1996; Russo and Fouts, 1997; Statman and Glushkov, 2009), while another group of researchers show a null or a negative relationship (Brammer et al., 2006; Gregory and Whittaker, 2012; Khanna and Damon, 1999; Wagner, 2005). According to Endrikat (2015), this misalignment of findings may be the consequence of validity issues among the various measures used to operationalize the selected explanatory variables and the timeframes used to run the econometric analyses.

In the meantime, the majority of researchers have focused their attention on the effect of strong sustainable practices on accounting and financial measures of a firm’s performance, such as return on assets (ROA), return on equity (ROE) and return on sales (ROS) or on stock market measures, such as Tobin’s Q and stock returns (Christmann, 2000; Hart and Ahuja, 1996; Khanna and Damon, 1999; King and Lenox, 2001; Konar and Cohen, 2001; Russo and Fouts, 1997; Wagner, 2005), while normally neglecting the impact of sustainable actions on the cost of capital. This work was drawn from the theoretical background linking CSR to corporate reputation in order to examine the benefits that governance, environmental and social practices can bestow upon a firm’s cost of capital, more specifically its cost of equity. According to Cao et al. (2015) a firm’s

reputation can reduce the cost of equity for several reasons:

- (1) Signaling higher company quality (Chan et al., 2001),
- (2) Offering higher investor recognition and a lower return as a consequence (Loughran and Schultz, 2005) and
- (3) Improving the quality of financial reports' (Cao et al., 2012).

A firm's cost of equity, that is the discount rate the market applies to expected future cash flows to equity, is a pivotal value for managers despite the fact that it is not directly observable. Naturally, the cost of equity constitutes a fundamental input for firms to outline their operating and financial strategies, with risk of being the driver of such cost. Lozano (2005), highlighted that risk management is crucial for firms due to its effect on the relational nexus built between the firm and a series of internal and external entities, since risk has the potential to take a toll on reputation, processes and ordinary management (Di Giulio et al., 2011).

Various authors have supported the existence of a relationship between CSP and the degree of operational risk, highlighting a positive impact generated by environmental, social and governance efforts on a company's risk reduction (Orlitzky and Benjamin, 2001). Graham et al. (2005), highlighted the importance of managing the cost of equity, showing that reducing the latter is one of the main factors urging managers to adopt strong sustainable practices and non-financial disclosure (Botosan, 1997). The relationship between corporate disclosure and the cost of equity has been thoroughly studied (Diamond and Verrecchia, 1991; Easley and O'Hara, 2004; Lambert et al., 2006) with the majority of researchers pointing to a negative and statistically significant connection between the two, as stronger disclosure policies seem to lead to lower operational risk.

Jo and Na (2012) define firm risk "*as a risk inherent in a firms' operations as a result of external or internal factors that can affect a firm's profitability*"; it represents the uncertainty concerning future events and outcomes and can be measured as the volatility of financial performance. Such volatility may affect the share price (market risk) or the accounting returns (accounting risk) (Orlitzky and Benjamin, 2001). From a stakeholder theoretical point of view, as well as within the management theory (managerial credibility employed to produce signaling effects) (Waddock and Graves, 1997), higher levels of CSP are associated with lower levels of firm risk. Thus, according to Orlitzky and Benjamin (2001), lawsuits against various air and water polluters, cigarette manufacturers, and harvesters of old-growth redwoods and wetlands developers are examples of higher firm risk due to lower CSP. As Godfrey (2005) and Godfrey et al. (2009) suggest, CSR practices, due to their voluntary nature, can create a form of goodwill or moral

capital for firms that are able to encourage stakeholders to take a more lenient stance in case of negative future events (Uzzi, 1997) significantly influencing the firm's riskiness.

In contrast to the previous literature, the relationship between CSR practices and the cost of equity is poorer in terms of firms and countries analysed. Beaver et al. (1970) have been precursors in this field, suggesting that firm systematic risk is strongly related to "*lower dividend payout, higher growth, smaller asset size, and greater leverage*"; this is also suggested by Himme and Fisher (2014). There are considerably less studies focusing on the relationship between strict social and environmental management and reductions in the cost of equity. Feldman et al. (1997), found a positive effect of strong environmental management on the firm's beta and stock price, while, successively, Garber and Hammit (1998) demonstrated a positive impact of sustainable practices on the cost of equity for large firms and a null relationship for smaller ones. Following Chava (2010), firms should also improve their environmental practices, due to the growing trend of socially responsible investing (SRI) worldwide.

The Social Investment Forum (2006), described SRI as "*an investment process that considers the social and environmental consequences of investments, both positive and negative, within the context of rigorous financial analysis*" (Statman and Glushkov, 2009). A growing number of investors incorporate SRI in their investment decisions because they prefer firms with a higher environmental commitment for their portfolios (Chava, 2010; Stubbs and Cocklin, 2007).

In this direction, implementing a simple trading strategy based on sustainable investments, Kempf and Osthoff (2007) suggested that investing in stock with strong CSR ratings while discarding stock with poor ones can generate high abnormal returns reaching up 8.7% per year. Dhaliwal et al. (2011) assumed that CSR can reduce the cost of equity stressing its crucial role for a firm's operational and strategic decisions. This conclusion is also shared by corporate executives, as pointed out by Graham et al. (2005), who interviewed hundreds of CFOs worldwide to grasp the key factors that drive decisions related to performance measurement and voluntary disclosure.

On the other hand, Brammer et al. (2006) examined the link between sustainability (environment, employment and community activities) and expected stock returns, using a sample of sustainable UK firms. The study pointed out that lower returns are to be expected by firms performing better on social rather than environmental aspects of CSR. Sharfman and Fernando (2008) argued that a firm's commitment to environmental risk management is positively reflected in its cost of capital due to the lower riskiness of environmentally friendly firms (Heinkel et al., 2001; Mackey et al., 2007).

Chava (2014) and Goss and Roberts (2011), instead, posit that a cost of debt reduction benefits firms with stronger social and environmental tasks. Following these authors, the cost of equity, the cost of debt and the weighted average cost of capital are strongly influenced by social, environmental and governance practices. Analysing a sample of Canadian listed companies, Richardson and Welker (2001), in line with existing literature in the field, found a negative relationship between the cost of equity and financial disclosure, while, in contrast with other relevant findings, they suggest a positive relationship exists between social disclosure and the cost of equity. They argue that this potential bias is moderated by ROE with more successful firms appearing less penalized for their social disclosures. In addition, Cao et al. (2015), revealed a negative relationship between companies with higher reputation and their cost of equity.

As pointed out by Graham et al. (2005), a crucial reason driving firms to publish voluntary disclosure reports is the effect of such disclosures on the firm's performance and, in particular, on the firm's cost of equity, given that better disclosure practices can reduce the cost of equity in two ways:

- (1) Decreasing the estimation risk in the capital markets and
- (2) Mitigating the transaction costs and information asymmetries issue (Leuz and Verrecchia, 2000, 2008; Verrecchia, 2001).

Indeed, many international firms publish separate annual social and environmental performance reports (Klassen and McLaughlin, 1996) as response to investor's expectations, as well as a common measure to mitigate reputational risk (Bebbington et al., 2008; Unerman, 2008). In the meantime, evidence comes from emerging markets as well, which enhances the significance of voluntary disclosures worldwide with specific cases being made regarding the efforts introduced in African countries (Bimha and Nhamo, 2017; Dachs, 2010; Mensah and Kwame, 2016). These data are provided by firms in a clear and verifiable manner, similar to economic and financial data, in order to provide a comprehensive picture concerning the firm's sustainable efforts (KPMG, 2008). Social and environmental issues and the way in which firms manage these concerns is growing in importance both for companies and investors selecting their strategies (Sullivan, 2011).

More in depth sustainability reporting (SR) "*is a report published by a company or organization about the economic, environmental and social impacts caused by its everyday activities*" (globalreporting.org). SR can be viewed as the most direct measure of a company's tendency towards social responsibility (Perrini, 2005), providing a large set of performance indicators and

following the triple-bottom line approach developed by Elkington (1997). Researchers have further suggested that firms may opt for CSR reporting to "*legitimize various aspects of their respective organizations*" (Deegan, 2002). Better social and environmental reputation and management credibility is believed to reduce the perceived risk (Gardberg and Fonbrun, 2006; Godfrey, 2005; Jensen and Meckling, 1976) of the organization from a creditor's perspective, a signaling effect known as good management theory (Waddock and Graves, 1997).

