

OPEN ACCESS

The cover image features a hand holding a smartphone against a background of a sunset or sunrise sky with clouds. The phone's screen displays a blurred image of a soccer field with a goalpost. The title 'African Journal of Business Management' is overlaid in white text on a semi-transparent dark band across the middle of the image.

# African Journal of Business Management

28 March 2018  
ISSN: 1993-8233  
DOI: 10.5897/AJBM  
[www.academicjournals.org](http://www.academicjournals.org)

**academicJournals**



Academic  
Journals

## **ABOUT AJBM**

The African Journal of Business Management (AJBM) is published twice monthly (one volume per year) by Academic Journals.

African Journal of Business Management (AJBM) is an open access journal that publishes research analysis and inquiry into issues of importance to the business community. Articles in AJBM examine emerging trends and concerns in the areas of general management, business law, public responsibility and ethics, marketing theory and applications, business finance and investment, general business research, business and economics education, production/operations management, organizational behaviour and theory, strategic management policy, social issues and public policy, management organization, statistics and econometrics, personnel and industrial relations, technology and innovation, case studies, and management information systems. The goal of AJBM is to broaden the knowledge of business professionals and academicians by promoting free access and providing valuable insight to business-related information, research and ideas. AJBM is a weekly publication and all articles are peer-reviewed.

### **Contact Us**

**Editorial Office:** [ajbm@academicjournals.org](mailto:ajbm@academicjournals.org)

**Help Desk:** [helpdesk@academicjournals.org](mailto:helpdesk@academicjournals.org)

**Website:** <http://www.academicjournals.org/journal/AJBM>

**Submit manuscript online** <http://ms.academicjournals.me/>

## Editor-in-Chief

### **Prof. Wilfred Isioma Ukpere**

*Department of Industrial Psychology and People Management,  
Faculty of Management,  
University of Johannesburg,  
South Africa.*

### **Editors**

#### **Dr. Amran Awang**

*Faculty of Business Management,  
02600 Arau, Perlis, Malaysia*

#### **Prof. Giurca Vasilescu Laura**

*University of Craiova, Romania  
13, A.I. Cuza, 200585, Craiova, Dolj,  
Romania.*

### **Associate Editors**

#### **Dr. Ilse Botha**

*University of Johannesburg  
APK Campus PO Box 524 Aucklandpark 2006  
South Africa.*

#### **Dr. Howard Qi**

*Michigan Technological University  
1400 Townsend Dr., Houghton, MI 49931,  
U.S.A.*

#### **Dr. Aktham AlMaghaireh**

*United Arab Emirates University  
Department of Economics & Finance  
United Arab Emirates.*

#### **Dr. Haretsebe Manwa**

*University of Botswana  
Faculty of Business  
University of Botswana  
P.O. Box UB 70478  
Gaborone Botswana.*

#### **Dr. Reza Gharoie Ahangar**

*Islamic Azad University of Babol,  
Iran.*

### **Dr. Sérgio Dominique Ferreira**

*Polytechnic Institute of Cavado and Ave  
Campus IPCA, Lugar does Aldão, 4750-810. Vila  
Frescainha,  
Portugal.*

### **Prof. Ravinder Rena**

*Department of Economics  
University of the Western Cape  
Private Bag: X17  
Modderdam Road  
Bellville 7535  
Cape town, South Africa*

### **Dr. Shun-Chung Lee**

*Taiwan Institute of Economic Research  
No. 16-8, Dehuei Street, Jhongshan District,  
Taipei City 104,  
Taiwan.*

### **Dr. Kuo-Chung Chu**

*National Taipei University of Nursing and Health  
Sciences No. 365, Min-Te Road, Taipei,  
Taiwan.*

### **Dr. Gregory J. Davids**

*University of the Western Cape  
Private Bag x17, Bellville 7535,  
South Africa.*

### **Prof. Victor Dragotă**

*Bucharest Academy of Economic Studies, Department  
of Finance  
Bucharest, Sector 1, Piata Romana no. 6, Room 1104,  
Romania*

### **Dr. Maurice Oscar Dassah**

*School of Management, IT and Governance  
University of KwaZulu-Natal  
Post Office Box X54001  
Durban  
4000  
South Africa.*

**Prof. Joseph Offiong Udoayang**

*University of Calabar  
P.M.B 1115, Calabar. Cross River State, Nigeria.*

**Prof. Robert Taylor**

*University of KwaZulu-Natal  
Varsity Drive, Westville  
South Africa.*

**Dr. Nazim Taskin**

*Massey University - Albany  
Quad Building A, Room 3.07  
Gate 1, Dairy Flat Highway (State Highway 17)Albany,  
New Zealand*

**Prof. João J. M. Ferreira**

*University of Beira Interior (UBI)  
Estrada do Sineiro, Pólo IV 6200 Covilhã,  
Portugal.*

**Dr. Izah Mohd Tahir**

*Universiti Sultan Zainal Abidin  
Gong Badak Campus, 21300 Kuala Terengganu,  
Terengganu, Malaysia.*

**Dr. V. Mahalakshmi**

*Panimalar Engineering College  
7-A,CID Quarters, Mandaveli,Chennai-600028,  
Tamilnadu,  
India.*

**Dr. Ata Allah Taleizadeh**

*Iran University of Science and Technology  
Faculty of Industrial Engineering,  
Iran University of Science and Technology,  
Narmak, Tehran, Iran.*

**Dr. P.S. Vohra**

*Chandigarh Group of Colleges, Landran, Mohali, India  
#3075, Sector 40 D  
Chandigarh, Pin code 160036*

**Dr. José M. Merigó**

*University of Barcelona  
Department of Business Administration, Av. Diagonal  
690, Spain.*

**Prof. Mornay Roberts-Lombard**

*Department of Marketing Management,  
C-Ring 607, Kingsway campus, University of  
Johannesburg, Auckland Park, Johannesburg, 2006,  
South Africa*

**Dr. Anton Sorin Gabriel**

*Carol I Boulevard, No. 11, 700506, Iasi,  
Alexandru Ioan Cuza University Iasi,  
Romania.*

**Dr. Aura Emanuela Domil**

*31 Horia Creanga, zip code 300253, Timisoara,  
West University from Timisoara,  
Faculty of Economics and Business Administration, Romania.*

**Dr. Guowei Hua**

*NO. 3 Shangyuancun, Haidian District, Beijing 100044,  
School of Economics and Management,  
Beijing Jiaotong University, China.*

**Dr. Mehdi Toloo**

*Technical University of Ostrava,  
Ostrava, Czech Republic*

**Dr. Surendar Singh**

*Department of Management Studies, Invertis University  
Invertis village, Bareilly -  
Lucknow Highway, N.H.-24, Bareilly  
(U.P.) 243 123 India.*

**Dr. Nebojsa Pavlovic**

*High school "Djura Jaksic"  
Trska bb, 34210 Raca, Serbia.*

**Dr. Colin J. Butler**

*University of Greenwich  
Business School, University of Greenwich, Greenwich, SE10  
9LS,  
London, UK.*

**Prof. Dev Tewari**

*School of Economics and Finance  
Westville Campus University of Kwa-Zulu  
Natal (UKZN) Durban, 4001  
South Africa.*

**Dr. Paloma Bernal Turnes**

*Universidad Rey Juan Carlos  
Dpto. Economía de la Empresa  
Pº de los Artilleros s/n  
Edif. Departamental, Desp. 2101  
28032 Madrid, España*

**Dr. Jurandir Peinado**

*Universidade Positivo  
Rua Silveira Peixoto, 306  
Zip 80240-120 Curitiba – PR – Brazil*

# **African Journal of Business Management**

**Table of Contents: Volume 12 Number 6 28 March, 2018**

## **ARTICLES**

<b>Sustainable entrepreneurship intention among university students in Uganda: A conceptual paper</b>	<b>131</b>
Kasimu Sendawula, Peter Turyakira and Christopher Alioni	
<b>Public owned enterprises in Italy: A hybrid nature for a hybrid regime of over - compliance</b>	<b>140</b>
Pietro Previtali, Andrea Zatti and Danila Scarozza	
<b>Two case studies to explore pros/cons and to assess applicability of Nexus maturity model</b>	<b>154</b>
Purnur Firat and Esin Can	

*Full Length Research Paper*

# Sustainable entrepreneurship intention among university students in Uganda: A conceptual paper

Kasimu Sendawula\*, Peter Turyakira and Christopher Alioni

Department of Marketing and Management, College of Business and Management Science, Makerere University, Kampala, Uganda.

Received 18 July, 2017; Accepted 12 February, 2018

Entrepreneurship is significant in transformation towards a sustainable future. Sustainable entrepreneurship intention aims at establishing businesses that balance the triple bottom line of economic, social and environmental aspects. Such businesses minimize environment degradation, pollution, resource scarcity and social challenges while enabling entrepreneurs to maximize profits. In developing countries such as Uganda, there are limited conceptual and empirical studies on action regulation factors in predicting sustainable entrepreneurship intention among university students. Therefore, developing an action regulation mechanism among university students could enhance their intention towards establishing sustainable entrepreneurial ventures. The overall objective of this paper is two-fold: To identify action regulation factors that influence sustainable entrepreneurship intention and to develop a hypothesised model that can be tested on university students with a focus on the moderating effect of gender differences on sustainable entrepreneurship intention. The results of the action regulation factors could enhance establishment of more sustainable enterprises in Uganda.

**Key words:** Sustainable entrepreneurship intention, action regulation theory, students' gender.

## INTRODUCTION

Entrepreneurship is significant in transformation towards a more sustainable future (Belz and Binder, 2017). Sustainable entrepreneurship is "the process of identifying, evaluating and seizing entrepreneurial opportunities that minimize a venture's impact on the natural environment and therefore create benefits for society as a whole and for local communities" (Gast et al., 2017). Unlike conventional entrepreneurship, which

largely focuses on profit maximization, sustainable entrepreneurship aims at establishing businesses that balance the triple bottom line of economic, social and environmental aspects (Belz and Binder, 2017; Gast et al., 2017). Sustainable entrepreneurship minimizes the impact of entrepreneurial actions on the environment, enhances society improvement as a whole for local communities, provides purposeful employment and finds

\*Corresponding author. E-mail: [sendawulakasimu@gmail.com](mailto:sendawulakasimu@gmail.com). Tel: +256 702073972.

solutions to balance business goals with sustainability and environment management (Shepherd and Patzelt, 2011). Thus, beyond conventional economic concerns, societal and environmental issues should be considered while creating new ventures.

In developing countries such as Uganda, universities and tertiary institutions teach students a profit first attitude that encourages profit optimization and self-interest maximization (Gast et al., 2017). This has resulted in creation of businesses that negatively affect the society and the environment in the form of environmental degradation, exhaustion of natural resources and emission of dangerous gases. Hence, in addressing environmental and societal challenges caused by entrepreneurial actions, university students should develop sustainable entrepreneurship intention. In boosting sustainable entrepreneurship intention, action regulation factors such as action plans, action knowledge and self-efficacy are vital in enabling university students to create ventures that maximize profits while conserving the environment and the values of the society (Zacher and Frese, 2015).

Although, extent studies have been conducted on sustainable entrepreneurship (Haiyat and Kohar, 2013; Hansen and Schaltegger, 2016; Kaldschmidt, 2011; Koe et al., 2012; Munoz and Cohen, 2017; Nowduri, 2012; Segal et al., 2010; Walker and Preuss, 2008; Waweru, 2012), there is limited literature on sustainable entrepreneurship intention among university students especially in sub-Saharan Africa. Furthermore, the few empirical and theoretical studies conducted in Africa largely focused on intention of university students in creating conventional entrepreneurial ventures Gielnik et al., 2014). Therefore, the purpose of this paper is to identify action regulation factors influencing sustainable entrepreneurship intention among university students in Uganda and to develop a hypothesised model that can be tested on university students in predicting their intention in establishing sustainable entrepreneurial ventures moderated by their gender. This will contribute to a wider understanding of sustainable entrepreneurship in Uganda.

## LITERATURE REVIEW

### Theoretical foundation

In this study, action regulation theory is employed. Action regulation theory was invented by Germany and Russia (Hacker, 2003). It was operationalized in England by Frese and Zapf (Frese and Zapf, 1994). The theory suggests that the psychology of work is concerned with actions Frese and Gielnik (2014). Action is a goal directed behaviour that is affected by personal factors, physical and social environmental feedback.

Action regulation also proposes that human actions come to reality with goal intention, action plans, action knowledge and self-efficacy (Zacher and Frese, 2015). Goal intention involves what individuals desire to achieve, action plans look at what individuals are going to do to achieve their goals, action knowledge involves individuals' having information on their actions, and self-efficacy refers to an individual's belief in having the necessary capabilities to perform the actions (Gielnik et al., 2015; Khalid et al., 2016; Zacher and Frese, 2015). These factors are antecedents that predict university students' sustainable entrepreneurship actions.

In this paper, action regulation involves action plan, self-efficacy and action knowledge that university students need to develop sustainable entrepreneurship intention aimed at conserving the environment and the values of the society. The action regulation theory has been extensively used in studies of evaluating students' entrepreneurship based training Frese and Gielnik (2014). This is because it can assess actions undertaken after the training. In addition, it has been used in studies of business start-up (Gielnik et al., 2014), entrepreneurial behaviour and success (Glaub et al., 2014), career management of employees (Raabe et al., 2007). However, action regulation theory has not been utilized in sustainable entrepreneurship studies. Thus, this study adopted the action regulation theory to predict the intention of the university students towards sustainable entrepreneurship in Uganda.

### Sustainable entrepreneurship

Sustainable entrepreneurship is a novel field in entrepreneurship research. It is derived from sustainable development which is the "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Jasma et al., 2011). Encouraging sustainable development calls for adjusting the interfaces in the three aspects of sustainability, that is, social, environment and economic dimensions. Thus, the integration of sustainable development and entrepreneurship has led to the emergence of sustainable entrepreneurship. There is seemingly no agreement on the definition of sustainable entrepreneurship. Existing definitions have focused on the economic, social and environmental aspects (Alani and Ezekiel, 2016; Atiq, 2014; Batra, 2012; Crnogaj et al., 2014; Kloviené and Speziale, 2015; Kumar et al., 2012; Levinsohn, 2013; Ojo et al., 2017; Salimzadeh et al., 2013; Santamaria et al., 2015; Soto-Acosta et al., 2016). In addition, sustainable entrepreneurship is viewed as "the focus on the preservation of nature, life support, and community in the pursuit of perceived opportunities to bring into existence future products, processes and

services for gain, where gain is broadly construed to include economic and non-economic gains to individuals, the economy and society” (Shepherd and Patzelt, 2011). Furthermore, Gast et al. (2017) viewed sustainable entrepreneurship as “the process of identifying, evaluating and seizing entrepreneurial opportunities that minimize a venture’s impact on the natural environment and therefore create benefits for society as a whole and for local communities”. Therefore, this study adopts Elkington’s (2004) definition of sustainable entrepreneurship which consists of “people, planet and profit”. This implies that entrepreneurs should balance the social, environmental and economic aspects of sustainability while undertaking entrepreneurial actions.

Social sustainability involves the ability of entrepreneurs to be answerable to different stakeholders such as the community, workers, suppliers, customers as well as the government voluntarily (Lu and Taylor, 2016; Majid et al., 2017; Moshina, 2015; Nevia, 2015). The social dimension of sustainable entrepreneurship requires university students to fulfil their responsibilities towards the stakeholders and the social setting in which they intend to operate as they undertake entrepreneurial actions (Ciasullo and Troisi, 2013). This can be achieved through improving the internal working condition of employees, employing community members, support community activities, involving stakeholders in making decisions that affect the community, community investment and development, provision of social services as well as empowering marginalized people in the community in their future businesses.