According to Weber et al. (2010), a firm's sustainability can improve the validity of its credit rating process, influencing the company's creditworthiness as a part of its financial goals (Reverte, 2012). Sustainability-oriented companies, according to Schaltegger and Burritt (2005), face risk in a positive manner because they perceive it as an element that is able to enhance financial performance and stability by exploiting its potential upside and not just as an element that can destroy value.

Moving towards the core of this study, there are different ways to measure a firm's cost of equity. The average realized periodical returns seem to be too weak and unreliable as proxy for expected returns (Elton, 1999). As a consequence, this measure has been avoided, given that academics also agree it is necessary to define new, more robust proxies (Botosan and Plumlee, 2002; Chava and Purnanandam, 2010; Easton, 2004; Elton, 1999; Pastor et al., 2008).

Ohlson (1995) highlighted that the "*ex ante implied cost of equity that is impounded in current market prices and analysts' earnings forecasts*" can represent a truthful and reliable proxy to this purpose. In this light, Botosan and Plumlee (2002) suggested two methods, among others, to calculate a firm's cost of equity: (1) the Price Earnings Growth ratio method (PEG) and (2) the Target price method. The authors pointed out that the results obtained using these methods are consistent among them.

Concluding, as mentioned previously, researchers agree that a negative and statistically significant relationship between CSR and cost of equity exists (Botosan, 2006; Core, 2001; Leuz and Wysocki, 2008). According to Reverte (2012), who analysed this relationship using a sample of Spanish listed firms, previous researchers in the field of interest have mainly focused their attention on US and Canadian companies. To bridge this gap, the present paper conducts an analysis on two different geographical samples and proceeds with a comparative analysis in a comprehensive manner. Stronger sustainable behavior may be considered a soft metric able to reduce the cost of capital (Blume et al., 1998) in addition to the classic hard metrics that include operating margin, assets growth, leverage and earnings volatility (Beaver et al., 1970; Blume, 1998; Elton et al., 2001).

As Feldman et al. (1997) postulated, lower systematic risk can foster a reduction in the cost of equity manifested

as a decrease of the equity beta, which is the measure of systematic risk traditionally applied according to the Capital Asset Pricing Model (CAPM) and developed by Sharpe (1964) and Lintner (1965). In light of this, the main research hypothesis developed here is the following: *does stronger environmental, social, governance and economic behaviors (measured by the Equal Weighted Rating - EWR) foster a reduction in the firm's cost of equity, ceteris paribus?*

METHODOLOGY

This research aims to test the impact of superior environmental, social and governance commitment on a firm's cost of equity, under a holistic perspective. Managing a firm's risk to reduce financial, social and environmental criticalities is the best way to preserve (or improve) its financial performance (Jo and Na, 2012) and CSR could represent an interesting and viable option to do so. The cost of equity is a crucial value, for managers and investors, mainly for two reasons: (1) *"it represents the expected rate of return demanded by a firm's investors for investing in the firm and (2) it is the rate that investors use to discount a firm's future cash flows. The higher the cost of capital, the lower the present value of the firm's future cash flows"* (Sharfman and Fernando, 2008). Therefore, it represents the returns expected by investors holding the firm's stock (Lintner, 1965; Sharpe, 1964).

The realized stock market returns, as stated previously, is a weak and unreliable measure for the cost of equity since historical returns have frequently been lower than the risk-free rate (Elton, 1999). In order to avoid this problem, it is necessary to compute an ex ante proxy for the cost of equity. Ambiguous findings among various works regarding firm performance that have employed realized returns indicate the attractiveness of an ex ante implied cost of capital proxy, although no universally accepted alternative seems to exist. There are various ways to compute a proxy for the cost of equity; in Botosan and Plumlee (2005), the authors analysed and discussed the reliability of five different methodologies to compute this variable, all deriving from the original dividend discount model, whose basic formula is reported below (Equation 1):

$$P_0 = \sum_{t=1}^{\infty} (1+r)^{-t} E_0 (dps_t) \quad (1)$$

where P_0 represents the share price at time $t = 0$, r the estimated cost of equity, E_0 the expectation operator, and dps_t the dividend per share. Table 1 describes and summarizes the five methods analysed by Botosan and Plumlee (2005) to compute a consistent proxy of the ex ante cost of equity. The authors concluded that two methods, in particular, are more reliable than the others. The most reliable proxies appear to be: (1) the Target price method (r_{div}) and (2) the PEG ratio method (r_{PEG}) that consistently incorporate market, leverage, information and residual risk, as well as growth. In light of the latter, in line with Reverte (2012), the PEG ratio method (r_{PEG}) may represent a viable way to gauge the implied ex ante cost of equity, in order to test the role of robust sustainable patterns and their impact on the cost of equity.

Dependent variable

The PEG ratio method, developed by Easton (2004), derived from the Economy-Wide Growth Method (r_{OJN}) elaborated by Ohlson and

Juettner-Nauroth (2005), is reported in Table 1. Starting from the no arbitrage condition, Easton (2004) highlights the difference between economic earnings (the product of the expected rate and beginning-of-period price) and accounting earnings (eps_1). Due to this difference and according to the author, it is necessary to introduce the role of two-period-ahead forecasts of accounting earnings and the concept of "agr"¹ ($agr = eps_2 + rdps_1 - (1+r)eps_1$)². Easton recursively rewrites the previous equation and modifies it to accommodate a finite forecast horizon, defining a perpetual rate of change in abnormal growth³ ($\Delta agr = \left(\frac{agr_{t+1}}{agr_t}\right) - 1$). Imposing $\Delta = 0$ and $rdps_1 = 0$, Easton obtains the PEG ratio method's formula, reported in Equation (2):

$$r_{PEG} = \sqrt{\frac{eps_2 - eps_1}{P_0}} \quad (2)$$

where eps_2 and eps_1 represent the analysts' consensus forecasts of earnings per share for firms for two years and one-year ahead respectively and P_0 represents stock price at the end of year t . To compute the cost of equity using the PEG method it is necessary that $eps_2 \geq eps_1 > 0$.

Easton (2004) tested this method on a sample comprised of 1,499 portfolios of 20 stocks formed annually confirming its reliability and robustness. The high correlation between the PEG ratio method and the refined estimate of the expected rate of return (0.90) supports the use of this method as a simple basis stock recommendation that implicitly reflects the ranking of expected return on portfolios of stocks.

The robustness of this methodology was further corroborated by Botosan et al. (2011), who demonstrated that the PEG ratio method and the Target price method are good proxies of the cost of equity for a firm due to their relationship with both a future realized returns and firm-specific risk. The authors prove that:

"(1) *The impact of analysts forecast bias*

¹ "agr" is the "expected abnormal growth in accounting earnings insofar as it is expected (period 2) cum-dividend accounting earnings less the normal accounting earnings that would be expected given earnings of period 1. This abnormal growth in earnings reflects the effects of generally accepted accounting practices that leads to a divergence of accounting earnings from economic earnings. For example, consider Microsoft, which was trading at a price per share of \$75 at the end of its fiscal year (June 30) 2001 and was not expected to pay dividends for the foreseeable future. If Microsoft's expected rate of return was 10 percent, then its expected economic earnings for 2002 and 2003 would have been \$7.5 and \$8.25, respectively. If accounting earnings (eps_1 and eps_2) were equal to economic earnings in these years, then $agr_1 = \$8.25 - 1.1(\$7.50) = 0$ and eps_1 would be sufficient for valuation (that is, $\$75 = \$7.50/0.1$). Yet analysts were forecasting accounting earnings for 2002 and 2003 of \$1.90 and \$2.15, respectively, so that $agr_1 = \$2.15 - \$1.1(\$1.90) = 0.06$. In other words, the difference between expected accounting earnings and expected economic earnings in 2002 and 2003 implies accounting earnings growth of 6 cents more than the cost of capital". (Easton, 2004, p. 79).

² $rdps_1$ is the expected dividends per share at the date $t=1$.

³ "Returning to the Microsoft example, the estimate of Δagr that equates the price of \$75 and the forecasts of accounting earnings is 8.9 percent (this estimate is obtained by recognizing that, for this Microsoft example, the only unknown term in equation is agr . In other words, 8.9 percent is the geometric average rate at which the abnormal growth in earnings of 6 cents will increase as accounting earnings eventually "correct" for the short-run difference between accounting and economics earnings in the two-years forecast horizon (this growth reflects the attribute of accounting that differences between accounting earnings and economics in any one period must be captured in accounting earnings of another period)" (Easton, 2004, p 80).

Table 1. Summary of assumption and data requirements for ex ante proxy of cost of equity calculation.

Method	Formula	Author(S)	Short-term horizon	Terminal value
Target price method	$P_0 = \sum_{t=1}^5 (1 + r_{div})^{-t} (dps_t) + (1 + r_{div})^{-5} (P_5)$	Botosan and Plumlee (2002)	During the forecast horizon, analysts' forecast of dividends equals the market's expectation	Beyond the forecast horizon analysts' forecasts of stock price equal the market expectation
Industry method	$P_0 = b_0 + \sum_{t=1}^{11} (1 + r_{GLS})^{-t} ((ROE_t - r_{GLS})b_{t-1} + r_{GLS} (1 + r_{GLS})^{-11})^{-1} ((ROE_{t2} - r_{GLS})b_{11})$	Gebhardt et al. (2001)	-During the forecast horizon with analyst forecasts, analysts of earnings and book value equal the market's expectation. -During the forecast horizon without analyst forecasts, firm ROE fades linearly to industry ROE	-Beyond the forecast horizon, firms earn their industry ROE in perpetuity. -Beyond the forecast horizon, firms have a 100% dividend payout ratio
Finite horizon method	$P_0 = \sum_{t=1}^4 (1 + r_{GOR})^{-t} (dps_t) + (r_{GOR} (1 + r_{GOR})^4)^{-1} (eps_5)$	Gordon (1997)	During the forecast horizon, analysts' forecasts of dividend equal the market's expectation	Beyond the forecast horizon, each firm's ROE equals its cost of equity
Economy-wide growth method	$P_0 = y_0 + \sum_{t=1}^{\infty} (1 + r)^{-t} (y_t - (1 + r)y_{t-1}) + \sum_{t=1}^{\infty} (1 + r)^{-t} (dps_t)$	Ohlson and Juettner-Nauroth (2005)	-Analysts' forecasts of earnings in years 1 and 2 and analysts' forecasts of dividends in year 1 equal the market's expectation -Year 1 earnings and year 2 "abnormal earnings" defined as $r^1(eps_2 + rdps_1 - R eps_1)$ are positive	-Growth in "abnormal earnings" defined as $r^1(eps_2 + rdps_1 - R eps_1)$ occurs at a constant rate for all t. -Estimated constant rate of growth in abnormal earnings equals the market's expectation. -Constant rate of growth is less than the cost of equity and greater than zero
PEG ratio method	$r_{PEG} = \sqrt{\frac{eps_2 - eps_1}{P_0}}$	Easton (2004)	-Analysts' forecasts of earnings in years 1 and 2 equal the market's expectation -Zero dividends in year 1. -Year 1 earnings and year 2 "abnormal earnings" defined as $r^1(eps_2 - R eps_1)$ as are positive	Beyond the forecast horizon zero growth in "abnormal earnings"

Source: authors' elaboration based on Botosan and Plumlee (2005).

(2) The efficacy of realized returns for expected returns before and after controlling cash flow news, (3) The effectiveness of averaging several proxies to produce superior measures, and (4) the substitution of realized values for analysts' forecast of cash flows or earnings" do not influence the obtained results using the

PEG method, further validating this approach.

Following Easton (2004), Botosan and Plumlee (2005), Reverte (2012) and Cao et al. (2015), this work employs the PEG ratio method to estimate the implied ex ante cost of equity to measure if, and to what extent, sustainability

can influence a firm's access to equity finance as a consequence of improved perceived corporate reputation, in terms of economic, social, governance and environmental tasks. Under this perspective, Easton (2004) continues that the PEG method may result in an effective way to study the impact of a series of factors, such as

disclosure quality, cross-listing and so on, on equity costs.

Control variables

The cost of equity is the dependent variable employed in this study to explore the influence sustainable practices have on this aspect of a firm's financial performance. To control the validity of our dependent variable, a set of control variables, most commonly used in this field, was used (Beaver et al., 1970; Reverte, 2012): the firm's beta, market to book value and size.

(1) Beta is a measure of market risk which shows the relationship between a stock's volatility and that of the market. This coefficient is computed on 23 and 35 consecutive month-end price percent changes and their relativity to a local market index (IBES Thomson Reuters). The value of beta obtained from Thomson Reuters database is levered. In order to obtain the unlevered beta and to avoid the leverage effect in the econometric part of the analysis, transition was made to the levered beta and to the unlevered one, using the following formula (3):

$$\text{Unlevered Beta} = \frac{\text{Levered Beta}}{1 + \frac{\text{Debt}}{\text{Equity}}} \quad (3)$$

Debt represents the sum of all interest bearing and capitalized lease short- and long-term obligations, while equity represents the sum of preferred stock and common shareholders' equity. Leverage is a variable used to control the reliability of the unlevered beta in the econometric part of the analysis, in order to consider the impact of the firm's financial structure on the cost of equity due to the relationship between the amount of debt and a firm's riskiness separately. Leverage is calculated as debt divided by equity.

(2) Market to book value represents the share price divided by the book value of net tangible assets per share for the appropriate financial year end, adjusted for capital changes. It is calculated as price divided by assets per share.

(3) The adopted measure of a firm's size, following Fama and French (1992) and their Three-factor model, is the natural logarithm of a firm's market capitalization where market capitalization is equal to market price-year end times common shares.

Independent variable

The independent variable employed in this study is the "Equal Weighted Rating" (EWR)⁴. The EWR varies in a range from 0 to

⁴ According to Thomson Reuters "the EWR reflects a balanced view of a company's performance in all four areas, economic, environmental, social and corporate governance. (1) The corporate governance pillar measures a company's systems and processes, which ensure that its board members and executives act in the best interests of its long-term shareholders. It reflects a company's capacity, through its use of best management. (2) The economic pillar measures a company's capacity to generate sustainable growth and a high return on investment through the efficient use of all its resources. It is reflection of a company's overall financial health and its ability to generate long-term shareholder value through its use of best management practices. (3) The environmental pillar measures a company's impact on living and non-living natural systems, including the air, land and water, as well as the complete ecosystems. It reflects how well a company uses best management practices to avoid environmental risks and capitalize on environmental

100, where 0 represents firms with the poorest sustainability performance and 100 firms with the best one. The ESG Asset4 Thomson Reuters Datastream data are reliable proxies of environmental, social and governance aspects and several studies in relevant literature have proven their robustness (Semenova and Hassel, 2014). Additionally, the EWR is a comprehensive measure that is able to cover all principal aspects of a firm's sustainability profile, revealing if sustainable practices can reduce perceived riskiness and the cost of equity. To test the relationship between strong sustainable practices and the cost of equity, this work applies a multiple Ordinary Least Square regression (OLS) with temporal dummies, also defined as a Least Square Dummy Variable model (LSDV), controlled for temporal, country, industry effects (Waddock and Graves, 1997), as well as firm specific effects caused by the unobserved heterogeneity (Hamilton and Nickerson, 2003; Reverte, 2012). The Equations used to explain the relationship between CSR and the cost of equity reduction are reported below (Equations 4 and 5). Table 2 summarizes the variables used in this analysis (more details can be found in Appendix A).

$$\text{Ke} = \alpha + \beta_1 \text{Beta}(U) + \beta_2 \text{MTBV} + \beta_3 \text{LnMc} + \beta_4 \text{Lev} + \varepsilon_i \quad (4)$$

$$\text{Ke} = \alpha + \beta_1 \text{Beta}(U) + \beta_2 \text{MTBV} + \beta_3 \text{LnMc} + \beta_4 \text{Lev} + \text{EWR} + \varepsilon_i \quad (5)$$

Equation 4 contains all the variables used by Fama and French (1992) in their Three-factor Asset-Pricing Model, where they demonstrated that such model outperforms the CAPM. This equation is, thus, necessary to validate our measure for the cost of equity due to the strong and widely supported relationship between the cost of equity and a firm's beta, market to book value and size. Equation 5, instead, is the equation employed to analyse the relationship between a higher degree of sustainability and the cost of equity, controlled for all variables tested in Equation (4). Findings are reported and discussed in the paragraph titled "Results".