Regarding environmental sustainability, it involves preserving natural resources to benefit the present and future generations (Batra, 2012; Lu and Taylor, 2016; Mulà Pons de Vall, 2011). University students can preserve natural resources in future businesses by dropping greenhouse gas emissions, efficient use of energy, using proper farming methods, afforestation and reforestation (Drohomeretski and Gouvea Da Costa, 2015; Epstein and Roy, 2001). Economic sustainability, entrepreneurs aim at wealth maximization in operating their businesses (Buckingham, 2009). University students should operate their future businesses in the best interest of the shareholders’ profit and wealth maximization (Vincenza Ciasullo and Troisi, 2013). Thus, their focus ought to be on economic value in the form of strategy, marketing and sales as well as innovation (Elkington, 1998). In developing sustainable entrepreneurship intention, university students will attain competitive advantage through customer retention, brand reputation, financial performance, employee motivation, management of risks as well as getting market opportunities in their entrepreneurial actions (Cantele and Zardini, 2016). In addition, sustainable entrepreneurship presents new opportunities which university students can

exploit to maximize economic gains while conserving the environment and the values of the society (Belz and Binder, 2017).

Extent studies on sustainable entrepreneurship have identified several factors affecting sustainable entrepreneurial intention such as perceptual factors, innovation orientation, attitude, entrepreneurial personality, firm size, ownership, management skills as well as motivation (Alani and Ezekiel, 2016; Choongo et al., 2016; Koe and Majid, 2014; Koe et al., 2014). However, few have adopted action regulation factors such as action plans, action knowledge and self-efficacy to predict sustainable entrepreneurship intention among university students. Therefore, this study intends to develop a conceptual model using action regulation theory that can be tested on the university students in understanding their intention towards sustainable entrepreneurship.

### **Sustainable entrepreneurship intention**

According to Frese and Gielnik (2014), intention determines the motivational factors that predict an individual’s behaviour. Frese and Gielnik (2014) defines intention in terms of what individuals desire to achieve. Intention includes an individual’s purpose that influences behaviour, how resilient in the efforts to achieve their desires (Ajzen, 1991). In other words, how much effort the person needs to perform behaviour. It is therefore assumed that the stronger the intention, the more the university students will devote efforts towards the action to achieve desired goals. It is against this backdrop that sustainable entrepreneurship intention is defined as the likelihood of the individual to practice sustainable entrepreneurship. In a study conducted by Koe et al. (2014), sustainable entrepreneurship intention among entrepreneurs was highly positive when making important decisions in opportunity identification, growth and general running of the businesses and meeting stakeholder needs. This implies that university students easily identify profitable business opportunities if they have sustainable entrepreneurship intention. In addition, Crnogaj et al. (2014) suggested that to encourage sustainable entrepreneurs, there should be improvement in the business environment by upgrading institutional arrangements, changing general attitudes and intentions towards sustainable entrepreneurship. Thus, the government and universities should create an enabling environment for university students to enhance their sustainable entrepreneurship intention. This can be achieved through organizing sensitization campaigns aiming at creating awareness on sustainable entrepreneurship practices, conducting sustainable business competitions and expositions as well as funding



students with viable sustainable business ventures. This could promote new business creation for profit, conservation of the natural environment and social welfare improvement of the society.

Furthermore, Raderbauer (2011) revealed that a positive attitude towards sustainability of businesses promotes the entrepreneur's sustainable entrepreneurship intentions. Thus, universities in developing countries such as Uganda should change students' attitude from focusing on profit and wealth maximization to the triple bottom line aspects of balancing the social, environmental and economic dimensions of sustainable entrepreneurship in their businesses. This will enhance creation of more sustainable entrepreneurial ventures that will ultimately conserve the environment and the values of the society. Therefore, intention influences university students' decision to adopt and implement sustainable practices in their future businesses.

## METHODOLOGY

This section indicates the research method, data collection, data preparation and data analysis stages. The research approach of this paper is a systematic literature review of secondary reported sources. This method is characterized by a well-documented, replicable and transparent search process. It is driven by a theory based understanding of the phenomena of interest and improves the quality of the review process. This method is common in business management studies (Bouncken et al., 2015; Gast et al., 2015).

Data collection, preparation and analysis was done to determine all published articles in the field of sustainable entrepreneurship; the following search terms were defined and combined to identify appropriate publications: "sustainable", "entrepreneurship", "intention", "action regulation theory" (action knowledge, action plans and self-efficacy) and "university students". To discover a full range of scientific articles, libraries such as ProQuest, EBSCOHost and Elsevier were used in searching for articles. In addition, data bases such as Emerald Management Thinking, Emerald full text and Management Reviews, Google Scholar, Science Direct and Academic Search Complete were searched. These databases were searched because they provide important articles on sustainable entrepreneurship.

The study focused on peer reviewed journal articles. Thus, books, book chapters, reviews, discussion papers and conference papers were excluded. This is because peer reviewed journal articles are considered to be more valid (Macdonald and Kam, 2004). A total of 353 peer reviewed articles were identified, which were then screened manually. After exclusion of non-business related, non-English and unrelated articles, the final sample for the systematic review of literature was 85 articles. Then, relevant information was collected and organized by indicating: the name of the author(s), year of publication, title of the article, journal, subject of study, research questions, methodology used and the key findings of the study for the remaining 85 articles in an excel sheet.

To ensure validity and reliability as well as quality of the analysis, the multiple assessor method was applied. This was done by engaging two entrepreneurship scholars and two experts who read through and examined the articles, indicating the subject, research

questions as well as the findings of the study. This enabled the researcher to develop and propose a research model. Suggestions and recommendations from the entrepreneurship scholars and experts were thoroughly discussed and analyzed to enhance quality of this work. This study therefore recommends that the developed hypothesis model should be subjected to parametric tests that ensure normality, linearity, homogeneity of variance and multicollinearity.

## Proposed research model

The literature review has revealed several action regulation variables that influence the sustainable entrepreneurial intention among the university students in Uganda. Based on these factors, the following research model is proposed. Figure 1 shows the conceptual framework of the study. According to the framework, the study considers action plan, action knowledge and self-efficacy as the independent variables and sustainable entrepreneurship intention as the dependent variable. Students' gender is the moderating variable of the study.

## Hypothesis development

### *Self-efficacy and sustainable entrepreneurship intention*

Self-efficacy is one of the widely studied entrepreneurial competencies in entrepreneurship intention. According to Bandura (1971), self-efficacy involves individual's beliefs in their competencies to mobilize the motivation, cognitive resources and courses of action needed to exercise control over events in their lives. More importantly, self-efficacy in sustainability concerns an individual's belief in his or her competencies that are important in establishing sustainable ventures (Koe et al., 2014). A number of studies indicate that self-efficacy predicts sustainable entrepreneurship intention (Bădulescu et al., 2014; Elliot, 2011; Koe and Majid, 2013; Koe et al., 2014; Rey, 2011; Walker et al., 2014; Koe et al., 2014). For example, Koe et al. (2014) revealed that self-efficacy is a significant predictor of sustainable entrepreneurship among small and medium enterprises in Malaysia. This suggests that if university students are to develop sustainable entrepreneurship intention, they should have confidence in themselves first. Their sustainable entrepreneurship intention could be further enhanced if universities organize programmes such as sustainable business plan competitions as well as exposition of green products that will stimulate their self-efficacy and thus establish sustainable entrepreneurial ventures.

In addition, Raabe et al. (2007) contend that self-efficacy impacts an individual's initial decision on setting goals and activities to undertake sustainable entrepreneurial ventures. In this way, having confidence in undertaking sustainability activities increases the chance that university students will make decisions that

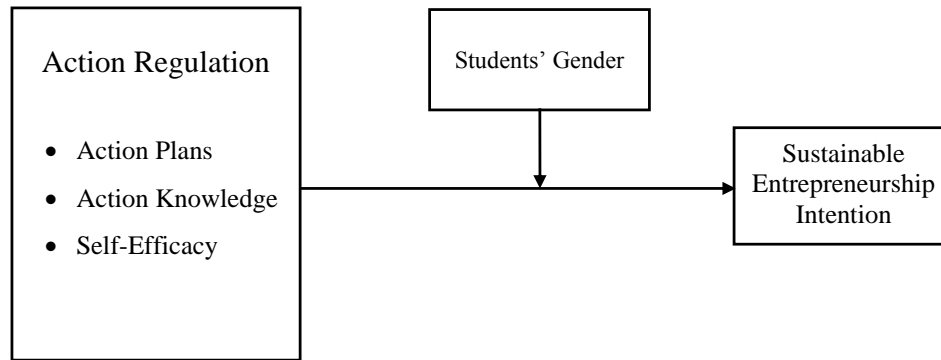


Figure 1. Research model.

enhance their sustainable entrepreneurship intention. In addition, when university students decide to undertake sustainability actions, they are more likely to show higher commitment, efforts and become resilient in integrating sustainability practices into their current and future businesses (Khalid et al., 2016). Furthermore, self-efficacy enables university students to develop action skills (Zacher and Frese, 2015). These skills are crucial in enabling future entrepreneurs to take actions that improve sustainability of the society and environment by setting sustainable businesses. Similarly, university students depend on their confidence to develop interpersonal skills (Lans et al., 2014). This is the ability to motivate, enable and facilitate collaboration and participation in sustainability activities through effective communication, bargaining as well as being empathetic to people in the society. Interpersonal skills also enable university students to establish working relationships with different stakeholders, learning from them and recognise sustainability opportunities that are core in shaping their sustainability intention. Hence, based on the above analysis of existing literature, the following relationship is presented.

H1: Self-efficacy positively influences sustainable entrepreneurship intention of the university students.

### ***Action knowledge and sustainable entrepreneurship intention***

Action knowledge involves individuals having information on their actions. This knowledge is crucial in recognizing opportunities that conserve the environment and the values of the society while maximizing economic gains. Action knowledge in this context is conceptualised as sustainability knowledge that can be explicit and implicit knowledge. Existing studies have revealed that

knowledge influences sustainable entrepreneurship intention for example, Batra (2012) asserts that sustainability action knowledge makes future entrepreneurs to become efficient in their actions. This is because knowledge enables students to understand the impact of entrepreneurial actions on the environment and the society thus reducing climate change, pollution, global warming and unemployment that come from conventional entrepreneurial actions. Furthermore, action knowledge enables entrepreneurs to share and communicate sustainability actions and principles in their marketing campaigns to consumers in both small and large scale businesses (Raderbauer, 2011). Hence, the willingness of entrepreneurs to use sustainability knowledge in terms of proper communication about their products and services in the sustainability transition enhance their growth (Hörisch, 2015).

Literature further indicates that prior exposure to sustainability practices motivates entrepreneurs to follow their goal of sustainable enterprises in order to solve environmental and societal problems (Bell and Stellingwerf, 2012). Lack of knowledge is the main challenge affecting sustainable entrepreneurs (Bell and Stellingwerf, 2012). In other words, sustainability may lead to entrepreneurial opportunity identification based on entrepreneurial knowledge of the business owner. Thus, small business owners need knowledge to identify opportunities from the environment. However, little is known about whether action knowledge influences sustainable entrepreneurial intention of the University students. Concerning the process of developing sustainable entrepreneurship intention, action knowledge enables future entrepreneurs to have information on the activities undertaken to successfully start and run a sustainable entrepreneurial venture (Belz and Binder, 2017; Farny, 2016; Hooi et al., 2016; Hörisch, 2016). This enables them to understand what to do and how to do it. Such activities include: recognizing ecological and social

problems, recognizing ecological and social opportunity, developing a triple bottom line solution, funding and forming a sustainable entrepreneurial venture and creating or entering a sustainable market.

Action knowledge is developed through active learning by involving students in the real sustainable business creation actively (Frese and Gielnik, 2014). This enables future entrepreneurs to attain comprehensive knowledge that is necessary in developing sustainable entrepreneurship intention. According to Hörisch (2015), action knowledge enables future entrepreneurs to develop communication systems that can enhance marketing green products and services. Such communication systems enable future entrepreneurs to share and communicate in their marketing campaigns sustainability practices to consumers. Hence, the willingness of the university students to use knowledge in terms of proper communication about their products and services in the sustainability transition promotes their sustainable entrepreneurship intention (Hörisch, 2015). Literature further indicates that prior exposure to sustainability practices can motivate university students to follow their goal of establishing sustainable enterprises in order to solve environmental and societal problems (Bell and Stellingwerf, 2012). Therefore, lack of knowledge is the main challenge affecting sustainable entrepreneurship intention (Bell and Stellingwerf, 2012). Surprisingly, in a study conducted by Choongo et al. (2016), knowledge does not enhance identification of sustainable entrepreneurial opportunities. The implication of Choongo et al. (2016)'s finding is that knowledge may not enable university students to identify opportunities for establishing sustainable ventures. Based on the foregoing discussion, it can be hypothesized that:

H2: Action knowledge influences sustainable entrepreneurship intention of the university students.

### ***Action plan and sustainable entrepreneurship intention***

Action plan is an important action regulation factor that is needed by university students to develop sustainable entrepreneurship intention. In this paper, action plans is used with sustainability planning interchangeably. According to Koe et al. (2014), lack of action plan knowledge could lead to wastage of resources for new sustainable venture creation. In this way, more conventional entrepreneurial ventures are likely to be created hence leading to climate change, environmental degradation, pollution and global warming. Thus, action planning involves designing, implementing activities, translated and transformative governance strategies towards sustainability of the business (Hörisch, 2016). In

this study, action planning is defined as a process of determining the sub steps of what to do and the operation details of how to do it in enhancing attainment of sustainability goals (Gielnik et al., 2015). Action plans that are sustainable enable university students to initiate and focus on the desired course of action, give special attention to activities that are more important than others and thus attaining the desired goals. This is because resources are not wasted and remain focused on the desired course of action despite the challenges involved in developing sustainable entrepreneurship intention.

Extent studies indicate that action planning enhance university students sustainable entrepreneurship intention. For example, Sisaye (2013) revealed that sustainability planning provides environmental opportunities for entrepreneurial ventures to competitively operate in a way that is environmentally sensitive and preserves societal resources. This implies sustainability planning enables university students to generate viable investment opportunities that will enhance achievement of their profit and wealth maximization as well as conserving the environment and the values of the society. In addition, Belz and Binder (2017) revealed that entrepreneurs need to have a detailed sustainable business plan if they are to access seed capital to translated their ideas to sustainable entrepreneurial ventures. Thus, if university students are to access start up capital to implement their sustainable business opportunities, it is important to develop sustainable business plans first. This will ultimately lead to creation of more sustainable entrepreneurial ventures.

Furthermore, Basiago (1999) indicates that entrepreneurs should live within the limitation of the environment and the society by integrating sustainability principles into their businesses. This implies that university students should develop plans for natural system resource protection, plan for team training in environmental protection, development of environmental plan as well as waste disposal plans. This will also preserve the environment and the value of the society. Based on the synthesis of the existing literature, the following relationship is developed.

H3: Action planning positively influences sustainable entrepreneurship intention of the university students.

### ***The moderating role of students' gender***

Gender is an important measurement of the socio-cultural aspects and can be a likely predictor of university students' sustainable entrepreneurship intention. Thus, gender difference concerning entrepreneurial interest, intention and attitude among university students has attracted attention of many scholars in the field of

entrepreneurship. According to Karimi et al. (2014), reasons for differences in gender sustainable entrepreneurship intention among students are not clear. This study could help to provide a clear understanding on whether the male or female university students have a higher intention to establish sustainable businesses in a developing country perspective. Previous studies have revealed that male students have a higher entrepreneurial intention as compared to their female counterparts (Nonato et al., 2014; Karimi et al., 2014). This could be true in establishing conventional entrepreneurial ventures in which male students are motivated to establish businesses aimed at profit and wealth maximization.

However, Mustapha and Selvaraju (2015) revealed that gender is not an important predictor of male and female students intention towards sustainable entrepreneurship. This could be true especially if both the male and female students have different plans, knowledge and are confident to undertake sustainability initiatives in their future entrepreneurial ventures. In addition, Dabic et al. (2012) indicate that low sustainable entrepreneurship intention among the female students could be due to low self-efficacy, poor attitude towards lack of skills as well as fear of taking risks. Furthermore, gender stereotypes affect students career options by impacting their perception and intention concerning entrepreneurship (Pawlak, 2016). Hence, female students are presumed to have lower intention towards sustainable entrepreneurship in comparison with their male counterparts. Dabic et al. (2012) also reported that male students have a high perceived and desirability feasibility as compared to female students. This is because female students get more support from their families and thus become reluctant about sustainable entrepreneurship actions.

Concerning the moderating effect of students gender, Shinnar et al. (2012) discovered that gender does not moderate the relationship between barrier to entrepreneurship and the intention of students to undertake sustainable entrepreneurship initiatives in China, Belgium and United States. This finding is not surprising because of the difference in the social culture factors among students in developed and developing economies. Therefore, there is need to test this research model to establish whether students' gender in Uganda moderates their intention towards sustainable entrepreneurship. Hence based on the above analysis of existing literature, the following relationship is presented.

H4a: There are significant differences between action plans, action knowledge and self-efficacy of students' gender.

H4b: There are significant differences in sustainable entrepreneurship intention between male and female

students.

## **CONCLUSION, LIMITATIONS AND RECOMMENDATIONS**

This literature review has contributed to the general understanding of sustainable entrepreneurship intention of university students. A research model with hypothesis has been developed and should be in position to demonstrate that university students have a significant intention towards sustainable entrepreneurship. In addition, the research model can be used to understand factors that influence intention of university students towards sustainable entrepreneurship. Furthermore, action regulation factors of action knowledge, action plans and self-efficacy as well as the moderation of effect of the students' gender should be proven to positively influence university students' sustainable entrepreneurship intention. The contribution of this paper is twofold: it helps to flourish the existing literature by filling the identified gaps. It has also developed a research model that can be used to predict sustainable entrepreneurship intention of university students' in becoming sustainable entrepreneurs.

This study has limitations. First, the inclusion and exclusion criteria used in the systematic review of literature can be criticized. This is because some important articles on sustainable entrepreneurship intention could have been excluded unintentionally. In addition, concerns regarding the objectivity of data analysis of the reviewed journal articles may also arise. This is due to the fact that analysis and interpretation of the articles was subjective, that is, the previous studies' findings were perception based. Moreover, the actual sustainable entrepreneurial actions that could help in providing a better understanding of sustainable entrepreneurship intention were not explored by the researcher and hence action regulation factors of action knowledge, action plans and self-efficacy are merely discussed based on prior studies. This study thus identifies the need to conduct an empirical study to practically understand the sustainable entrepreneurship intention of university students in Uganda.

Therefore, the study recommends that for students to develop sustainable entrepreneurship intention, universities should teach sustainability and entrepreneurship together. This will enhance sustainable entrepreneurship intention among students in the university. Additionally, more sustainable opportunities will be identified by students once they are taught sustainable entrepreneurship principles. This will also contribute to the realization of the United Nations aim of incorporating sustainability principles, values and practices into education to stimulate behavioural changes

and create a more sustainable future. The government should further create conducive environment for university students to develop sustainable entrepreneurship intention that will minimize both environmental and societal challenges, thus attaining sustainable growth and development in Uganda.

## CONFLICT OF INTERESTS

The author has not declared any conflict of interests.

## REFERENCES

- Ajzen I (1991). The theory of planned behaviour. *Organizational Behaviour and Human Decision Processes, The theory of planned behavior*, *Organ. Behav. Hum. Decis. Process.* 50(2):179-211.
- Alani F, Ezekiel O (2016). Critical Success Factors for Sustainable Entrepreneurship in SMEs: Nigerian Perspective. *Mediterr. J. Soc. Sci. MCSER Publishing*, 7(3):2039-9340.
- Atiq M (2014). University Of Southampton Sustainable Corporate Entrepreneurship: Insights from Pakistan.
- Bădulescu A, Badulescu D, Bac D, Sipos-Gug S (2014). Attitudes and intentions of business master students towards sustainable tourism and entrepreneurship. *Amfiteatru Econ.* 16(8):1110-1124.
- Bandura A (1971). *Social learning theory*. New York: General Learning Press.
- Basiago AD (1999). Economic, Social, and Environmental Sustainability in Development Theory and Urban Planning Practice. *The Environmentalist* 19:145-161.
- Batra S (2012). Sustainable Entrepreneurship and Knowledge Based Development, 11th International Entrepreneurship Forum Kuala Lumpur, Malaysia, 3–6 September.
- Bell JF, Stellingwerf JJ (2012). Sustainable Entrepreneurship: The Motivations & Challenges of Sustainable Entrepreneurs in the Renewable Energy Industry. Master's Thesis, Jönköping International Business School, Jönköping, Sweden.
- Belz, F, Binder J (2017). Sustainable entrepreneurship: a convergent process model. *Bus. Strateg. Environ.* 26(1):1-17.
- Bouncken RB, Gast J, Kraus S, Bogers M (2015). Competition: a systematic review, synthesis, and future research directions. *Rev. Managerial Sci.* 9(3):577-601.
- Buckingham F (2009). Idea: Triple bottom line | *The Economist*. The Economist. Retrieved from <http://www.economist.com/node/14301663>.
- Cantele S, Zardini A (2016). Is sustainability a competitive advantage for small businesses? An empirical analysis on the possible mediators of social and financial performance relationship, 22<sup>nd</sup> ISDRS 2016 Conference "Rethinking Sustainability Models and Practices: Challenges for the New and Old World Contexts", School of Science and Technology, Universidade Nova de Lisboa, Lisbon, Portugal. 2:205-207.
- Choongo P, Van Burg E, Paas LJ, Masurel E (2016). Factors influencing the identification of sustainable opportunities by SMEs: Empirical Evidence from Zambia. *Sustainability (Switzerland)*, 8(1):1-24.
- Crnogaj K, Rebernik M, Bradac HB, Omerzel GD (2014). Building a model of researching the sustainable entrepreneurship in the tourism sector. *Kybernetes*, 43(3/4):377-393.
- Dabic M, Daim T, Bayraktaroglu E (2012). Exploring gender differences in attitudes of university students towards entrepreneurship: an international survey. *Int. J. Gender Entrep.* 4(3):316-336.
- Drohomeretski E, Gouvea Da Costa SE (2015). The Application of Sustainable Practices and Performance Measures in the Automotive Industry: A Systematic Literature Review. *Engineering Manage. J.* 27(1):32-44.
- Elkington J (2004). Enter the triple bottom line. In A. Henriques & J. Richardson (Eds.), *The triple bottom line: Does it all add up?*. London, England: Earthscan. pp. 1-16.
- Elkington J (1998). Partnerships from cannibals with forks: The triple bottom line of 21st-century business. *Environ. Qual. Manage.* 8(1):37-51.
- Elliot S (2011). *Transdisciplinary Perspectives on Environmental Sustainability: A Resource Base and Framework for It-Enabled Business Transformation*. *MIS Quart.* 35(1):197-A13.
- Epstein MJ, Roy MJ (2001). Sustainability in action: Identifying and measuring the key performance drivers. *Long Range Planning*, 34(5):585-604.
- Farny S (2016). Revisiting the Nexus of Entrepreneurship and Sustainability: Towards an Affective and Interactive Framework for the Sustainability Entrepreneurship Journey" Aalto University School of Business (September 2012-December 2016).
- Frese M, Gielnik MM (2014). The psychology of entrepreneurship. *Ann. Rev. Organ. Psychol. Organ. Behav.* 1:413-438.
- Gast J, Filser M, Gundolf K, Kraus S (2015). Coopetition research: towards a better understanding of past trends and future directions. *Int. J. Entrep. Small Bus.* 24(4):492.
- Gast J, Gundolf K, Cesinger B (2017). Doing business in a green way: A systematic review of the ecological sustainability entrepreneurship literature and future research directions. *J. Cleaner Prod.* 147:44-56.
- Gielnik MM, Barabas S, Frese M, Namatovu-Dawa R, Scholz FA, Metzger JR, Walter T (2014). A temporal analysis of how entrepreneurial goal intentions, positive fantasies, and action planning affect starting a new venture and when the effects wear off. *J. Bus. Vent.* 29(6):755-772.
- Gielnik MM, Frese M, Kahara-Kawuki A, Katono IW, Kyejjusa S, Ngoma M, Dlugosch TJ (2015). Action and action-regulation in entrepreneurship: Evaluating a student training for promoting entrepreneurship. *Acad. Manage. Learning Educ.* 14(1):69-94.
- Glaub ME, Frese M, Fischer S, Hoppe M (2014). Increasing personal initiative in small business managers or owners leads to entrepreneurial success: A theory-based controlled randomized field intervention for evidence-based management. *Acad. Manage. Learning Educ.* 13(3):354-379.
- Hacker W (2003). Action Regulation Theory: A practical tool for the design of modern work processes? *Eur. J. Work Organ. Psychol.* 12(2):105-130.
- Haiyat U, Kohar A (2013). The Factors that Influence the Sustainability of Malaysian Bumiputera (Indigenous) New Technology-Based Small Firms. *J. Manage. Hist.* 23(3):278-296.
- Hansen EG, Schaltegger S (2016). The Sustainability Balanced Scorecard: A Systematic Review of Architectures. *J. Bus. Ethics.* 133(2):193-221.
- Hooi HC, Ahmad NH, Amran A, Rahman SA (2016). The functional role of entrepreneurial orientation and entrepreneurial bricolage in ensuring sustainable entrepreneurship. *Manage. Res. Rev.* 39(12):1616-1638.
- Hörisch J (2015). The Role of Sustainable Entrepreneurship in Sustainability Transitions: A Conceptual Synthesis against the Background of the Multi-Level Perspective. *Admin. Sci.* 5(4):286-300.
- Hörisch J (2016). Entrepreneurship as Facilitator for Sustainable Development? Editorial for the Special Issue *Advances in Sustainable Entrepreneurship*. *Administrative Sciences* 6(1):4.
- Jasma P, Tahtinen J, Ryan A, Pallari M (2011). Sustainable SMEs network utilization: the case of food enterprises. *J. Small Bus. Enterp. Dev.* 18(1):141-156.
- Kaldschmidt S (2011). *The Values of Sustainability: The Influence of Leaders' Personal Values on Sustainability Strategies*. University of St. Gallen, Business Dissertations, (3906):1-255.
- Karimi SJA, Biemans H, Lans T, Chizari M, Mulder M (2014). Effects of role models and gender on students' entrepreneurial intentions. *Eur. J. Training Dev.* 38(8):694-727.
- Khalid K, Hassam SF, Ahmad AM (2016). Inducing the entrepreneurial

- action theory into sustainable-business model: An alternative to entrepreneurship theory. *Adv. Sci. Lett.* 22(5-6):1188-1191.
- Kloviene L, Speziale MT (2015). Sustainability Reporting as a Challenge for Performance Measurement: Literature Review. *Econ. Bus.* 26:44-53.
- Koe WL, Omar R, Majid IA (2014). Factors Associated with Propensity for Sustainable Entrepreneurship. *Procedia – Soc. Behav. Sci.* 130:65-74.
- Koe WL, Majid IA (2014). Socio-Cultural Factors And Intention Towards Sustainable Entrepreneurship. *Eurasian J. Bus. Econ.* 7(13):145-156.
- Koe, WL, Majid IA (2013). Intention towards Sustainable Entrepreneurship: A Conceptual Framework. *J. Tech. Manage. Technop.* 1(1):71-84.
- Koe Omar R, Majid IA, Koe WL, Omar R, Majid IA (2014). Factors Associated with Propensity for Sustainable Entrepreneurship. 4Th International Conference on Marketing and Retailing 2013 (Incomar 2013), 130:65-74.
- Koe Sa'ari JR, Majid IA, Ismail K (2012). Determinants of Entrepreneurial Intention Among Millennial Generation. *Procedia – Soc. Behav. Sci.* 40:197-208.
- Kumar V, Rahman Z, Kazmi AA, Goyal P (2012). Evolution of Sustainability as Marketing Strategy: Beginning of New Era. *Procedia - Social and Behavioral Sciences*, 37:482-489.
- Lans T, Blok V, Wesselink R (2014). Learning apart and together: Towards an integrated competence framework for sustainable entrepreneurship in higher education. *J. Cleaner Prod.* 62:37-47.
- Levinsohn D (2013). Disembedded and beheaded? - A critical review of the emerging field of sustainability entrepreneurship. *Int. J. Entrep. Small Bus.* 19(2):190-211.
- Lu W (Lucy), Taylor ME (2016). Which Factors Moderate the Relationship between Sustainability Performance and Financial Performance? A Meta-Analysis Study. *J. Int. Account. Res.* 15(1):1-15.
- Macdonald S, Kam J (2004). Quality Journals and Gamesmanship in Management Studies. *Manage. Res. News* 33(6):702-717.
- Majid I, Latif A, Koe W (2017). SMEs' Intention towards Sustainable Entrepreneurship. *J. Multidisciplinary Stud.* 8385:24-32.
- Moshina V (2015). Does Entrepreneurship Contribute to Sustainable Development? A Systematic Literature Review Title of thesis Does Entrepreneurship Contribute to Sustainable Development? A Systematic Literature Review. Retrieved from [http://epub.lib.aalto.fi/en/ethesis/pdf/14209/hse\\_ethesis\\_14209.pdf](http://epub.lib.aalto.fi/en/ethesis/pdf/14209/hse_ethesis_14209.pdf)
- Mulà Pons de Vall I (2011). Living and Learning sustainability in Higher Education: constructing Indicators of Social Learning, PhD thesis, University of Gloucestershire. <http://eprints.glos.ac.uk/1251/>
- Munoz, P, Cohen B (2017). Entrepreneurial Narratives in Sustainable Venturing: Beyond People, Profit and Planet. *J. Small Bus. Manage.* 00(00):pp.00-00. <http://onlinelibrary.wiley.com/doi/10.1111/jsbm.12395/full>
- Mustapha M, Selvaraju M (2015). Personal attributes, family influences, entrepreneurship education and entrepreneurship inclination among university students. *Kajian Malaysia*, 33:155-172.
- Nevia F (2015). FACTORS influencing students entrepreneurial intentions towards entrepreneurship (Doctoral dissertation, Effat University).
- Nonato LFN, Leal BA, Rocha ARJ (2014). The influence of age and gender on entrepreneurial behaviour characteristics of students and professionals of Business Administration. *Afr. J. Bus. Manage.* 8(21):1019-1028.
- Nowduri S (2012). Framework for Sustainability Entrepreneurship for Small and Medium Enterprises (SMEs) in an Emerging Economy. *World J. Manage.* 4(1):51-66.
- Ojo OD, Petrescu M, Petrescu AG, Bilcan FR (2017). Impact of innovation on the entrepreneurial success: Evidence from Nigeria. *Afr. J. Bus. Manage.* 11(12):261-265.
- Pawlak A (2016). The influence of gender on the entrepreneurial intention of Polish high school students. *Studia Oeconomica Posnaniensia*, 4(5):25-37.
- Raabe B, Frese M, Beehr TA (2007). Action regulation theory and career self-management. *J. Vocat. Behav.* 70:297-311.
- Raderbauer M (2011). The importance of sustainable business practices in the viennese accommodation industry. University of Exeter, (September), pp. 1-91.
- Rey L (2011). Sustainable Entrepreneurship and its Viability (Rotterdam: Master Thesis for MS in Entrenuership, Strategy and Organizations Economics from Erasmus School of Economics, December 12.
- Salimzadeh P, Courvisanos J, Nayak RR (2013). Sustainability in Small and Medium Sized Enterprises in Regional Australia: A Framework of Analysis. 26th Annual SEAAZ Conference Proceedings. pp.1–12.
- Santamaria L, Escobar-tello MC, Ross T (2015). Planet or people? Redefining the ideological position of sustainable design. IN: Proceedings of the 11th International European Academy of Design Conference: The Value of Design Research, 22nd-24th April 2014, Paris, France. <https://dspace.lboro.ac.uk/dspace-jspui/handle/2134/18109>
- Segal G, Borgia D, Schoenfeld J (2010). Founder human capital and small firm performance: An empirical study of founder-managed natural food stores. *J. Manage. Market. Res.* 4(1):1-10.
- Shepherd DA, Patzelt H (2011). The New Field of Sustainable Entrepreneurship: Studying Entrepreneurial Action Linking “What Is to Be Sustained” With “What Is to Be Developed.” *Entrepreneurship: Theory and Practice*, 35(1):137-163.
- Shinnar RS, Giacomini O, Janssen F (2012). Entrepreneurial Perceptions and Intentions: The Role of Gender and Culture. *Entrepreneurship: Theory and Practice*, 36(3):465-493.
- Sisaye S (2013). The development of sustainable practices in complex organizations. *World J. Entrep. Manage. Sustainable Dev.* 9(4):223-245.
- Soto-Acosta P, Cismaru DM, Vătămănescu EM, Ciocină R (2016). Sustainable Entrepreneurship in SMEs: A Business Performance Perspective. *Sustainability*. 8(4):342.
- Vincenza Ciasullo M, Troisi O (2013). Sustainable value creation in SMEs: a case study. *The TQM Journal*, 25(1):44-61.
- Walker H, Preuss L (2008). Fostering sustainability through sourcing from small businesses: public sector perspectives. *J. Cleaner Prod.* 16(15):1600-1609.
- Walker H, Preuss L, Briggs BRB, Melorose J, Perroy R, Careas S, Benjamin CG (2014). Sustainable Entrepreneurship. *J. Bus. Vent.* 4(1):1-10.
- Waweru SM (2012). Factors Influencing the Development of Youth Entrepreneurship in Ongata Rongai Township, Kajiado County, Kenya. <http://erepository.uonbi.ac.ke/bitstream/handle/11295/6974/Abstract.pdf?sequence=1>
- Zacher H, Frese M (2015). Action regulation theory: Foundations, current knowledge, and future directions. In *The SAGE Handbook of Industrial, Work, & Organizational Psychology*, (2<sup>nd</sup> ed., Vol. 2). New York, NY:Sage.