Data collection

To test the hypothesis that strong sustainable practices can foster reductions in cost of equity, two different samples have been employed in order to compare obtained results among different geographical areas.

The first sample (sample one) consists of the firms included in the S&P 1200 Global⁵ index within a period spanning from 2002 to 2016. This sample represents a global sample of firms useful to test the hypothesis under a worldwide perspective given that the aforesaid index "provides efficient exposure to the global equity

opportunities in order to generate long term shareholder value. (4) The social pillar measures a company's capacity to generate trust and loyalty with its workforce, customers and society, through its use of best management practices. It is a reflection of the company's reputation and the health of its license to operate, which are key factors in determining its ability to generate long term shareholder value".

⁵ The index is constructed as a composite of 7 headline indices, many of which are accepted leaders in their regions. These include the S&P 500® (US), S&P Europe 350, S&P TOPIX 150 (Japan), S&P/TSX 60 (Canada), S&P/ASX All Australian 50, S&P Asia 50 and S&P Latin America 40 (Source: us.spindices.com).

Table 2. Variables description.

Variable	Symbol	Description
Dependent variable		
Cost of equity	Ke	The proxy of the implied ex ante cost of capital is calculated using the Price Earning Growth method (PEG) developed by Easton (2004)
Independent variable		
Equal Weighted Rating	EWR	The equal weighted rating reflects a balanced view of a company's sustainable performance in four areas: economic, environmental, social and corporate governance
Control variables		
Levered beta	B(L)	Measure of market risk which shows the relationship between the volatility of the stock and the volatility of the market
Unlevered beta	B(U)	Measure of market risk which shows the relationship between the volatility of the stock and the volatility of the market. The unlevered beta is obtained dividing the levered beta for $(1 + (\text{debt}/\text{equity}))$
Market to book value	MTBV	Price dividend by the book value or net tangible assets per share for the appropriate financial year end, adjusted for capital changes
Leverage	Lev	Leverage is calculated as financial debt divided by shareholder's equity
Natural logarithm of market cap	LnMc	The measure of a firms' size is the natural logarithm of a firms' market capitalization where market cap is equal to market price-year end times common shares outstanding

Source: authors' elaboration.

market, capturing approximately 70% of global market capitalization" (us.spindices.com). It includes 1,220 firms and 18,300 observations.

The second sample (sample two) is made up of the companies included in the STOXX Europe 600⁶ index, an index that "represents large, mid and small capitalization companies across 17 countries of the European region" (stox.com), using the same timeframe as sample one. The STOXX Europe 600 is a reliable basis to test the impact of CSR on the cost of equity exclusively for European firms. This second sample includes 600 firms and 9,000 observations. The choice of the samples is due to the existing gap in literature which has mainly focused on American and Canadian companies (Reverte, 2012). Tables 3, 4 and 5 summarize the main descriptive characteristics of this study's samples, in terms of geographical area and industry sector. It is important to highlight that the financial sector has not been removed from the samples due to the growing importance of sustainability in this field, despite the absence of a wide literature to such regard (de-los-Salmones et al., 2005; Garbarino and Johnson, 1999; Kolk, 2003; Matute-Vallejo et al., 2011; Scholtens, 2006;).

Indeed, according to Matute-Vallejo et al. (2011), banks, financial institutions and all the other firms that make up the financial sector are improving their corporate image, brand loyalty, and consumer perception in terms of CSR because of lowered consumer empathy

towards the sector. Moreover, Kolk (2003) highlights that CSR practices are not reserved for big firms operating in particular sectors with high pollution levels; sustainability is increasing rapidly also among small and medium firms operating in sectors with a low environmental impact (banks and insurance for example) worldwide, without any significant geographical and dimensional differences.

This study is not focused on investigating the impact of pure environmental management on the cost of equity but rather it adopts a 360-degree point of view on sustainability, as demonstrated by the applied measure for the latter. The EWR is a comprehensive metric based on environmental, social, governance and economic indicators able to optimally synthesize corporate commitment in the aforementioned fields. This is the rationale behind the choice to preserve the financial sector within the two samples examined. To corroborate this intuition, additional analyses excluding financial firms from the two samples are conducted.

RESULTS

Tables 6 and 7 provide the descriptive statistics and matrix correlation concerning the dependent, independent and control variables employed for the two samples used here. As these two tables show, the correlation coefficients are low and only in one case (between unlevered beta and leverage) it got to the threshold of 0.62 and 0.63, in sample one and two respectively (Tables 6 and 7). Coherent with previous results obtained by researchers in this field, the measure

⁶ The STOXX Europe 600 Index is derived from the STOXX Europe Total Market Index (TMI) and is a subset of the STOXX Global 1800 Index. With a fixed number of 600 components, the STOXX Europe 600 Index represents large, mid and small capitalization companies across 17 countries of the European region: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Table 3. Sample one composition by geographical area.

Geographical area	No. of firms	% in sample
North America	567	46
Europe	363	30
Asia	200	17
Australia	50	4
South America	40	3
Total	1,220	100

Source: authors' elaboration.

Table 4. Sample two composition by geographical area.

Geographical area	No. of firms	% in sample
United Kingdom	173	29
France	85	14
Germany	72	12
Switzerland	48	8
Sweden	44	7
Italy	31	5
Spain	29	5
Netherlands	28	5
Denmark	22	4
Finland	16	3
Belgium	15	3
Norway	12	2
Ireland	8	1
Austria	7	1
Luxembourg	3	0.3
Portugal	3	0.3
Czech Republic	2	0.2
Others	2	0.2
Total	600	100

Source: authors' elaboration.

Table 5. Samples composition by industry.

Industry	S&P 1200 global		STOXX Europe 600 index	
	No. of firms	% in sample	No. of firms	% in sample
Financials	253	21	137	23
Industrials	212	17	126	21
Consumer Goods	159	13	73	12
Consumer Services	155	12	76	12
Basic Materials	93	8	45	7
Health Care	91	8	46	8
Technology	81	6	25	4
Oil & Gas	72	6	21	4
Utilities	71	6	30	5
Telecommunications	33	3	21	4
Total	1,220	100	600	100

Source: authors' elaboration.

Table 6. Descriptive statistics and matrix correlation: sample one (S&P 1200 Global).

Variable	Mean	SD	Ke	Beta(U)	MTBV	LnMC	Lev	EWR
Ke	0.0963	0.4333	1.00	-	-	-	-	-
Beta(U)	0.5748	0.3703	0.1211***	1.00	-	-	-	-
MTBV	2.7968	2.4156	-0.1796***	-0.0976***	1.00	-	-	-
LnMc	17.0650	1.9523	-0.0856***	0.0171**	-0.0964***	1.00	-	-
Lev	41.3099	22.9476	0.1108***	-0.6208***	0.0341***	-0.0626***	1.00	-
EWR	67.6250	27.3164	-0.0003	-0.0079	-0.0287***	0.0268***	0.0405***	1.00

Source: authors' elaboration; Note: * p < 0.10, ** p < 0.05, *** p < 0.01 (two-tailed test).

Table 7. Descriptive statistics and matrix correlation: sample two (STOXX Europe 600).

Variable	Mean	SD	Ke	Beta(U)	MTBV	LnMC	Lev	EWR
Ke	0.0980	0.0518	1.00	-	-	-	-	-
Beta(U)	0.5530	0.3651	0.0483***	1.00	-	-	-	-
MTBV	2.6687	2.3730	-0.2166***	-0.0631***	1.00	-	-	-
LnMc	15.7443	1.4331	-0.1209***	-0.0579***	0.0174	1.00	-	-
Lev	42.9405	23.7313	0.1554***	-0.6328***	-0.0355***	0.0926***	1.00	-
EWR	71.3555	26.7430	-0.0762***	-0.0117	-0.0163	0.3459***	0.0547***	1.00

Source: authors' elaboration; Note: * p < 0.10, ** p < 0.05, *** p < 0.01 (two-tailed test).

for CSR and risk are negatively correlated in both samples (Jo and Na, 2012; Reverte, 2012). Using the levered beta does not substantially modify the conclusions. The results are robust to the effect of multicollinearity, as the Variance Inflation Factor test (VIF) generates VIF values (Appendix B) considerably lower than the critical value of 10 (Stock and Watson, 2005).

Regarding the dependent variable, the mean value of the ex ante implied cost of equity is equal to 9.63% in sample one and 9.80% in sample two; these values are consistent with relevant literature (Reverte, 2012, on European firms; Claus and Thomas, 2001, on US firms). This enforces Easton's intuition (2004), concerning the robustness of the PEG method as a viable way to compute the ex ante implied cost of equity.

The Hausman test has helped in the selection between fixed and random effects analyses and render the model more robust, supporting a fixed effects model for the two samples. Table 8 summarizes all findings regarding the two samples, depicting three different models to understand in-depth the reliability of the dependent variable and the relationship between sustainability and cost of equity. The cost of equity should be positively related to the unlevered beta (Sharpe, 1964) and leverage, because according to Lintner (1995) "*the CAPM indicates that the cost of equity is increasing in unlevered beta*" (Botosan and Plumlee, 2005) and according to Modigliani and Miller (1958), there is a

positive relationship between the amount of debt in a firm's capital structure and its riskiness. Moreover, the cost of equity should be negatively related to the market to book value (Fama and French, 2004) and the firm's size, because market value and firm risk are "*inherently inversely related*" (Berk, 1995).

Results are strongly consistent with the cited literature, with a statistical significance of 1% ($p < 0.00$) and an adjusted R^2 equal to 0.54 and 0.59 in samples one and two respectively; providing support for the robustness of the proxy used for the cost of equity. Models 2 and 3 in Table 8 highlight a negative and statistical relevant relationship, at a 1% level of significance, between strong sustainable commitment (EWR) and the cost of equity (Ke), both in sample one and sample two, supporting the main hypothesis. It is crucial to further stress that in models 2 and 3 the dependent variable is positively related to beta and negatively related to the market to book value and the firm's size, as in model 1, boosting the idea that strong CSR practices are able to foster equity cost reductions. More in-depth and as a robustness check, model 2 regressed the cost of equity on unlevered beta and leverage degree to isolate potential leverage effects. As an alternative, model 3 regresses the cost of equity on levered beta (omitting the leverage degree) and the results do not change further, supporting the research hypothesis.

A further analysis excludes the financial sector from both samples (to avoid specific sector

Table 8. Impact of EWR on Ke for samples one and two.

Variable	S&P 1200 global			STOXX Europe 600		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Constant	0.03901*** (0.0325)	0.4259*** (0.0733)	0.4358 (570.8957)	0.2240*** (0.0482)	0.2795*** (0.0316)	0.3339*** (0.0804)
Beta (U)	0.0099*** (0.0014)	0.0090*** (0.0016)	-	0.0135*** (0.0023)	0.0142*** (0.0027)	-
Beta (L)	-	-	0.0091*** (0.0010)	-	-	0.0149*** (0.0016)
MTBV	-0.0014*** (0.0002)	-0.0011*** (0.0002)	-0.0003 (0.0002)	-0.0015*** (0.003)	-0.0016*** (0.0004)	-0.0011*** (0.0004)
LnMc	-0.0151*** (0.0007)	-0.0160*** (0.0009)	-0.0177*** (0.0008)	-0.0187*** (0.0011)	-0.0175*** (0.0013)	-0.0189*** (0.0013)
Lev	0.0005*** (0.00003)	0.0004*** (0.00003)	-	0.0004*** (0.00005)	0.0004*** (0.00006)	-
EWR	-	-0.0001*** (0.00002)	-0.0001*** (0.00002)	-	-0.0001*** (0.00003)	-0.0001*** (0.00003)
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Temporal dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Country effects	Yes	Yes	Yes	Yes	Yes	Yes
Firms' effects	Yes	Yes	Yes	Yes	Yes	Yes
R ² Adjusted	0.54	0.51	0.50	0.59	0.63	0.59
No. of firms	1,164	1,151	1,167	534	534	542
No. of obs.	13,365	11,860	12,341	6,247	5,292	5,489

Source: authors' elaboration; Note: Standard errors are in the parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ (two-tailed test).

issues) generating almost identical results and verifying what has already been presented in the "Data" section of this work.

DISCUSSION

Academics, managers and practitioners have demonstrated a growing interest on how and to what extent sustainable practices can improve corporate financial performance and consequently a firm's value. Although extensive literature in this field is present, the lack of consensus urges new studies to corroborate the actual relationships and fill gaps relating to their dynamics. This paper employs two samples in terms of geographical

composition in order to explore the relationship between sustainable practices, measured as environmental, social, economic, and governance efforts (EWR) and a firm's cost of equity. The study mainly aims to:

- (1) Analyse the impact of CSR on the cost of equity and
- (2) Compare the results obtained by the two geographical samples covering the gap in existing literature by focusing on European companies.

Using two samples of 1,220 and 600 firms respectively and a timeframe spanning from 2002 to 2016 (18,300 and 9,000 observations respectively), the relationship between CSR and

the cost of equity under a holistic view of the former and the crucial importance of the latter for a firm's financial viability were analyzed. This study's results point out how more sustainable companies generate higher returns and achieve cost cuttings through innovation, as well as reduce their risk as perceived by the stock market and investors benefiting, as a consequence, from a lower cost of equity and better access to finance.

The findings are in agreement with the branch of researchers that sustain the idea that strategic stakeholder management combined with investments in sustainability reduce the firm's overall riskiness (Di Giulio et al., 2011) and should be included in policy assessment procedures

(Weaver and Jordan, 2008).

Multiple possible conclusions can be drawn. First off, Reverte (2012) suggests that the negative relationship between CSR and the cost of equity could “*be interpreted as evidence that the cost of equity is an important channel to the market prices CSR disclosure*”. Second, more sustainable firms reduce information asymmetries, giving investors the chance of more informed investment decisions, especially in the light of the growing importance SRI is gaining worldwide. Third, sustainable firms are perceived less risky by the market and investors and this is a crucial driver behind lower cost of equity.

Another potential factor for cost reductions in the equity of more sustainable firms lies in the green firms attraction theory according to which “*green’ investors will only invest in firms with good environmental risk management (i.e., more legitimate firms) while ‘non-green’ investors are indifferent about environmental risk management and will not necessarily invest in ‘green’ firms*” (Sharfman and Fernando, 2008). This work contributes to the existing literature in three fundamental ways:

- (1) It further corroborates the robustness of the PEG ratio method, as a useful and reliable methodology to compute an ex ante implied cost of equity proxy
- (2) It demonstrates that more sustainable firms benefit from a cost of capital reduction
- (3) It provides a thorough comparison between a worldwide and a European sample, trying to fill the existing gap in literature that mainly focuses on American firms (Dhaliwal et al., 2011; El Ghoul et al., 2011).

Moreover, this study can be a useful tool for politicians and regulatory authorities to urge firms towards increased sustainability efforts, as well as more thorough and comprehensive non-financial disclosure. This would boost investors’ confidence and reduce asymmetries worldwide while rewarding more sustainable firms that adopt, free of any enforcement, massive voluntary disclosure and sustainable policies. Finally, the work is in agreement with those that opine that CSR activity can create value for their shareholders through the creation of insurance-link protection fostering cost of equity reductions. As repeatedly analysed in our work, moral capital generated by superior sustainable practices seems to be able to protect firms when negative events occur, reducing firm risk. CSR is beneficial not only to society, but to firms as well.

Conclusion

In conclusion, great grounds for future research works have been identified. From a methodological point of view, researchers may use different metrics to operationalize key variables, especially the ex ante implied measure of the cost of equity and the sustainable

score, as well as expand the sample, in terms of firms, countries and timeframe, in order to corroborate and improve these results. Another interesting stream of research can be located within the relationship between sustainable practices and the cost of debt, reviewing the impact of CSR on the weighted average cost of capital, combining the results of equity and debt analyses to obtain a 360-degree overview on this filed. These results could magnify implications for managers, investors and policymakers all around the world.