*Full Length Research Paper*

# Public owned enterprises in Italy: A hybrid nature for a hybrid regime of over-compliance

Pietro Previtali<sup>1\*</sup>, Andrea Zatti<sup>2</sup> and Danila Scarozza<sup>1</sup>

<sup>1</sup>Department of Economics and Management Sciences, University of Pavia Via San Felice 7, 27100 Pavia Italy.

<sup>2</sup>Department of Political and Social Sciences, University of Pavia Corso Strada Nuova 65, 27100 Pavia Italy.

Received 18 November, 2017; Accepted 24 February, 2018

The purpose of this paper is to describe the state of play regarding Italian Government strategy for preventing and combating corruption in Public Owned Enterprises (POEs). That is a special case since it implies the application of a hybrid regime of over compliance. On one hand, POEs must comply with Legislative Decree no. 231 of 2001 as private organization, on the other hand POEs must comply with Law No 190/2012 as public-owned organization. We carried out empirical research on the application of Legislative Decree no. 231 and Law No 190 based on an analysis of 106 Italian POEs. The results depict a controversial situation. Only a small part of the sample seems to comply with the Law and Decree. Most parts of the sample do not perfectly comply with Decree No 231 and Law No 190. In this case, it seems that the hybrid nature of POEs leads to an incomplete process of compliance. Or said in other terms, over-compliance does not work. The research limitations are mainly related to the sample, only Italian POEs, and to the absence of a longitudinal analysis due to the too recent application of the normative. This study provides an empirical basis for governments to apply anticorruption measures to POEs, and it provides useful insights for management to avoid the “conformity trap”. This study is the first to provide a starting point for reflection on the intertwined relationship between POEs and anticorruption measures, and to outline the current status quo of application in the Italian context.

**Key words:** Anticorruption, compliance, public owned enterprises, hybrid organizations.

## INTRODUCTION

Historically, the spread of public entrepreneurship in Europe from the end of the 19<sup>th</sup> century has been largely explained as a process of reacting to market failures, through which public administrations progressively supplanted the market and behaved as an entrepreneur in designing and managing services (Clo et al., 2015; Millward, 2005). The disillusionment with private initiated

regimes gave way in most countries to direct self-production as the dominant form of regulation, where public authorities governed the whole process of service provision both through internal departments or organizing entities strictly organic (local authorities keep the responsibility to define aims and strategic goals, to directly appoint the administrative organs, to approve

\*Corresponding author. E-mail: [pietro.previtali@unipv.it](mailto:pietro.previtali@unipv.it).

fundamental acts and to supervise the management) to local authorities. Starting from this almost generalized background, new organizational model progressively came out in the last decades of the 20<sup>th</sup> century, following the opposite direction. Bureaucratic failures, together with other technological, political and economic forces triggered de-integration and decentralization, bringing about a changing regulatory environment.

Within this general context of change, public owned enterprises (POEs) have turned out to be a distinctive institutional feature of many European countries. This trend has been driven by an evolving economic, political, ideological and theoretical background, aimed at making the public sector more business-like by introducing the principles and tools of private management into public administrations in order to improve their performance (Grossi and Reichard, 2008; McDonald, 2016). As a result, an increasing share of decisions and resources, while being kept within the public sphere initiative, are finally allocated to entities converted into private-law companies (joint-stock companies or limited liability companies). Accordingly, their efficiency, efficacy, but also their sustainability, accountability and transparency become key concerns for both public policy makers and theoretical analysis (Grossi et al., 2015; Klein, 2012; Zatti, 2013).

In what follows we do not discuss the controversial and widely investigated ownership effects on the overall performance of enterprises (Boardman and Vining, 1989; Bognetti and Obermann, 2008; MacAvoy et al., 2012), but we focus on a specific issue concerning the management of POEs. A recent challenge they have to deal with is in fact the internalisation of effective corruption prevention mechanisms. On the one hand, POEs are exposed to the same governance challenges as those faced by private organizations and should be held to the same high standards of governance as private companies. On the other hand, due to their close relationship with policy makers and regulators, POEs may face additional and more specific challenges, such as undue political influence and conflict of interest for board members. In particular, concerning this second aspect, previous studies (Anechiarico and Jacobs, 1995; Auriol and Blanc, 2009; Faccio, 2006; Nguyen and Van Dijk, 2012) have explored the connection between firms and politicians finding corporate political connections to be relatively widespread, more evident among larger firms and particularly common in countries that are perceived as being highly corrupt (such as Italy) (Kaptein, 2011). According to the World Bank, in fact, POEs are prone to greater corruption risks due to some additional challenges than private sector firms. These are mainly due to factors such as multiple principals, politicized boards and management, and low levels of transparency and accountability (Cameron et al., 2005; Dela Rama, 2011; World Bank, 2014). The proximity of POEs to other public organizations or public-owned entities, which can

be clients or suppliers to the POEs, creates a potential risk for favoritism and corruption. In addition, politicized boards and political appointment of chief executives leads to poor oversight of managers and increases the risk of corrupt activities going unchecked. Many POEs have weak internal control and auditing systems, thereby making them more prone to corruption (World Bank, 2014).

Starting from these premises there is both the theoretical and empirical need to go beyond the classical understanding of corruption as a generic form of moral hazard in organizations and analyze anti-corruption practices in different types of organizations (Banerjee et al., 2012). POEs, for instance, should adopt several corruption prevention practices with the aim, among others, of making them consistent and functional both in terms of their mission, often closely linked to objectives of general interest, and with governance choices, often borrowed from the private sector. To the best of our knowledge, previous studies on POEs are focused on privatization and globalization (Cuervo-Cazurra et al., 2014), on governance and ownership issues, foreign acquisition and, in general, on the expanded role of governments in global capital markets (Bremmer, 2010; Karolyi and Liao, 2017). To date, researchers have devoted relatively little attention to both the study of corruption in POEs. The little done so far has focused on the causes and economic consequences of corruption, without analyzing how organizations adapt and integrate “universal” practices and systems into their specific organizational frame. One of the goals of this paper is to remedy this deficiency with a study of corruption and compliance practices adopted in Italian POEs.

Moreover, almost all empirical studies in the literature to date measure and analyze corruption at the country-level. There are several arguments for why we need more organization-level analyses for a better understanding of corruption. First, country-level research does not help us to understand how individual firms face corruption and why and how the practices and the tools to fight corruption vary across organizations within a country. In addition, the country-level institutions and the regulatory framework cannot help to explain the substantial differences among organizations within the same country. Finally, organization-level studies can have important policy implications and could, for example, provide countries with a high level of corruption with recommendations on which local institutions matter for the prevalence of corruption.

Italy is interesting as a single country setting for at least three reasons. First, According to the latest Corruption Perception Index (CPI) by Transparency International ([https://www.transparency.org/news/feature/corruption\\_perceptions\\_index\\_2016](https://www.transparency.org/news/feature/corruption_perceptions_index_2016)), Italy ranked 60th (along with Cuba), with a perceived corruption rate improving over the past few years. As to the 2016 CPI, on a scale from zero to 100 whereby 100 refers to the lack of corruption,



Italy got a score of 47, with a little improvement compared to the previous year (44), rather placing Italy among the worst performing countries in the G7 and the EU members. As calculated by the Italian Court of Auditors, direct economic costs amount to approximately EUR 50/60 billion per year. Second, although several prior studies investigate the role of the overall national legal effectiveness and the legal origins in affecting corruption (Herzfeld and Weiss, 2003; Treisman, 2000), the role of within-country governance structures has received very little attention in the academic literature, partly due to data availability issues. Third, in Italy, the government strategy to prevent corruption has led the National Anti-Corruption Authority (ANAC) to issue Determination no. 8 of 2015 which provides that POEs due to their hybrid nature - abide by a dual compliance obligation: compliance with Legislative Decree no. 231 of 2001 as regards cases of active bribery (bribery, undue inducement to give or promise utilities, private corruption), and compliance to Law no. 190/2012 as regards cases of passive bribery.

Consequently, POEs in Italy represent an interesting context of analysis in order to study the adoption of anticorruption and compliance measures on forms of control and accountability in organizations characterized by a hybrid nature, as a means to facilitate the achievement of hybrid organizational and strategic objectives, aiming at removing or mitigating the factors that make more difficult the accomplishment of results. It is necessary to go beyond the simple analysis that considers the adoption of anticorruption and compliance practices as a "formal" process: the mere introduction of these practices could be not sufficient to create the conditions to implement innovative practices and policies in POEs. The anticorruption and compliance mechanisms characterized just by rule-based processes may have negative consequences especially in POEs, reducing these mechanisms to an add-on for internal control and compliance to external regulations, derailing any real process of hybridization with the pre-existing organization management systems and practices.

However, despite an awareness of how the effectiveness of both anticorruption and compliance mechanisms depends greatly on the way in which they are introduced and implemented, there are few contributions exploring "if" and "how" they work in practice. In addition, most of the cases already studied concern private enterprises (Belloc, 2014; Cuervo-Cazurra et al., 2014; Nguyen and van Dijk, 2012), with results that can be partially generalizable to different organizational contexts such as the POEs, where the practices related to corruption are having a rapid development after the regulatory intervention and where there is still an important need for knowledge and theoretical development.

Within the international debate on corruption there is the need to understand how organizations adapt and integrate "universal" practices and systems into their

specific organizational frame. This need is even greater when it comes to POEs, where particular external forces and internal dynamics require the adaptation of management tools coming from other sectors, as the new public management discourse has repeatedly debate. The present work contributes to filling this gap by understanding the state of implementation of Italian legislation based on anti-corruption and compliance measures in POEs; a relatively new subject and one lacking in-depth theoretical and research exploration.

The paper is organized as follows: first is an overview of regulatory framework on both corruption and compliance in Italy. This is followed by presentation of the peculiarities of the relationship among POEs, governance and corruption. Thereafter, the research model and sample used for the research is outlined; followed by the main results of the questionnaire and their discussion. The conclusions, recommendations for further development along with research and limitations were then presented.

## THE ITALIAN REGULATORY FRAMEWORK

Corruption is a widespread phenomenon in Italy: it represents one of the main causes of inefficient service delivery, instability of public financial resources as well as citizen's lack of trust towards democratic institutions affecting the Italian economic development (Ceschel et al., 2016). There was a need for an anticorruption policy to strengthen, on one hand, repressive measures and to introduce (or enhance where needed) prevention tools after and "on the other hand" aiming to tackle corruption in a comprehensive way and those factors that facilitate its incidence. It was precisely the widespread and systematic nature of the corruption that makes repression (though important) insufficient and that calls for the design and implementation of an integrated and coordinated anticorruption policy.

In this frame, in Italy, since 2001 the Legislative Decree no. 231 was issued to implement the OECD Convention of 17 September 1997 on the fight against corruption involving foreign public officials in international economic transactions. This has led to a change in the Italian regulatory system: the Decree provides a new form of liability for all private companies, which the legislator describes as "administrative", independent from the liability of the individual who has actually committed the crime. In fact, under articles 6 and 7 of the Decree, in a case of corruption or bribery the company body may be exempted from liability if it can prove it has adopted and effectively implemented some measures and choices of governance and an organizational model to prevent corruption and frauds, such as the following:

(a) the Board of Directors adopted and efficiently enacted, prior to commission of the act, organizational and management models which are capable of

- preventing offences of the type occurring;
- (b) the task of overseeing such operations has been delegated to a Supervisory board vested with powers to act on its own initiative and conduct monitoring;
- (c) the persons committed the offence by fraudulently circumventing the organizational and management models;
- (d) there has been no omission or insufficient oversight on the part of the Supervisory board referred to in subparagraph b).

As we have seen, the Legislative Decree concerns private legal entities. For public administrations, Law 190 of November 6, 2012, the so-called "Anti-Corruption Law," introduced, for the first time in Italy, an organic system to prevent corruption and illegality in public administration. Examining the content, it is clear that Law No 190 is the extension of the provisions of Decree No 231 for private companies to all Italian public administrations. Law No 190 requires that all public bodies should adopt:

- (a) a corruption prevention plan that must identify the activities which encourage corruption;
- (b) a person responsible for the prevention of corruption (compliance officer) who must assess the suitability of the corruption prevention plan and oversee both its implementation and operation and the effectiveness of the control procedures and processes;
- (c) a code of ethics and conduct; a set of values, principles and guidelines for behaviour to which employees should aspire for as part of their work;
- (d) specific risk prevention measures, which coincide with procedures and protocols that cover sensitive issues such as conflict of interest, authorization to make appointments outside the company, incompatibilities and ineligibility for top positions, whistleblowing, and the rotation of staff.

Here, ANAC (2015) enforced a double compliance regime for POEs: publically controlled enterprises are obliged to comply with Legislative Decree no. 231 as private companies, but at the same time, they are obliged to comply with Law no. 190 since ANAC equates POEs, with particular reference to in-house cases, and public administrations. From here, the risk is to create redundancies between the two systems: the organizational model and the supervisory body established under Decree no. 231 risk overlapping with the adoption of the corruption prevention plan and the appointment of a compliance officer, as explicitly stated by the Law no. 190. The risk here is the creation of an "over-compliance framework" which can lead to a "conformity trap" (Vit, 2016). That is the reassuring and unquestioning acceptance of legitimacy building activities that are contrary to apparent technical-rational warning signs, and the illusion of control and confidence they

create. Moreover, this regulatory framework could apply a "rule based compliance", creating the conditions for a "protect and justify" approach to possible failures of POEs (as well as the behaviour of poorly performing employees); but such systems could also be embedded in managers' decision-making processes, becoming instruments of organizational learning and, therefore, a means for improving the performance of POEs (Behn, 2001; Previtali and Cerchiello, 2017; Hinna et al., 2017).