From a less technical but more substantial perspective, a myriad amount of works can be developed around specific sectors or markets. More to the point, the financial sector, banks in particular, may represent an interesting and viable way to develop future studies, due to the growing importance these firms attribute to CSR practices and corporate image; while still remaining vastly marginalized in CSR literature.

At this point we have to recognize the high potential for study that emerges with regard to less explored markets, especially in developing and frontier economies. African countries, especially newborn economies recently liberated from totalitarian political regimes have been the focus of novel interesting research that defies classic capital pricing models.

In addition to such limited line of work, even less literature has thoroughly explored CSR in emerging economies. While investors placing financial resources in such countries face a myriad of challenges in comparison with mature markets, integrating sustainability into their analysis can provide additional lenses into firms that possess the necessary capabilities to create value over time.

Furthermore, ESG considerations can be studied as a potential moderator of inevitable risks (political, currency and so on) embedded in certain countries and a compass helping international capital to identify the most promising candidates within a high risk high return context. Concluding, given the lack of maturity in these markets and the still unexploited grounds to develop sustainability skills, the hot topic of active ownership can be unfolded. Interacting constructively with the firm organization in order to enhance its ESG profile can lead to operational and risk management improvements, as well as boost investors’ perception and confidence in the underlying firms helping to bring in much needed and expensive capital so far.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

REFERENCES

- Anginer D, Mansi S, Warburton A, Yildizhan C (2016). Firm Reputation and the Cost of Debt Capital. Working paper, available at SSRN:

- <https://ssrn.com/abstract=1873803>.
- Barnett M, Jermier J, Lafferty B (2006). Corporate reputation: The definitional landscape. *Corporate Reputation Review* 9(1):26-38.
- Beaver W, Kettler P, Scholes M (1970). The Association between Market-Determined and Accounting-Determined Risk Measures. *The Accounting Review* 45(4):654-682.
- Bebbington K, Larrinaga-Gonzales C, Moneva J. (2008). Corporate social reporting and reputation risk management. *Accounting, Auditing and Accountability Journal* 21(3):337-362.
- Berk J (1995). A critique of size-related anomalies. *The Review of Financial Studies* 8(2):275-286.
- Bimha A, Nhamo G (2017). Sustainable Development, Share Price and Carbon Disclosure Interactions: Evidence From South Africa's JSE 100 Companies. *Sustainable Development* 25(5):400-413.
- Blume M, Lim F, Mackinlay A (1998). The Declining Credit Quality of U.S. Corporate Debt: Myth or Reality? *The Journal of Finance* 53(4):1389-1413.
- Botosan C (1997). Disclosure Level and the Cost of Equity Capital. *The Accounting Review* 72(3):323-349.
- Botosan C (2006). Disclosure and the cost of capital: What do we know? *Accounting and Business Research International Accounting Policy Forum* 36(1):31-40.
- Botosan C, Plumlee M (2002). A re-examination of disclosure level and the expected cost of equity capital. *Journal of Accounting Research* 40(1):21-40.
- Botosan C, Plumlee M (2005). Assessing alternative proxies for expected risk premium. *The Accounting Review* 80(1):21-53.
- Botosan C, Plumlee M, Wen H (2011). The Relation between Expected Returns, Realized Returns, and Firm Risk Characteristics. *Contemporary Accounting Research* 28(4):1085-1122.
- Boulding K (1956). General systems theory: the skeleton of science. *Management Science* 2(3):197-208.
- Brammer S, Brooks C, Pavelin S (2006). Corporate social performance and stock returns: UK evidence from disaggregate measures. *Financial Management* 35(3):97-116.
- Cao Y, Myers L, Omer T (2012). Does company reputation matter for financial reporting quality? Evidence from restatements. *Contemporary Accounting Research* 29(3):956-990.
- Cao Y, Myers J, Myers L, Omer T (2015). Company reputation and the cost of equity capital. *Review of Accounting Studies* 20 (1):42-81.
- Chan L, Lakonishok J, Sougiannis T (2001). The stock market valuation of research and development expenditures. *The Journal of Finance* 56 (6):2431-2456.
- Chava S (2010). Socially Responsible Investing and Expected Stock Returns. Working paper, available at SSRN: <https://ssrn.com/abstract=1678246>.
- Chava S (2014). Environmental externalities and cost of capital. *Management Science* 60(9):2223-2247.
- Chava S, Purnanandam A (2010). Is default-risk negatively related to stock returns? *The Review of Financial Studies* 23(6):2523-2559.
- Chen K, Metcalf R (1980). The relationship between pollution control record and financial indicators revisited. *Accounting Review* 55(1):168-177.
- Cheng B, Ioannou I, Serafeim G (2014). Corporate social responsibility and access to finance. *Strategic Management Journal* 35(1):1-35.
- Christmann P (2000). Effects of Best Practices of Environmental Management on Cost Advantage: The Role of Complementary Assets. *Academy of Management Journal* 43(4):663-680.
- Claus J, Thomas J (2001). Equity Premia as Low as Three Percent? Evidence from Analysts' Earnings Forecasts for Domestic and International Stock Markets. *The Journal of Finance* 56(5):1629-1666.
- Core J (2001). A review of the empirical disclosure literature: Discussion. *Journal of Accounting and Economics* 31(1-3):441-456.
- Dachs P (2010). South Africa makes plans for voluntary disclosure programme. *International Tax Review* 21(8):48-48.
- de-los-Salmones M, Crespo A, del Bosque I (2005). Influence of corporate social responsibility on loyalty and valuation of services. *Journal of Business Ethics* 11(4):369-385.
- Deegan C (2002). The legitimising effect of social and environmental discloses – a theoretical foundation. *Accounting, Auditing and Accountability Journal* 15(3):282-311.
- Dhaliwal D, Li O, Tsang A, Yang G (2011). Voluntary nonfinancial disclosure and the cost of equity capital: the initiation of corporate social responsibility reporting. *The Accounting Review* 86(1):59-100.
- Di Giulio A, Migliavacca P, Tencati A (2011). Corporate Social Performance and Cost of Capital: A Meaningful Relationship? In A. Tencati & F. Perrini (Eds.), *Business Ethics and Corporate Sustainability*, Cheltenham, UK: Edward Elgar Publishing. pp.132-146.
- Diamond D, Verrecchia R (1991). Disclosure, liquidity and the cost of equity capital. *The Journal of Finance* 46(4):1325-1360.
- Dowell G, Hart S, Yeung B (2000). Do Corporate Global Environmental Standards Create or Destroy Market Value? *Management Science* 46(8):1059-1074.
- Easton P (2004). PE Ratios, PEG Ratios, and Estimating the Implied Expected Rate of Return on Equity Capital. *The Accounting Review* 79(1):73-95.
- Easley D, O'Hara M (2004). Information and the cost of capital. *The Journal of Finance* 59(4):1553-1583.
- El Ghoul S, Guedhami O, Kwok C, Mishra D (2011). Does corporate social responsibility affect the cost of capital? *Journal of Banking & Finance* 35(9):2388-2406.
- Elkington J (1997). *Cannibals with forks: The Triple Bottom Line of 21st Century Business*. Oxford: Capstone publishing.
- Elton E (1999). Expected return, realized return, and asset pricing tests. *The Journal of Finance* 54(4):1199-1220.
- Elton E, Gruber M, Agrawal D, Mann C (2001). Explaining the Rate Spread on Corporate Bonds. *The Journal of Finance* 56(1):247-277.
- Endrikat J (2015). Market Reactions to Corporate Environmental Performance Related Events: A Meta-analytic Consolidation of the Empirical Evidence. *Journal of Business Ethics* 138(3):535-548.
- Fama E, French K (1992). The cross-section of expected stock returns. *Journal of Finance* 47(2):427-465.
- Fama E, French K (2004). Profitability, Growth, and Average Returns. CRSP Working Paper, Vol. 558, University of Chicago, US. Available at SSRN: <https://ssrn.com/abstract=570343>.
- Feldman S J, Soyka P A, Ameer PG (1997). Does improving a firm's environmental management system and environmental performance result in a higher stock price? *Environmental Group Study*, ICF Kaiser International, Inc.: Fairfax, VA.
- Freeman R (1984). *Strategic Management. A stakeholder Approach*. Pitman/Ballinger (Harper Collins): Boston.
- Garbarino E, Johnson M (1999). The different roles of satisfaction, trust and commitment in customer relationships. *Journal of Marketing* 63(2):70-87.
- Garber S, Hammit J (1998). Risk premiums for environmental liabilities: superfund and the cost of capital. *Journal of Environment and Economic Management* 36(3):267-294.
- Gardberg N, Fombrun C (2006). Corporate Citizenship: Creating Intangible Assets across Institutional Environment. *Academy of Management Review* 31(2):329-346.
- Gebhardt W, Lee C, Swaminathan B (2001). Toward an implied cost of capital. *Journal of Accounting Research* 39(1):135-176.
- Godfrey P (2005). The Relationship between Corporate Philanthropy and Shareholder Wealth: A Risk Management Perspective. *Academy of Management Review* 30(4):777-798.
- Godfrey P, Merrill C, Hansen J (2009). The relationship between corporate social responsibility and shareholder value: an empirical test of the risk management hypothesis. *Strategic Management Journal* 30(4):225-245.
- Golicic S, Smith C (2013). A meta-analysis of environmentally sustainable supply chain management practices and firm performance. *Sustainable CSM Practices and Performance* 49(2):78-95.
- Gordon J, Gordon M (1997). The finite horizon expected return model. *Financial Analysts Journal* 53(3):52-61.
- Goss A, Roberts G (2011). The impact of corporate social responsibility on the cost of bank loan. *Journal of Banking and Finance* 35(7):1794-1810.

- Graham J, Harvey C, Rajgopal S (2005). The economic implications of corporate financial reporting. *Journal of Accounting and Economics* 40(1-3):3-37.
- Gregory A, Whittaker J (2012). Exploring the Valuation of Corporate Social Responsibility-A comparison of Research Methods. *Journal of Business Ethics* 116(1):1-20.
- Gruber V, Schlegelmilch B (2015). MNEs' regional headquarters and their CSR agenda in the African context. *International Marketing Review* 32(5):576-602.
- Hamilton B, Nickerson J (2003). Correcting for endogeneity in strategic management research. *Strategic Organization* 1(1):51-78.
- Hart S, Ahuja G (1996). Does it pay to be green? An empirical examination of the relationship between emission reduction and firm performance. *Business Strategy and the Environment* 5(1):30-37.
- Hearn B (2009). Liquidity and Valuation in East African Securities Markets. *South African Journal of Economics* 77(4):553-576.
- Hearn B, Piesse J (2015). The Impact of Firm Size and Liquidity on the Cost of External Finance in Africa. *South African Journal of Economics* 83(1):1-22.
- Heinkel R, Kraus A, Zechner J (2001). The effect of green investment on corporate behavior. *Journal of Financial and Quantitative Analysis* 36(4):431-449.
- Himme A, Fischer M (2014). Drivers of the Cost of Capital: The Joint Role of Non-Financial Metrics. *International Journal of Research in Marketing* 31(2):224-238.
- Jensen M, Meckling W (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics* 3(4):305-360.
- Jo H, Na H (2012). Does CSR Reduce Firm Risk? Evidence from Controversial Industry Sectors. *Journal of Business Ethics* 110(4):441-456.
- Khanna M, Damon L (1999). EPA's Voluntary 33/50 Program: Impact on Toxic Releases and Economic Performance of Firms. *Journal of Environmental Economics and Management* 37(1):1-25.
- Kempf A, Osthoff P (2007). The Effect of Socially Responsible Investing on Portfolio Performance. CFR-Working Paper. No. 06–10, University of Cologne, Germany. Available at <https://www.econstor.eu/bitstream/10419/57725/1/702962686.pdf>
- King A, Lenox M (2001). Does It Really Pay to Be Green? An Empirical Study of Firm Environmental and Financial Performance. *Journal of Industrial Ecology* 5(1):105-116.
- King A, Lenox M (2002). Exploring the locus of profitable pollution reduction. *Management Science* 48(2):289-299.
- Klassen R, McLaughlin C (1996). The Impact of Environmental Management on Firm Performance. *Management Science* 42(8):1199-1214.
- Kolk A (2003). Trends in sustainability reporting by the Fortune Global 250. *Business Strategy and the Environment* 12(5):279-291.
- Konar S, Cohen M (2001). Does the Market Value Environmental Performance? *Review of Economics and Statistics* 83(2):281-289.
- KPMG (2008). KPMG International survey of responsibility reporting 2008. Amstelveen. The Netherlands: KPMG International. Available at http://s3.amazonaws.com/zanran_storage/www.kpmg.bg/ContentPages/45691987.pdf
- Kühn A, Stiglbauer M, Matthias S (2018). Contents and Determinants of Corporate Social Responsibility Website Reporting in Sub-Saharan Africa: A Seven-country Study. *Business and Society* 57(3):437-480.
- Lambert R, Leuz C, Verrecchia R (2006). Information Asymmetry, Information Precision, and the Cost of Capital. *Review of Finance* 16(1):1-29.
- Leuz C, Verrecchia R (2000). The economic consequences of increased disclosure. *Journal of Accounting Research* 8(S):91-124.
- Leuz C, Wysocki P (2008). Economic Consequences of Financial Reporting and Disclosure Regulation: A Review and Suggestions for Future Research. Working Paper, University of Chicago, US. Leuz, Christian and Wysocki, Peter D., Economic Consequences of Financial Reporting and Disclosure Regulation: A Review and Suggestions for Future Research (March 2008). Available at SSRN: <https://ssrn.com/abstract=1105398>.
- Lintner J (1965). The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets. *Review of Economics and Statistics* 47(1):13-37.
- Loughran T, Schultz P (2005). Liquidity: Urban versus rural firms. *Journal of Financial Economics* 78(2):341-374.
- Lozano JM (2005). Towards the relational corporation: from managing stakeholder relationships to building stakeholder relationships (waiting for Copernicus). *Corporate Governance: The International Journal of Business in Society* 5(2):60-77.
- Lozano R (2013). A Holistic Perspective on Corporate Sustainability Drivers. *Corporate Social Responsibility and Environmental Management* 22(1):32-44.
- Mackey A, Mackey T, Barney J (2007). Corporate social responsibility and firm performance: investor preferences and corporate strategies. *Academy of Management Review* 32(3):817-835.
- Margolis J, Elfenbein H, Walsh J (2007). Does it pay to be good? A meta-analysis and redirection of research on the relationship between corporate social and financial performance. Working paper, Harvard Business School, Harvard University, Boston, MA. Available at SSRN: <https://ssrn.com/abstract=1866371>.
- Margolis J, Walsh J (2003). Misery Loves Companies: Rethinking Social Initiatives by Business. *Administrative Science Quarterly* 48(2):268-305.
- Matute-Vallejo J, Bravo R, Pina J (2011). The Influence of Corporate Social Responsibility and Price Fairness on Customer Behaviour: Evidence from the Financial Sector. *Corporate Social Responsibility and Environmental Management* 18(6):317-331.
- Mensah A, Kwame B (2016). Internal control information disclosure and corporate governance: evidence from an emerging market. *Corporate Governance: The International Journal of Effective Board Performance* 16(1):79-95.
- Modigliani F, Miller M (1958). The cost of equity capital, corporation finance, and the theory of investment. *American Economic Review* 48(3):261-297.
- Munro V (2013). Stakeholder Preferences for Particular Corporate Social Responsibility (CSR) Activities and Social Initiatives (SIs). *Journal of Corporate Citizenship* 51:72-105.
- Murphy C (2002). The Profitable Correlation: Between Environmental and Financial Performance: A Review of the Research. Light Green Advisors Inc.: Seattle, WA.
- Nelson K (1994). Finding and implementing projects that reduce waste, industrial ecology and global change. New York: Cambridge University Press.
- Ohlson J (1995). Earnings, book value, and dividends in security valuation. *Contemporary Accounting Research* 11(2):661-687.
- Ohlson J, Juettner-Nauroth B (2005). Expected EPS and EPS Growth as Determinants of Value. *Review of Accounting Studies* 10(2-3):340-365.
- Orlitzky M, Benjamin JD (2001). Corporate social performance and firm risk: a meta-analytic review. *Business & Society* 40(4):369-396.
- Pastor L, Sinha M, Swaminathan B (2008). Estimating the Intertemporal Risk-Return Tradeoff Using the Implied Cost of Capital. *The Journal of Finance* 63(6):2859-2897.
- Paulo S (2011). The South African Companies Act of 2008 (SACA2008), and the Sarbanes-Oxley Act of 2002. *International Journal of Law and Management* 53(5):340-354.
- Perrini F (2005). Building a European Portrait of Corporate Social Responsibility Reporting. *European Management Journal* 23(6):611-627.
- Perrini F, Russo A, Tencati A, Vurro C (2011). Deconstructing the Relationship between Corporate Social and Financial Performance. *Journal of Business Ethics* 102(S1):59-76.
- Porter M, van der Linde C (1995). Toward a New Conception of the Environment-Competitiveness Relationship. *Journal of Economic Perspectives* 9(4):97-118.
- Post J E, Preston L E, Sachs S (2002). Managing the extended enterprise: the new stakeholder view. *California Management Review* 45(1):6-28.
- Reverte C (2012). The Impact of Better Corporate Social Responsibility Disclosure on the Cost of Equity Capital. *Corporate Social*