### **POES nature and corruption**

POEs are known by many names – government corporations, government business enterprises, government-linked companies, parastatals, public enterprises, public sector units or enterprises and so on. As well as the name, the definition of POEs also often varies across countries. Institutional documents and previous research (Kowalski et al., 2013; OECD, 2005; World Bank, 2006) suggests that there is a wide range of legal forms for POEs, depending on factors such as: the level of government that owns the enterprise; the way in which the enterprise was founded; the purpose of the POE and, finally, the status of the POE if it is in the process of being privatised. While the varying forms of POEs may provide governments with flexibility, the multiple forms that POEs assume may also serve to complicate ownership policy, make them less transparent and insulate POEs from the legal framework applicable to other companies. However, a move towards harmonisation of the legal status of POEs with companies in the private sector is beginning to take place, which in turn could facilitate a more systematic use of corporate governance instruments (Belloc, 2014; Clo et al., 2015; He et al., 2016).

It was this hybrid nature of corporatized enterprises that has been subject to diverse, in some cases opposite, evaluations. On one hand, following the influence of the New Public Management reform strategy (Pollit, 2007), corporatisation has been seen as a positive opportunity, bringing about efficiency and effectiveness in the public sector through organisational specialisation, results-based management and performance measurement (Alexius and Ornberg, 2015; McDonald, 2016). Accordingly, managerial autonomy and professionalization are expected to favour de-politicisation, shielding directors and professional bureaucrats from the day-to-day pressure of elected officials and the short term vision of election cycles and interferences from other government agencies (McDonald, 2016; OECD, 2015). Under this perspective, the amphibious nature of POEs sometime escaping from the rigid and bureaucratic framework (budgeting and accounting rules, recruiting mechanisms, public works awarding regulations) of public administrations (Grossi and Reichard, 2008). On the other hand, de-integration

and reduced political control can be the cause of unintended critical effects, mainly due to the creation of entities that behave like private companies without the political and financial risks associated with direct private sector participation (McDonald, 2014). As observed by Alexius and Cisneros Ornberg (2015), hybridity in public enterprises, which attempts to reconcile potentially conflicting logics and values, risks not being a straight forward tool for the simultaneous creation of social and commercial value, but rather, often becomes “*sites of confusion and criticism for failing to do so*” (p. 288). Mission drift, reduced accountability and increasing transaction costs are commonly considered as the main pitfalls emerging from this governance option. Firstly, the emphasis on monetary results may have counterproductive effects on the public missions of services, leading to short-termism and the commodification of the public approach (McDonald, 2016). The rhetoric of “customers” instead of “citizens” and cost-reflecting pricing are supposed to weaken the attainment of broader public goals, with values not expressed in monetary or quantitative terms that risk being penalised in decision making. Furthermore, the lack, or in any case lower, presence of synergistic planning and the diverging interests of ring-fenced corporations develop centrifugal powers and isolationism, which undermine economies of scale and a more holistic execution of the public mandate. Secondly, the presence of a more complex principal-agent chain (general public, public sector administrators, supervisory board and board of directors, CEO and professional management) can be the cause of unclear lines of responsibility, lack of accountability and reduced democratic transparency (Tonurist and Karo, 2016), thus raising the likelihood of self-serving behaviour by corporate insiders (OECD, 2015). Saussier and Klien (2014) assume that privatisation and contracting out favour corruption and opportunistic behavior since higher payoffs and personal benefits can be shared by the public government and the private partner. This risk is supposed to be lower for publically controlled enterprises where a higher degree of integration and the absence (or reduction) of a profit-oriented attitude should diminish the interest in and possibility of redirecting cash flows to reward the politician or bureaucrat involved (Clo et al., 2015; Cuervo et al., 2014; Karloyi and Liao, 2017). The same authors also observe that, differently from the problem of corruption, political opportunism and misuse can be favoured in a POE, especially when boards and chief executives are politicised and directly influenced by elected organs. This suggests the opportunity to depoliticise the management, and reduce the opportunity to use the firm to gain consensus in a misleading way. In addition, where a substantive autonomy is granted to directors and chief executives it can lead to poor overseeing of managers and increases the risk of corrupt activities being unchecked (Srinivasan, 2015). Poor

monitoring of managers, lack of market discipline, public managers corruption and malevolent politicians interference are the four main reasons commonly advocated to sustain POEs’ comparative inefficiency (Belloc, 2014). However, the available literature does not support the traditional claim that the State, as such, inevitably induces public managers to be weakly committed or corrupted in government-owned firms. In particular, the sources of POEs inefficiency are not intrinsic to the owner’s identity per se, i.e. the government, rather they concern conditions (such as culture, legislation and the degree of political competition) extrinsic to it (Bremmer, 2010; Cameron et al., 2005; Milward, 2005; Kaptein, 2011). As stated by the World Bank (2014) all these factors make POEs prone to greater corruption risks due to some additional challenges.

If we concentrate on corruption prevention, the perspective to be adopted for a POE should be designed in accordance with its mission and operating environment. In fact, the director and managers can be, as in a private entity, active agents in corruptive behaviors, trying to gain contracts and benefits for the enterprise (Belloc, 2014); but they can also be passive subjects when they demand money, gifts or other undue advantages to act or to refrain to act in the exercise of their function, thus penalizing the interests of the company (Auriol, 2006; Dela Rama 2011). Many operative areas can be involved: administrative acts and authorization, contract awarding procedures, grant and other donation policies, workforce recruitment and career progression, tariff definition, appointment and nomination rules, and, control and inspections. In respect to public administration, POES lead to an increased decentralization of responsibilities and autonomy that can raise the risk of corruption and of other ethical problems. The adoption of less rigid and bureaucratic accounting and contract awarding procedures leads to the incrementation of discretionary choices, and can further increase this risk. More independent managers, for example, have additional opportunities and instruments to influence other actors in the purchasing process or in the recruitment of the workforce. At the same time, the public shareholder has a lower incentive to exert control since the financial effects of mismanagement do not immediately affect public budgets. The presence of softer budget constraints may also induce elected officials to influence operative choices to gain political consensus (lowering prices for public services or increasing the staff) without being directly responsible for the negative impacts in terms of costs and revenues. The overall threat is that the ambiguous nature of publically controlled enterprises weakens the checks normally operating in the public sector (hierarchical control, more transparent awarding procedures, direct voice from the public) without (or only partially) benefiting from the disciplining effects of market pressure.

As we can see, in dealing with corruption there are no simple answers, and we think that this is particularly true for public-owned enterprises (POEs) that, unlike the parent public administration, may "benefit" from less rigid decision and control mechanisms that could potentially be used for the commission of corrupt and fraudulent crimes (Florio, 2014). As a consequence, the process of escaping from the rigid and bureaucratic legal framework of public administration into the relative freedom of the business sector can bring about a perverse result: that of creating freedom and lessening control coupled with more opaque systems of political rewards and penalties. In summary, it is as if the POES leads to an imperfect situation, between the public and the private sectors, which must provide adequate and specific prevention measures, strictly connected with the measures adopted by the public reference bodies, but within which problems of teleological ambiguity and opportunistic behaviour may arise. This actually confirms the hybrid nature of the POEs, and generates a potential antagonism between an imperfect process of corporatization and the need by the public partner to exercise more control.

In this frame, POE's boards of directors and supervisory board can play a key role in adopting effective mechanisms and practices to prevent corruption (Di Pietra and Melis, 2015). The managerial literature on corporate board composition shows that boards connections act as a mechanism of exchange of information and innovative governance practices among companies (Arora and Gambarella, 1991). Moreover, interlocking directorates facilitate the diffusion of the best strategies and the development of capabilities of the boards to overcome formal rigidities and to cope with dynamic scenarios (Carpenter and Westphal, 2001). When equipped to operate autonomously, they can act as safeguards against political capture. They also set the "tone from the top" (OECD, 2016) and can contribute to creating an ethos of integrity by communicating corporate values down the chain of command. In addition, boards can oversee and monitor the effectiveness of measures implemented within POEs to identify and prevent corruption and other forms of corporate misconduct, including anti-corruption ethics and compliance programs and measures.

Notwithstanding the benefits derived from both the increased control and the implementation of the regulatory requirements, the manner in which control is exercised – also by board of directors - and law's suggestions implemented may itself have pernicious consequences (de Colle 2014; Stansbury and Barry, 2007). Despite the apparent promise of organizational compliance and anti-corruption measures as vehicles for discouraging business practices and risky behaviors that compromise integrity or threaten the public interest, POEs can use these measures in a passive way (anti-corruption measures are adopted only to be compliant with the law). Summarizing, when organizations place

emphasis on coercive implementation of a compliance orientation instead of developing a values-based approach they may undermine the program's own effectiveness, because "they institutionalize control and thereby risk politicization, indoctrination, and an atrophy of competences" (Stansbury and Barry, 2007).

## RESEARCH MODEL

The purpose of our research is to provide an evidence about the state of play regarding POEs strategy for developing compliance and preventing corruption, addressing both their formal design and their practical implementations. Only focusing on the effectiveness of the compliance and anti-corruption systems it is possible to avoid the risks of a "conformity trap" (de Colle, 2014; Stansbury and Barry, 2007; Bruton et al. 2015), that is the risk of the emergence within organizations of a thoughtless, blind and blinkered mindset that is counterproductive with respect to the aim of enhancing the actual compliance of the organization.

To do so, we examined the contents of both the Law no. 190 and the Decree no. 231 by distinguishing the outcomes (e.g., effectiveness of the practices and measures) from the process, that is, the procedures that organizations should follow in order to achieve desirable outcomes (e.g. having management systems designed to avoid corruption) (de Colle et al., 2014; Leipziger, 2003). Then, starting from these two categories of analysis (the process and the outcomes), we began to form a table of analysis (Table 1).

Concerning the process, the first characteristic to be analysed was the supervisory board composition (Carpenter and Westphal, 2001; Dela Rama 2011). Boards of directors act as the intermediaries between the state as shareholder and the management. They can also play the crucial role of safeguard against political capture, if given the autonomy to effectively fulfil the functions of setting strategy – based on clear objectives communicated by the state – and monitoring management. The presence of politically affiliated individuals on POE boards, for example, can lead both to conflicts of interest and to situations where corporate decision-making is politically motivated rather than based on clear performance objectives. We also focused on the presence of outside directors, which is one of the most important characteristics of good governance. Codes of good governance in many countries (e.g. US, UK, Australia, Germany, Japan, Italy, India, and Brazil), in fact, call for more independent directors on boards. Strong and independent boards of directors can ensure that the state as owner is not involved in the day-to-day operations of POEs, thereby limiting opportunities for corruption involving public officials (Belloc, 2014; Nguyen and van Dijk, 2012; Previtali and Cerchiello, 2017; Treisman 2000). From a theoretical perspective, the agency theory tradition suggests that a higher proportion of outside directors should be associated with stronger financial performance (Stiles and Taylor, 2001). According to Brick and Chidambaram (2010) the independence of the directors on the board can be an important determinant of board activity that increases as a board becomes more independent. Clarke and Xu (2002) found that an independent and competent corporate board limits the firm's ability to pay bribes and can actually boost the bargaining power of the managers in dealing with corrupt officials. According to Sullivan (2009), compliance with internal policies, guidelines and regulations, and simply adopting a code of ethics or a code of corporate governance with a companion code of ethics is not sufficient. Hence, the role of the supervisory board is seen as central to establishing and maintaining a corporate ethics program.

Concerning the board continuity, Vafeas (1999) examined the number of board meetings in a sample of 307 firms over the period

**Table 1.** The model of analysis.

Level of analysis	Main dimensions of analysis	Purpose/research questions
General information	(i) Ownership structure (ii) Annual revenue (iii) Quality certifications	Collect data on ownership and dimension
Process	(iv) Board composition (inside/outside directors)	Verify if POEs have adopted and implemented practices and procedures to avoid corruption and favour compliance.
	(v) Board Continuity (frequency of board meetings)	
Effectiveness	(i) Compliance with Decree 231/2001	Understand if POEs have applied regulatory requirements
	(ii) Compliance with Law 190/2012	
	(i) Compliance with Decree 231/2001	Verify if the anti-corruption and compliance systems are an integral part of the organization – embedded in the culture and practices and tailored to the business process of the organization
	(ii) Compliance with Law 190/2012	

from 1990 to 1994 and he found that board activity measured by board meeting frequency is an important dimension of board operations and that there is a positive relationship between the representation of outside directors in the board and the level of board activity. According to the author, if higher board activity facilitates better board monitoring, outside directors are likely to demand more board meetings to enhance their ability to monitor management. Other scholars investigated this aspect in order to study the relationship between board meeting and effective monitoring (Lipton and Lorsch, 1992). The researchers found boards that meet regularly are more active in making sure the enterprise is running in the best interest of ownership. Chen et al. (2006) stated that a high number of board meeting might indicate that the board is aware of the enterprise's activities. Kamardin and Haron (2011) also stated that a high percentage of board meeting shows that the directors know about the enterprises' activities and are able to better monitor the implementation of the strategy. Finally, Salleh and Othman (2016) found that more frequent board meetings lead to a more effective board of directors in deterring corporate fraud. Starting from the same assumptions, the implementation of law no. 190 was explored by analysing the number of compliance officers reports to the board in a year.

Then we analysed the system effectiveness. Since it is not realistic to think that this type of supervisory board and/or the compliance officer can lead to a significant impact on a company's financial performance, here it seemed to be more appropriate and coherent with the supervisory board's and compliance officer's mission pursuant of Decree no. 231 and Law no. 190 to consider the efficacy of the compliance system, analysed both as perceived effectiveness by top management (Boiral, 2012; Bruton et al., 2015; de Colle, 2014; Stransbury and Barry, 2007).

This means looking beyond compliance with the letter of regulation: the attention needs to shift to promoting organizational solutions and behaviours useful to prevent risk corruption (Ceschel et al., 2016; Hinna et al., 2017). The better definition of a managerial control system, which is the result of a development process and adequately organized innovation, permits to decide to avail tools (mechanisms, organs and procedures) considered more in keeping with the organizational needs and specificity (Miller et al., 2008). This "new" form of control will also enable favourable assessment processes on the part of externals called in to verify the attainment of such results and that the standards determined have been respected. Moreover, ensuring people behave in a compliant way implies a different and a more clear definition of role and responsibilities in the whole organization. Managers, directors

and employees have to be motivated to behave in a compliant way, despite pressures to the contrary. Compliance is then both 'top down' and 'bottom up' and a culture of compliance will become the default behaviour across the organisation. To be compliant, people need both to know what they are expected to do and to have the skills to behave in the right way (Bhimani, 2009; Grossi et al., 2015; Klein, 2012).

## DATA COLLECTION

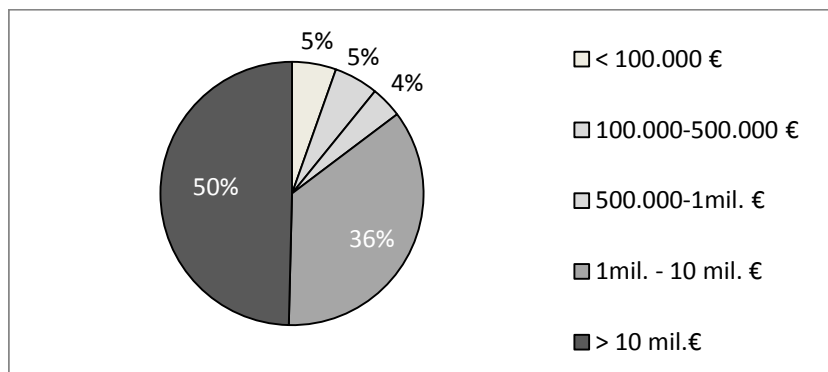
Due to the nature of the study, the research strategy was a survey involving 106 POEs (Figure 1) selected from our research directory that contains about 200 SOEs - that have declared a deep interest in the anti-corruption system. These POEs are in large part controlled by State and public entities: 82 companies are totally controlled by public authorities, in 18 companies the State owns from 50 to 90% of the shares, and, in six companies the shares owned by the State are less than 50% of the capital. One third of the interviewed companies have a sole shareholder.

To develop the survey instrument, an inventory of anticorruption and compliance practices was drawn up based on both a literature review (Auriol, 2006; Chen et al., 2006; De la Rama 2011; Hezfel and Weiss, 2003) and an analysis on the Italian policy documents. Data collection was done through a questionnaire of 28 questions that was composed of three parts, each with a different focus: company demographics, assessment of compliance to Legislative Decree n. 231, assessment of compliance to Law n. 190. As stated above, our research model explores the several dimensions concerning the application of legislative decree n. 231 and law n. 190 on POEs.

The first variable analysed was the provenance of members, by identifying supervisory units with external members, in-house members or a mixed composition.

The second variable was the board continuity, analysed by the frequency of supervisory board meetings. The effectiveness was measured through questions on the following:

- (i) Compliance is useful to a better definition of managerial control;
- (ii) Compliance implies a better definition of roles and responsibilities;
- (iii) Compliance leads to a positive impact on the organisation and a better formalisation of procedure.
- (iv) Compliance implies an improvement in the organisational mechanism for risk prevention and control.



**Figure 1.** Composition of the sample by annual revenue (in Euro).

**Table 2.** Composition of supervisory board by provenance of members.

Provenance of members	n. companies
all in-house members	9
33% external members	4
50% external members	5
67% external members	30
75% external members	1
all external members	57
<i>Total</i>	106

**RESULTS**

According to research model, for a useful discussion of the results obtained by the survey we based our elaborations on descriptive statistics enucleating two perspectives of analysis reflecting the measures to prevent corruption and frauds: the process and the outcomes. Concerning the first perspective of analysis, we investigated the board composition and the frequency of board meetings.

In relation to the board composition and – particularly – to the provenance of its members from inside or outside the company, just nine companies used an in-house body that coincided with an existing function; 40 prefer a mix between internal and external members; and 57 adopt a composition made up of external members (Table 2). This result shows that Italian POEs prefer to choose external board members probably assuming that an independent board of directors can be an important element not only to ensure high quality and credible disclosure by POEs, but also to confirm the commitment in preventing and fighting corruption. Boards of directors can, and should, play a key oversight role regarding POEs’ operations. However, this result should be related to the fact that 82 companies of our sample are totally controlled by public authorities: transparency and corruption issues can notably arise if POEs are run so

closely to the public administration that the government is involved at many – or all – levels of corporate decision making. Without proper checks in place, the scope for corruption increases, particularly when POEs operate in weak public governance environments with lax oversight.

Another fundamental characteristic is the supervisory board continuity, measured as the frequency with which the members meet together. Table 3 shows that 25 companies meet more than 9 times a year, 33 companies from 5 to 8 times, and there were a substantial number of boards (48) which meet less than 4 times a year. The analysis depicts a low continuity in about half of the sample. From the analysis is not clear if board meetings can be used to monitor the POEs in preventing the occurrence of fraud and corruption. The low frequency of board meetings in the half of the POEs analysed seems to show that the directors do not know about the company activities and, consequently, they are not able to monitor the company operation closely. This result shows that board meetings only in some cases, could be used in deterring corruption. Moreover, from a theoretical perspective, the obtained results on board meetings questioning one of the main role of the board of directors that is the protection of the ownership’s interests from any management manipulation: the low frequency of board meetings, in other words, could increase the agency problem.

**Table 3.** Number of meetings of the supervisory board a year.

N. of meetings	N. companies
<4	48
5 to 8	33
9 to 12	21
> 12	4
Total	106

**Table 4.** Number of compliance officers reports to the board in a year.

N. of reports	N. companies
1	38
2 to 4	52
5 to 8	12
9 to 12	4
Total	106

**Table 5.** Value of the compliance with Decree 231.

Compliance	Total disagree	Disagree	Agree	Total agree	total
Compliance with decree 231 implies a better definition of roles and responsibilities	8	32	54	12	106
Compliance is useful to a better definition of managerial control	10	32	53	11	106
Compliance with decree 231 leads to a better formalisation of the existing procedures	10	27	50	19	106

In relation to the analysis of compliance related to Law n. 190/2012, as regards the compliance officer continuity, we asked how many times he/she formalised his/her work through a written report to the board. Table 4 shows 4 POEs reported to the board from 9 to 12 times a year, 12 companies from 5 to 8 times, a substantial number of compliance officers (52) who reported less than 4 times a year, and 38 companies that reported only once a year. This analysis depicts a very a low continuity in a large part of the sample.

This controversial situation is confirmed by the analysis of the second perspective of our analysis, measured as the value and effectiveness of the compliance. Here, half of the sample declared that compliance is useful for a better definition of managerial control, roles and responsibilities, and for a better formalization of procedures. The remaining half of the sample saw compliance as not useful (Table 5). Probably, this half of the sample look at the compliance as something that is "rule based", not embedded in managers' decision-making processes: the requirements of Decree 231 are

not perceived as instruments of organizational learning and, consequently, they are not functional for improving POEs' performance (Behn, 2001). These responses can consist in symbolic adhesion to norms or standards to high level of compliance. Different responses may depend on both the broader external context (i.e. the policy environment in which the POE operates) and the internal context (i.e. the internal distribution of power, the credibility and legitimacy of leadership) that can favour (or not) the effective adoption of the requirements of Decree 231.

Concerning the application of law no. 190, half of the sample perceives a low value of compliance (Table 6). The collected evidences reveals that even if the Italian legislation has provided strong and compelling legal support for the improvement of the organisational mechanism for risk prevention and control, a systematic way of implementing and developing a risk management process is not widespread until now. One of the possible reasons that may help to explain this ambiguous result is that anticorruption policies – and consequently the

**Table 6.** Value of the compliance with Law n. 190/2012.

<b>Compliance</b>	<b>Total disagree</b>	<b>Disagree</b>	<b>Agree</b>	<b>Total agree</b>	<b>Total</b>
compliance with Law 190/2012 implies an improvement in the organisational mechanism for risk prevention and control	12	38	42	14	106

systems adopted in order to prevent and control risks – should be strictly interconnected with performance, transparency and accountability, and personnel’s training. Moreover, the organizational mechanisms to prevent corruption can be effective only in the case they are aligned to the strategic and organizational purposes of the company (Ceschel et al., 2016). Another important aspect to guarantee an effective implementation and the use of some risk management tools is related to the approach used by the company: an effective use of risk management is one of the major components of an organization that allows every employee to feel that his/her contribution has supported the fight against corruption and, more in general, the innovation of the POEs.

Moreover, the presented results are aligned to the evidences collected at the European level. According to the data provided by the reports of the European Commission (2014a, 2014b), the majority of Europeans disagree that their government’s efforts are effective in tackling corruption (66%, with 28% ‘totally’ disagreeing). In particular, the view that government efforts are effective in tackling corruption is most prevalent in Denmark (54%), followed by Finland (47%) and Belgium (40%). The countries with the least positive opinions on government efforts are the same as those with the poorest perceptions of prosecution success, with the addition of Latvia: Slovenia (10%), Spain (11%), Czech Republic and Cyprus (both 12%), Greece and Latvia (both 14%), Portugal (15%) and Bulgaria (16%). In Italy only the 22% of people have a positive opinion about the effectiveness of the system designed by the norms.

More in general, according to the OECD Report “Combatting corruption and promoting business integrity in state-owned enterprises: Issues and trends in national practices” (2016), there is a weak enforcement of anti-corruption laws. Half of the 41 countries party to the OECD Anti-Bribery Convention had not concluded a single enforcement action related to foreign bribery as of end-2014. And this situation leads to a vicious circle in the case of POES, where the institutions are responsible, respectively, for investigating corruption cases and for their oversight.

## DISCUSSION

The analysis of results highlights the current state of compliance with both Decree no. 231 and Law no.190 as

very controversial, a sort of intermediate-state. On one hand we found POEs with high levels of perceived value of the compliance systems as an effective measure to prevent corruption; on the other hand there are POEs which seem to refuse to comply with the norms. Even if several years have passed since the launching of the Decree (16 years) and of the Law (5 years), it is evident how the approach suggested by the regulatory framework has not been fully internalized by the POEs. In fact, from the survey, we remark the slow progresses made conducting us to suppose some technical and/or organizational difficulties encountered in the shifting from a merely compliant logic of adjustment to the norms of the sector to the establishment of holistic organizational models (Haimes, 1992), related to an approach based on the “performance rationality”.

These results highlight how the dual compliance regime required by norms for POEs is actually leading to unsatisfactory results, both in the prevention of bribery, and therefore, in the implementation of the compliance to Legislative Decree no. 231/2001, and in the prevention of passive corruption and implementation of the compliance to the Law no. 190/2012. The survey conducted in this study provides some insights into the debate (Lozeau et al., 2002, Boiral 2012) related to the resistance, compliance or development of practices and the measures in both the anti-corruption and compliance field. In general, the main findings of our analysis have shown that Italian POEs are conducting several activities that could be smoothly integrated into a compliance/anti-corruption strategy, but a systematic way of implementing and developing a compliance/anti-corruption framework and process is not widespread until now.

On the one hand, the analysis revealed that the implemented anticorruption and compliance systems have positively impacted on the definition of role, responsibilities, managerial control and, finally, on the existing procedures. At the same time, the “new” anti-corruption system improved the organisational mechanism for risk prevention and control are strictly interconnected with performance appraisal, transparency and accountability, confirming – at a first glance – the adoption of a systematic approach to risk management (Hinna et al., 2017). All these elements evidence the presence of some form of organizational support (in terms of structures, people and resources) to make effective the compliance/anticorruption systems.

Nevertheless, on the other hand, an important aspect



to guarantee a systematic implementation and the use of a compliance/anticorruption system is related to both the approach and the completeness of the process (Boiral, 2012). Looking at our analysis the process seems to be characterized by some sources of inconsistency, evidencing the need for clarification in order to ensure its effectiveness. Referring to the dimensions of analysis that we classified as "process", our data show that in almost the 85% of POEs the number of compliance officers reports to the board in a year it is inferior to 4. Also the number of meetings of the supervisory board in a year it is inferior to 4 for the 45% of the analyzed POEs. These results evidenced that the adopted procedures could not adequately support the compliance/anti-corruption systems effectiveness.

Formally, all the POEs analyzed have an organizational model for corruption prevention, a supervisory board and a compliance officer, but they appear to be proceeding along separate tracks. In addition to scholars (Power, 2004) which sustain that the key to successful anticorruption practices depends on the organizational culture our focus on POEs point out some "technical" and organizational problems. One of the most important and technical issue is the hybrid nature of POEs (Bruton et al., 2015): this nature consists in differing degrees of state ownership and control and also a range of models which governments might choose on the path to private ownership where there is no longer value seen in maintaining state involvement. It is as if their hybrid nature does not allow the POEs to equip themselves with effective corruption prevention instruments, in an unresolved dilemma between the public and the private natures that, in our analysis, leads to a more than obvious risk of a conformity trap.

Another issue - related to the nature - that provides some possible explanations for this results concern the process of change that in the last decades involved POEs. While it is important to maintain a pragmatic view and to acknowledge that rent-seeking intentions may be pervasive among POEs' administrators, policy-makers should not consider public officials' misbehavior as an issue intractable except by narrowing State functions and control (that is, privatization process). Rather, there is the need to examine much more deeply (than it currently does) some issue, including the appropriate conditions under which operational autonomy of board of directors should be allowed and strengthened the tools through which the ownership entity should be held accountable (that is, how the State should exercise its ownership rights), disclosure of both financial and non-financial information, the appointment of independent or external directors in the board, and the mechanisms for enhancing board participation of employee representatives. These issues could be considered for improving POEs' governance with respect to anti-corruption activity and to overcome the problem of the hybrid nature.

It is important that compliance and anti-corruption

norms provide guidance on both substantive and process aspects, if their implementation would be most effective. The results of our analysis help us to remind both norms designers and users that the real aim for an organization will only be to understand itself and the meaning of compliance for its business. Compliance and anti-corruption norms can be obstacles to this process if they are developed and implemented uncritically and with an excessive emphasis on a rule-based compliance. However, we believe that they can be a vehicle not only for organizational self-discovery, but also for fighting corruption.

## CONCLUSIONS

The results of our research show that the state-of-play of the implementation of Legislative Decree 231/2001 and Law 190/2012 in Italian POEs is a work still in progress. One of the most noticeable and positive element is that our empirical analysis shows a commitment of the POEs in the implementation of a decentralized anti-corruption strategy that goes beyond mere bureaucratic exercise. However, alongside many POEs who demonstrate a good application of the norm, there are other POEs, which have unclear operative implications and do not provide for improvements within the organization. The supervisory units of this latter group are often composed of one internal member who lacks the indispensable requisite of independence and autonomy of judgment. The situation is even worse when we consider the continuity of actions promoted by the supervisory body and compliance officers where the majority meets together and/or reports to the company board less than 3-4 times a year. Moreover, over half of the sample made no changes whatsoever to their procedures.

It is rather surprising if we think about the dominant organizational culture in Italian POEs: the analysis shows that an half of the sample perceive the value of compliance confirming a commitment to putting the regulatory requirements into practice. However, another consistent part of the sample saw compliance as not useful, showing a possible passive use of the regulatory framework since there is a low level of internal pressure to effectively implement it. A possible explanation for the lack of influence of internal requirements on implementation may be that, in general, policies for change are mandated without regard to the organization's ability (in terms of resources) to implement them. This could be the case also of Italian POEs.

More in general, our study show that the shifting from the definition of the regulatory framework - to both promote compliance and prevent corruption - to action asks for the establishment of a complex organizational model involving not only the implementation of the law but also the integration among structures and management systems, ranging from performance

assessment to internal controls, and from optimization of resources to the creation of specific capabilities (Bhimani, 2009; Boden et al., 2009; Hood et al., 2004; Miller et al., 2008).

In this sense if, on one side, the legislative perimeter provided by Decree 231 and Law 190/12 includes restrictions and opportunities of structural nature, on the other side, the organizations, in order to move toward a logic of effectiveness and rational use of resources, shall primarily be able to act according to their features and to the context in which they operate, leveraging – especially on POEs - on the integration and hybridization of processes, practices, mechanisms and skills.

Even if several years have passed since the last regulatory intervention, it is evident how the suggested model has not been fully internalized by POEs. In fact, from the analysis, we may conclude that the shift from a merely compliant logic of adjustment to the norms, to the establishment of a holistic organizational models (Haines, 1992), based on a “performance management rationality” is still ongoing. In those holistic models, all the prevention system components shall support the decision-making process of “corporate governance” and be possibly open to forms of broad inclusion of all the stakeholders, within a scheme of “performance management” where organizational and individual responsibilities are clearly identified.