- and Environmental Management 19(5):253-272.
- Richardson A, Welker M (2001). Social disclosure, financial disclosure and the cost of equity capital. *Accounting, Organization and Society* 26(7):597-616.
- Russo M, Fouts P (1997). A Resource-Based Perspective on Corporate Environmental Performance and Profitability. *Academy of Management Journal* 40(3):534-559.
- Schaltegger S, Burritt (2005). Corporate Sustainability, in H. Folmer and T. Tietenberg (Eds.), *The International Yearbook of Environmental and Resource Economics 2005/2006*, Chetenham, UK and Northampton, MA, USA: Edward Elgar Publishing, pp. 185-222.
- Scholten B (2006). Finance as a driver of corporate social responsibility. *Journal of Business Ethics* 68(1):19-33.
- Semenova N, Hassel L (2014). On the validity of environmental performance metrics. *Journal of Business Ethics* 132(2):1-10.
- Sharfman M, Fernando C (2008). Environmental risk management and the cost of capital. *Strategic Management Journal*, 29(6):569-592.
- Sharpe W (1964). Capital asset prices: a theory of market equilibrium under conditions of risk. *The Journal of Finance* 19(3):425-442.
- Spicer B (1978). Investors, corporate social performance and information disclosure: an empirical study. *Accounting Review* 53(1):94-111.
- Statman M, Glushkov D (2009). The Wages of Social Responsibility. *Financial Analysts Journal* 65(4):33-46.
- Stock J, Watson M (2005). *Introduction to Econometrics*, 1st ed. Pearson & publishing as A.-W. Education, Inc, eds.
- Stubbs W, Cocklin C (2007). Cooperative, community-spirited and commercial: social sustainability at Bendigo bank. *Corporate Social Responsibility and Environmental Management* 14(5):251-262.
- Sullivan R (2011). *Valuing Corporate Responsibility: How do investors really use corporate responsibility information?* Greenleaf Publishing, US.
- Verrecchia RE (2001). Essays on disclosure. *Journal of Accounting and Economics* 32(1-3):97-180.
- Waddock S, Graves S (1997). The Corporate Social Performance-Financial Performance Link. *Strategic Management Journal* 18(4):303-319.
- Wagner M (2005). How to reconcile environmental and economic performance to improve corporate sustainability: corporate environmental strategies in the European paper industry. *Journal of Environmental Management* 76(2):105-118.
- Weaver P, Jordan A (2008). What roles are there for sustainability assessment in the policy process? *International Journal of Innovation and Sustainable Development* 3(1-2):9-32.
- Wilson R (1985). Reputations in games and markets. In A. E. Roth (Ed.), *Game-theoretic models of bargaining*. New York: Cambridge University Press.
- Weber O, Scholz R, Michalik G (2010). Incorporating sustainability criteria into credit risk management. *Business Strategy and the Environment* 19(1):39-50.
- Wood D (2010). Measuring Corporate Social Performance: A Review. *International Journal of Management Reviews* 12(1):50-84.
- UN Global Compact-Accenture (2010). A new era of sustainability. Available at https://microsite.accenture.com/sustainability/research_and_insights.
- Unerman J (2008). Strategic reputation risk management and corporate social responsibility reporting. *Accounting, Auditing and Accountability Journal* 21(3):362-364.
- Uzzi B (1997). Social structure and competition in interfirm networks: the paradox of embeddedness. *Administrative Science Quarterly* 42(1):35-67.

Appendix A. Analytical variables description.

Variable	Symbol	Description
Dependent variable		
		The ex ante cost of capital proxy is calculated using the Price Earning Growth (PEG) method, developed by Easton (2004) and validated by Botosan and Plumlee (2005) and Botosan et al. (2011). The formula to compute the cost of equity is the following:
Cost of equity	Ke	$Ke = \sqrt{\frac{(EPS_{t+2}) - (EPS_{t+1})}{P_{t0}}}$
		where EPS_{t+2} and EPS_{t+1} represent analyst forecasts of earnings per share for firm i for two and one year ahead (with $EPS_{t+2} > EPS_{t+1}$) and P_{t0} is the stock market price of firm i at the forecast data (end of year t). Source: IBES Thomson Reuters Datastream.
Independent variable		
		The "Equal Weighted Rating" reflects a balanced view of a company's performance in all four areas, economic, environmental, social and corporate governance.
		- The corporate governance pillar measures a company's systems and processes, which ensure that its board members and executives act in the best interests of its long-term shareholders. It reflects a company's capacity, through its use of best management.
		- The economic pillar measures a company's capacity to generate sustainable growth and a high return on investment through the efficient use of all its resources. It is reflection of a company's overall financial health and its ability to generate long term shareholder value through its use of best management practices.
Equal weighted rating	EWR	- The environmental pillar measures a company's impact on living and non-living natural systems, including the air, land and water, as well as complete ecosystems. It reflects how well a company uses best management practices to avoid environmental risks and capitalize on environmental opportunities in order to generate long term shareholder value.
		- The social pillar measures a company's capacity to generate trust and loyalty with its workforce, customers and society, through its use of best management practices. It is a reflection of the company's reputation and the health of its license to operate, which are key factors in determining its ability to generate long term shareholder value. Source: Thomson Reuters Datastream.
Control variables		
Levered beta	B (L)	A measure of market risk which shows the relationship between the volatility of the stock and the volatility of the market. This coefficient is based on between 23 and 35 consecutive month end price percent changes and their relativity to a local market index. Source: IBES Thomson Reuters Datastream
Unlevered beta	B (U)	A measure of market risk which shows the relationship between the volatility of the stock and the volatility of the market. This coefficient is based on between 23 and 35 consecutive month end price percent changes and their relativity to a local market index. The unlevered beta is obtained dividing the levered beta for $(1 + (\text{debt}/\text{equity}))$ as suggested by Botosan and Plumlee Botosan (2005). Source: author's elaboration on data come from Thomson Reuters Datastream.
Market to book value	MTBV	This is the price dividend by the book value or net tangible assets per share for the appropriate financial year end, adjusted for capital changes. It is calculated as: $(P/\text{assets per share})$. Source: Thomson Reuters Datastream.
Leverage	Lev	The leverage is calculated as debt/equity. Debt represents all interest bearing and capitalized lease obligations. It is the sum of long and short-term debt; total shareholders' equity represents the sum of preferred stock and common shareholders equity. This item is available in the annual time series and the quarterly, semi-annual and trimester interim time series. It is only available at the company level. Source: Thomson Reuters Datastream.
Natural logarithm of market cap	LnMc	The adopted measure of firm size is the natural logarithm of a firm market capitalization where market cap is equal to market price-year end multiplied by Common shares outstanding. Source: Thomson Reuters Datastream.

Source: authors' elaboration.

Appendix B. Variance inflation factor (VIF) test – two samples.

Variable	S&P 1200 Global	STOXX Europe 600 Index
	VIF	VIF
Unlevered beta	1.69	1.75
Market to book value	1.02	1.02
Leverage	1.69	1.73
Natural logarithm of market cap	1.02	1.15
EWR	1.01	1.14
MEAN VIF	1.29	1.36

Source: authors' elaboration.

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