Combining results and arguments provided to explain them, some practical implications can be derived. Firstly, some changes appear to be necessary in the governance structure of POEs: the board members nomination process, for example, should ensure that managers and directors have the necessary competencies, skills and experience to run successfully POEs’ activities. In many countries, the nomination process is largely based on political representation, and board members often lack the needed expertise. National-level corporate law should define the requirements to be met by eligible candidates and settle mandatory steps to ensure transparent selection of board members. Board composition regulation should also establish the presence of outside members in order to increase the independence of the board and consequently improve its capabilities to operate as an active entity insulated from political influence. Second, norms and legislative interventions should provide a clear definition of functions and responsibilities – in terms of compliance and anti-corruption - for board members and directors of POEs. This is central for separating out the management’s business judgment domain from political interference, and to help a transparent and coherent transmission of information between POEs’ boards and representative entities without incurring in undue political influence.

While with this article we have focused our discussion on practical arguments, we also believe that some theoretical implications can be derived from our research. With this paper, we have tried to contribute to academic

debate on corruption in public organizations. Previous studies (Von Eiff 2006; Von Eiff and Stachel, 2007; Vincent, 2005), in fact, have evidenced how anti-corruption activities continue to lack a systematic approach showing the public organizations’ weaknesses in implementing compliance in day-to-day practice. Hence, there is the need to study the implementation process of compliance practices on forms of control and accountability in public sector organizations, as a means to facilitate the achievement of organizational and strategic objectives. Among these, one of the most important is certainly the fight against corruption. Several studies have discussed about corruption aiming both to understand its dimension and to develop measures and policies to prevent it. Studies were conducted in both private (Argandona, 2003; Lange, 2008) and public sector (Anechiarico and Jacobs, 1995; Auriol, 2006; Auriol and Blanc, 2009), looking to the individual behavior (Cameron et al., 2005) or to the perceptions about corruption in different countries (Kaptein, 2011; Dela Rama, 2011), but little is known about the rise of the compliance logic and its implications for the fight against corruption in countries around the world (Lozeau et al., 2002; Auriol, 2006; Dela Rama, 2011). Finally the evidence provided is sufficiently general to be a reference also on the theoretical debate for POEs’ corporate governance.

## LIMITATIONS AND FURTHER RESEARCH

The major limitations of this study are related to the sample. The results are derived from a part of POEs operating in the Italian context. No attempts are made, in this research phase, to generalize the obtained results to the Italian POEs that are not included in this study. On this point, a next step of the research is to increase the number of cases in order to provide also some differences in terms of sector of activities/services.

Moreover, our study points to a number of potentially fruitful avenues for future research. First, we believe that future work using inter-temporal modelling could build upon and extend the insights presented here. A second area for future work arises from those contrasts in anti-corruption and compliance characteristics which are apparent across countries and or across several industries. Third, future research could try to understand the real use and the implications both at the organizational and individual level of the anticorruption mechanisms and policies during their adoption also adopting a longitudinal analysis. Finally, further research can explore also external elements that could influence in deterring corruption and fraud.

## CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

## REFERENCES

- Alexius S, Cisneros Ornberg JC (2015). Mission(s) impossible? Configuring values in the governance of state-owned enterprises. *J. Pub. Sector Manage.* 28(4/5):286-306.
- Anechiarico F, Jacobs JB (1995). The pursuit of absolute integrity: How corruption control makes government ineffective. University of Chicago Press, Chicago.
- Argandona A (2003). Private-to-Private Corruption. *J. Bus. Ethics* 47(3):253-267.
- Arora A, Gambarella A (1991). Complementarity and External Linkage: The Strategies of the Large Firms in Biotechnology. *J. Ind. Econ.* 37(4):361-379.
- Auriol E, Blanc A (2009). Capture and corruption in public utilities: The cases of water and electricity in Sub-Saharan Africa. *Utilities Policy* 17(2):203-216.
- Auriol E (2006). Corruption in procurement and public purchase. *Int. J. Ind. Organ.* 24(5):867-885.
- Bellof F (2014). Innovation in State-Owned Enterprises: Reconsidering the Conventional Wisdom. *J. Econ. Issues* 8(3):821-848.
- Boardman AE, Vining AR (1989). Ownership and Performance in Competitive Environments: A Comparison of the Performance of Private, Mixed, and State-Owned Enterprises. *J. Law Econ.* 32(1):1-33.
- Bognetti G, Obermann G (2008). Liberalization and privatization of public utilities: origins of the debate, current issues and challenges for the future. *Ann. Public Coop. Econ.* 79:461-485.
- ANAC (2015). Aggiornamento 2015 al Piano Nazionale Anticorruzione, Determinazione n.12, Roma.
- Banerjee A, Hanna R, Mullainathan S (2012). Corruption. MIT Working Paper Series, WP No. 12-08.
- Behn RD (2001). Rethinking democratic accountability, Washington, DC: Brookings.
- Bhimani A (2009). Risk management, corporate governance and management accounting: Emerging interdependencies. *Manage. Account. Res.* 20(1):2-5.
- Boden R, Epstein D, Latimer J (2009). Accounting for ethos or programmes for conduct? The brave new world of research ethics committees. *Sociol. Rev.* 57(4):727-749.
- Boiral O (2012). ISO Certificates as Organizational Degrees? Beyond the Rational Myths of the Certification Process. *Organ. Stud.* 33(5-6):633-654.
- Bremmer I (2010). *The End of the Free Market: Who Wins the War between States and Corporations?* Penguin Books, London, UK.
- Brick IE, Chidambaram NK (2010). Board meetings, committee structure, and firm value. *J. Corp. Financ.* 16(4):533-553.
- Bruton GD, Peng MW, Ahlstrom D, Stan C, Xu K (2015). State-owned enterprises around the world as hybrid organizations. *Acad. Manage. Perspect.* 29(1):92-114.
- Cameron L, Chaudhuri A, Erkal N, Gangadharan L (2005). Do Attitudes Towards Corruption Differ Across Cultures? Experimental Evidence from Australia, India, Indonesia and Singapore. Department of Economics - Working Papers Series 943, The University of Melbourne.
- Carpenter MA, Westphal JD (2001). The Strategic Context of External Network Ties: Examining the Impact of Director Appointments on Board Involvement in Strategic Decision Making. *Acad. Manage. J.* 44(4):639-661.
- Ceschel F, Hinna A, Scarozza D (2016). Organization and risk management practices for fighting corruption: evidences for the Italian public sector, in Myrczek J, Tworek P, (eds.) *Public Risk Management: Perspective of Theory and Practice*, Tome 1, Publishing House of University of Economics in Katowice.
- Chen G, Firth M, Gao DN, Rui OM (2006). Ownership structure, corporate governance, and fraud: Evidence from China. *J. Corp. Financ.* 12(3):424-448.
- Clarke G, Xu L (2002). Ownership, competition, and corruption: bribe takers versus bribe payers, Vol. 1. World Bank Policy Research Working Paper No. WPS 2783, February, Washington, DC, USA.
- Clo S, Del Bo CF, Ferraris M, Florio M, Vandone D., Fiorio C (2015). Public enterprises in the market for corporate control: recent worldwide evidence. *Ann. Public Coop. Econ.* 86(4):559-583.
- Cuervo-Cazurra A, Inkpen A, Musacchio A, Ramaswamy K (2014). Governments as owners: State-owned multinational companies. *J. Int. Bus. Stud.* 45(8):919-942.
- de Colle S, Henriques A, Sarasvathy S (2014). The Paradox of Corporate Social Responsibility Standards. *J. Bus. Ethics* 125:177-191.
- Dela Rama M (2011). Corporate Governance and Corruption: Ethical Dilemmas of Asian Business Group. *J. Bus. Ethics* 109(4):501-519.
- Di Pietra R, Melis A (2015). Governance and corruption: is history repeating itself? Fostering a debate and inviting contributions from a multidisciplinary perspective. *J. Manage. Governance* 20(4):689-701.
- European Commission (2014a). Report from the commission to the council and the European Parliament. EU anti-corruption report. [https://ec.europa.eu/home-affairs/sites/homeaffairs/files/e-library/documents/policies/organized-crime-and-human-trafficking/corruption/docs/acr\\_2014\\_en.pdf](https://ec.europa.eu/home-affairs/sites/homeaffairs/files/e-library/documents/policies/organized-crime-and-human-trafficking/corruption/docs/acr_2014_en.pdf)
- European Commission (2014b). Corruption Report. Special Eurobarometer 397 / Wave EB79.1 – TNS Opinion & Social. [http://ec.europa.eu/commfrontoffice/publicopinion/archives/ebs/ebs\\_397\\_en.pdf](http://ec.europa.eu/commfrontoffice/publicopinion/archives/ebs/ebs_397_en.pdf)
- Faccio M (2006). Politically connected firms. *Am. Econ. Rev.* 96:369-386.
- Florio M (2014). Contemporary public enterprises: innovation, accountability, governance. *J. Econ. Pol. Reform* 17(3):201-208.
- Grossi G, Reichard C (2008). Municipal Corporatization in Germany and Italy. *Pub. Manage. Rev.* 10(5):597-617.
- Grossi G, Ppenfuß U, Tremblay MS (2015). Corporate governance and accountability of state-owned enterprises. Relevance for science and society and interdisciplinary research perspectives. *Int. J. Public Sector Manage.* 28(4/5):274-285.
- Haimes YY (1992). Toward a holistic approach to total risk management, the geneva papers on risk and insurance. issues and practice. *Risk Manage. Stud.* 17(64):314-321.
- He X, Eden L, Hitt MA (2016). The Renaissance of State-Owned Multinationals. *Thunderbird Int. Bus. Rev.* 58(2):117-129.
- Herzfeld T, Weiss C (2003). Corruption and legal (in)effectiveness: An empirical investigation. *Eur. J. Political Econ.* 19: 621-632.
- Hinna A, Rotundi F, Scarozza D (2017). Implementing Risk Management in the Italian Public Sector: Hybridization between Old and New Practices. *Int. J. Public Admin.* 30 March 2 (in press).
- Hood C, James O, Peters BG, Scott C (2004). *Controlling Modern Government*, Cheltenham: Edward Elgar.
- Kamardin H, Haron H (2011). Internal corporate governance and board performance in monitoring roles: evidence from Malaysia. *J. Financ. Report. Account.* 9(2):119-140.
- Kaptein M (2011). Understanding unethical behavior by unraveling ethical culture. *Hum. Relat.* 64(6):843-869.
- Karolyi GA, Liao RC (2017) State capitalism's global reach: Evidence from foreign acquisitions by state-owned companies. *J. Corp. Financ.* 42:367-391.
- Klein M (2012). Corporatization and the behavior of public firms: how shifting control rights affects political interference. EPPP DP n.3, Chaire EPPP IAE Pantheon-Sorbonne, Paris. [http://chaire-ePPP.org/files\\_chaire/corporatization-klien.pdf](http://chaire-ePPP.org/files_chaire/corporatization-klien.pdf)
- Kowalski P. Büge M, Sztajerowska M, Egeland M (2013). *State-Owned Enterprises: Trade Effects and Policy Implications*, OECD Trade Policy Papers, No. 147, OECD Publishing.
- Lange D (2008). A Multidimensional Conceptualization of Organizational Corruption Control. *Acad. Manage. Rev.* 33(3):710-729.
- Leipziger D (2003). *The corporate responsibility code book*. Sheffield: Greenleaf. <https://trove.nla.gov.au/work/30784459>
- Lipton M, Lorsch, JW (1992). A modest proposal for improved corporate governance. *Bus. Lawyer* 48(1):59-77.
- Lozeau D, Langley A, Denis JL (2002). *The Corruption of Managerial Techniques by Organizations*. *Hum. Relat.* 55(5):537-564.
- MacAvoy PW, Stanbury WT, Yarrow G, Zeckhauser R (2012). *Privatization and state-owned enterprises: lessons from the United States, Great Britain and Canada*: Kluwer Academic Publisher. <http://www.springer.com/gp/book/9789401174312>
- McDonald DA (2016). To corporatize or not corporatize (and if so, how). *Utility Policy* 40:107-114.

- Miller P, Kurunmäki L, O'Leary T (2008). Accounting, hybrids and the management of risk. *Account. Organ. Soc.* 33(7-8):942-967.
- Millward R (2005). *Private and Public Enterprise in Europe: Energy, Telecommunications and Transport, 1830–1990*. Cambridge, UK: Cambridge University Press. [http://assets.cambridge.org/97805218/35244/frontmatter/9780521835244\\_frontmatter.pdf](http://assets.cambridge.org/97805218/35244/frontmatter/9780521835244_frontmatter.pdf)
- Nguyen TT, van Dijk MA (2012). Corruption, growth, and governance: Private vs. state-owned firms in Vietnam. *J. Bank. Financ.* 36:2935-2948.
- Organisation for Economic Co-operation and Development (OECD) (2016). *Combating corruption and promoting business integrity in state-owned enterprises: Issues and trends in national practices*. Issues paper prepared for the meeting of the Global Knowledge Sharing Network on Corporate Governance of State-Owned Enterprises (7-8 June 2016, Mexico City), Paris. <https://www.oecd.org/daf/ca/2016-SOEs-issues-paper-anti%20corruption-and-business-integrity.pdf>
- Organisation for Economic Co-operation and Development (OECD) (2015). *OECD Guidelines on Corporate Governance of State-Owned Enterprises*, Paris: OECD. <https://www.oecd.org/daf/ca/OECD-Guidelines-Corporate-Governance-SOEs-2015.pdf>
- Organisation for Economic Co-operation and Development (OECD) (2005). *OECD Guidelines on Corporate Governance of State-Owned Enterprises*, Paris: OECD. <http://www.oecd.org/corporate/guidelines-corporate-governance-SOEs.htm>
- Pollit C (2007). *New Public Management in Europe*, Basingstoke: Palgrave MacMillan. <https://www.palgrave.com/gp/book/9780230006935>
- Power M (2004). *The risk management of everything*, London: Demos. <http://www.lse.ac.uk/accounting/Assets/Documents/PDFs/briefing-the-risk-management-of-everything.pdf>
- Previtali P, Cerchiello P (2017). Structuring supervisory board for an anti-corruption strategy: A new application of a compliance system. *Corp. Gov.* 1(1):48-63.
- Salleh SM, Othman R (2016). Board of Director's Attributes as Deterrence to Corporate Fraud. *Procedia Econ. Financ.* 35:82-91.
- Saussier S, Klein M (2014). *Local Public Enterprises: A Taxonomy*, EPPP DP n.12, Chaire EPPP IAE Pantheon-Sorbonne, Paris.
- Srinivasan S (2015). *Anticorruption Compliance Mechanisms for State Owned Enterprises*, Transparency International, Anticorruption Helpdesk. Retrieved from [https://www.transparency.org/whatwedo/answer/anti\\_corruption\\_compliance\\_mechanisms\\_for\\_state\\_owned\\_enterprises](https://www.transparency.org/whatwedo/answer/anti_corruption_compliance_mechanisms_for_state_owned_enterprises)
- Stiles P, Taylor B (2001). *Boards at Work – How Directors View Their Roles and Responsibilities*, Oxford: Oxford University Press.
- Stansbury J, Barry B (2007). Ethics programs and the Paradox of control. *Bus. Ethics Quart.* 17(2):239-261.
- Sullivan JD (2009). *The Moral Compass of Companies: Business Ethics and Corporate Governance as Anti-Corruption Tools*. Global Corporate Governance Forum, Focus 7, International Finance Corporation, Washington, DC.
- Tonurist P, Karo E (2016). State owned enterprises as instruments of innovation policy. *Ann. Public Coop. Econ.* 87(4):623-648.
- Treisman D (2000). The causes of corruption: a cross-national study. *J. Public Econ.* 76:399-457.
- Vafeas N (1999). Board meeting frequency and firm performance. *J. Financ. Econ.* 53(1):113-142.
- Vincent C (2005). *Clinical Risk Management. Enhancing Patient Safety*. London: BMJ Publishing Group.
- Vit G (2016). *Over-Compliance and the Conformity Trap*. Paper presented at European Group for Organization Studies Conference, Naples, Italy
- Von Eiff W, Stachel K (2007). *Unternehmenskultur im Krankenhaus*. Verlag Bertelsmann Stiftung, Gütersloh.
- Von Eiff W (2006). *Risikomanagement.Kosten-/Nutzen-basierte Entscheidungen im Krankenhaus*. Wikom-Verlag, Wegscheid.
- World Bank (2014). *Corporate Governance of State Owned Enterprises. A Toolkit*. Washington: World Bank Group. <https://openknowledge.worldbank.org/handle/10986/20390>
- World Bank (2006). *Held by the Visible Hand – the Challenge of SOE Corporate Governance for Emerging Markets*, The World Bank Corporate Governance, <http://documents.worldbank.org/curated/en/396071468158997475/pdf/377110Corporate0Governance0SOEs01PUBLIC1.pdf>
- Zatti A (2013). *European Local Public Transport between Convergence and Diversity*, in Paramithiotti G (eds.), *Servizi pubblici e imprese pubbliche in Europa tra convergenza e sussidiarietà*, Quaderni della Rivista il Politico, 60:123-158.

*Full Length Research Paper*

## Two case studies to explore pros/cons and to assess applicability of Nexus maturity model

Purnur Firat\* and Esin Can

Department of Business Administration, Faculty of Economics and Administrative Sciences, Yildiz Technical University, Davutpasa Campus, 34349, Davutpasa, Istanbul, Turkey.

Received 28 November, 2017; Accepted 6 March, 2018

**Nexus maturity model, which is created as a structured gradual guideline for the companies wishing to adopt Nexus framework, is a new model, so the main purpose of this paper is to assess the model. Moreover, to explore pros and cons of the model to enlighten the researchers and implementers in the industry is aimed. Two case studies were conducted to collect data and to test three hypotheses. The second case study was executed 4 months later than the first case study which was completed with the same Nexus team members at the same company. During the case studies, structured interview technique was used via face-to-face meetings. Firstly, the results of the case studies show that this model can be applied easily by using the metrics to measure the success percentages of Nexus practices. Secondly, the practices with the low achievement percentage can be determined, the improvement strategies can be defined by means of the goals, objectives, practices of the model and investigation of the reasons as well. Lastly, with application of the improvement strategies, Nexus adoption success can be improved for higher levels by tracking Nexus maturity model elements. This paper presents the first application of Nexus maturity model in the industry, and also the first study to assess the model with its pros and cons in the literature.**

**Key words:** Nexus framework, maturity model, agility, scaling agile, Nexus maturity model, application of Nexus, scaled agile.

### INTRODUCTION

Globalized and rapidly changing markets have obliged organizations to be more simple, flexible and agile in order to quickly adapt to the change. Due to the development and transformation processes of these organizations, the management techniques of software development projects have been forced to evolve, especially in project-intensive companies.

According to a CHAOS report published in 2009,

roughly 70% of information technology (IT) development projects have resulted in failure, mostly during the software development stage, due to poor communication between the clients and the stakeholders who play a key role in the product development (Dominguez, 2009). Moreover, the most important criteria for success according to this report is the inclusion of the clients at every stage of the project. The agile techniques came

\*Corresponding author. E-mail: [purnurfirat@gmail.com.tr](mailto:purnurfirat@gmail.com.tr).

about as a “solution” to these cons of the classical project management methodologies like waterfall methodology. Despite sequential design processes, the agile techniques follow an incremental approach where developers start off with a simplistic project design, and then begin to work on small modules (Cobb, 2015).

In this way, problems are identified and solutions are generated early, thus allowing for the creation of a product that ensures greater customer satisfaction. The concept of agility, which means continuously improving work and the infrastructure that enables it (Michael et al., 2003) emerged in 2001 with the Agile manifesto which contains the values and techniques regarding agility (Beck et al., 2011). Agile methods are techniques that enable quicker and more appropriate responses to customer needs by enabling the delivery of more frequent, smaller, iterative and incremental software developments. Dynamic Systems Development Method (DSDM), Feature-Driven Development (FDD), XP (Extreme Programming), Crystal (Crystal Clear Software Development), Scrum, Kanban and Scrumban are the most frequently used agile techniques (Stoica et al., 2013; Ahmed et al., 2010).

The concept of scalability has gained importance with the attempts of organizations to assess the success of agile methods in the projects they are implemented and their attempts to expand them within the organization. The scalability can be defined as the property of reducing or increasing the scope of methods, processes, and management according to the problem size (Laitinen et al., 2000). Scalable agile frameworks, which have come about in accordance with the nature of agile methods, enable agile transformations in organizations in which they are fully or partially implemented.

The following scaling agile frameworks have been published in the literature: Scrum of scrums (SoS) by Ken Schwaber in 2004, Disciplined Agile Delivery (DAD) by Scott Ambler in 2007, Scaled agile framework (SAFe) by Dean Leffingwell in 2008, LeSS (Large Scale Scrum) by Craig Larman and Bas Vodde in 2008, Spotify by Henrik Kniberg and Anders Ivarsson in 2012, Rage (Recipes for Agile Governance in the Enterprise) by Thompson in 2013, and Nexus by Ken Schwaber in 2015. Although the Nexus Framework is the most recent scaled agile framework, it has been widely preferred because it is simple, easy to apply, not diversified according to the number of teams (unlike LeSS) and overlaps to a great extent with scrum values and practices.

Nexus was developed as a framework, and, due to the nature of frameworks, was structured on roles, rules, artifacts and events with the aim of drawing boundaries. On the path to becoming agile, it is necessary for organizations to be aware of their agility level and lay out a step-by-step roadmap in order to be promoted to higher agility levels. Nexus Framework does not provide the implementation strategies and the roadmap to the organizations which want to adopt Nexus. With this need, Nexus maturity model (MM) was developed in 2018 to

provide detailed information about how Nexus can be adopted successfully (Firat and Can, 2018).

In this study, to explore pros and cons of Nexus MM implementation in a company is aimed. For this purpose, an international company is selected and two case studies were conducted at different times to measure the improvement of the Nexus teams by regarding Nexus MM. The second case study was conducted 4 months later than the first case study. Then the results were compared.

## LITERATURE REVIEW

### Nexus framework and Nexus maturity model

Nexus is a framework, not a methodology. The frameworks define the boundaries, they set the rules, definitions, events, roles and artifacts, but they don't explain “how” questions. Also, Nexus is a new tool, so there is a limited number of an experienced individual in the industry. This limitation compels companies that wish to adopt Nexus framework to apply for coaching services which is a common method in agile transformation journey (Gandomani et al., 2014). With these main 2 reasons, Nexus MM was developed as a gradual roadmap and a well-structured guideline which consists of 117 practices, 22 objectives and 7 goals. Each item is located at the appropriate level in the model. The levels, goals, objectives and the number of the practices of Nexus MM are presented in Figure 1. Due to the extent of the material, only the numbers of the practices are showed next to the objective's name. The definition of each practice listed in the Nexus maturity model is provided in a supplementary material, available at: <http://avesis.yildiz.edu.tr/esincan/dokumanlar>

Nexus MM is a guiding tool for Nexus teams consisting of 3 to 9 scrum teams. The model recommends that Nexus teams should apply the practices in the model by starting from level 2 and progressing step by step to reach the higher levels. Each high level practice is supported by the lower level practices and thus the increase in achievement percentage of the lower level practices is important to climb the maturity steps. The main goal of the model is to give direction to the companies and to provide opportunity to determine their own improvement strategies during Nexus adoption process. Two case studies were conducted at 2 different times in the next section to assess this feature of the model. In order to test expected results, 3 hypotheses were defined:

H1: The achievement percentages of the practices can be defined with application of Nexus MM among Nexus teams.

H2: For the practices with the low achievement percentage, the improvement strategies can be generated by making use of the model elements.

H3: The progress in Nexus adoption can be tracked with

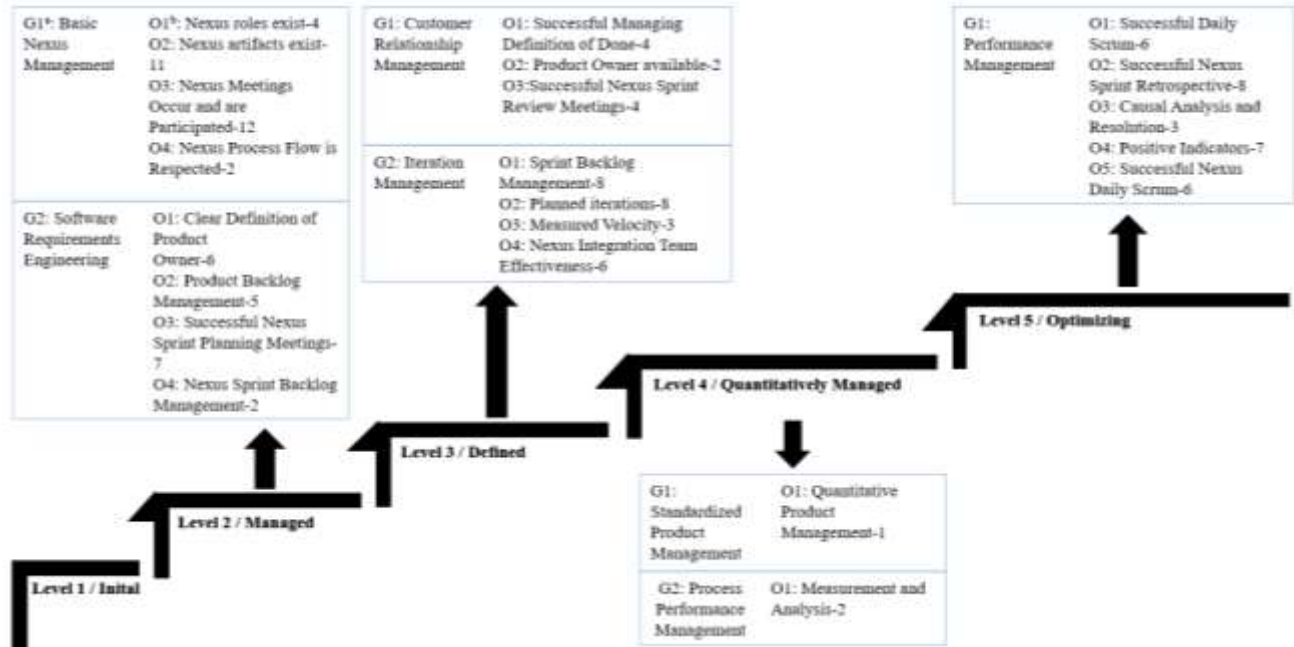


Figure 1. Nexus maturity model (Firat and Can, 2018).

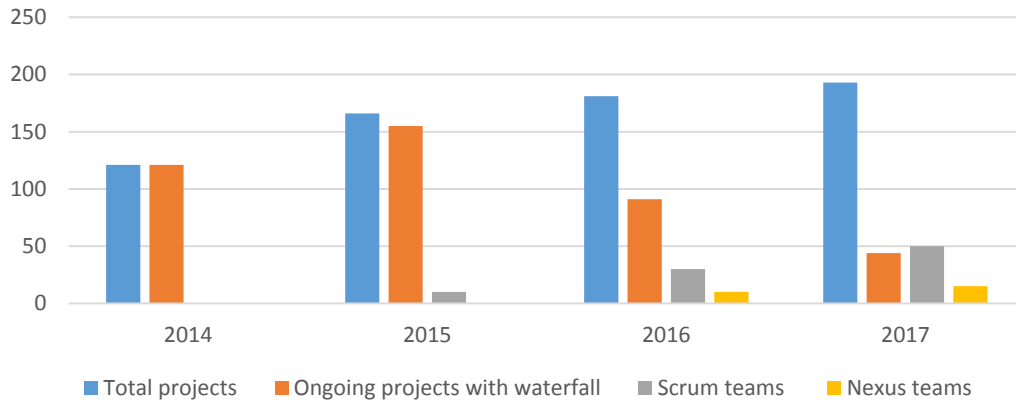


Figure 2. Number of total projects, ongoing projects managed with waterfall methodology, scrum and Nexus teams in the case company over the years between 2015 and 2017, May.

the application of these improvement strategies.

**Case study**

The Nexus MM was implemented in a large international corporation which is at the second year of its agility journey. The case company is a corporation headquartered in the Middle East area and located in 8 different regions including Silicon Valley. It services all the software development projects of a bank company which was established in 1924, employs more than 25,000 engineers, experts, professions and executives and has 1373 branches worldwide. This software company is also a research and development center to develop new products. The company initiated a change program in 2015 and the goal is to readjust the

company’s methods and processes related to product/project management to be more agile. Within the scope of this corporate change program, the company started firstly with ten scrum teams in 2015. Then, in 2016, the company increased the number of agile teams working on software development and created 30 Scrum teams. In 2016, the company carried out research to select an agility framework for large settings and then decided to implement the Nexus framework on the path to become agile. In the last quarter of 2016, the company continued its operations with 10 Nexus teams (30 Scrum teams) and in 2017 increased the number of agile teams to 15 Nexus teams (50 Scrum teams). The number of total projects, the number of projects managed with the waterfall methodology, and the number of Scrum and Nexus teams since 2014, when the company entered the agile transformation period, are shown in Figure 2.

**Table 1.** The results of the first case study.

Levels	Number of Pr Ap>85%	Number of Pr 85%≥Ap>50%	Number of Pr 50%≥Ap>15%	Number of Pr 15%≥Ap≥0	Total number of Pr	Achievement percentage
1	-	-	-	-	-	-
2	47	2	0	0	49	99
3	32	3	1	0	36	96
4	2	0	1	0	3	83
5	12	12	4	2	30	82

### Application of the Nexus maturity model

To assess Nexus MM, the 9 Nexus teams were determined to join this case study. Each team of the six Nexus teams consisted of 3 scrum teams and the other each Nexus team (3 Nexus teams) consisted of 4 scrum teams, so the study was conducted with a total of  $18+12=30$  scrum teams (208 employees). This case study was carried out in two stages. At both stage, the aim was to acquire data regarding Nexus maturity levels by presenting the participants with questionnaires which were prepared based on the indicators of the practices in the model. It was important to reach a consensus on the answers and to attain accurate results from each Nexus team. Because, some of the participants were inexperienced in the team and did not have prior experience with Nexus, the moderator of the case study had to make sure the individuals properly understood the questions.

For this reason, the 'structured interview technique' was used to collect information from the participants. Face-to-face interviews that consisted of 2 sessions were conducted with each Nexus team. The sessions were attended by the scrum master of each scrum team, the product owner of each Nexus team, and the representatives from the development teams appropriate for the study. Each two-session interview took 4 h and those were organized on 9 different days, making a total of 36 h. A total of 30 scrum masters, 9 product owners, and 35 development team representatives attended the meetings. Before the interviews, the indicators were created in order to measure the achievement levels of the Nexus MM practices. As an example, the indicators used for defining the achievement percentage (Ap) of the second practice 'cycle of sprints of development occurs' in level 2, are listed below;

Indicator1: Sprints has maximum length of 30 days or less  
 Indicator2: Sprints start with Nexus sprint planning meeting  
 Indicator3: Daily Scrum meeting happens every sprint-day  
 Indicator4: Nexus daily scrum meeting happens every sprint-day  
 Indicator5: Nexus sprint review meeting occurs before the retrospective  
 Indicator6: Sprints end with Nexus sprint retrospective meeting

For these 6 indicators, the participants gave a percentage value and then the arithmetic mean was calculated for the indicators aforementioned to define the achievement percentage of the practice 'cycle of sprints of development occurs'. For the practice (Pr) measured by 3 indicators, the formula is:

$$Ap \text{ of } Pr_x = (Ap \text{ of } Ind_{x1} + Ap \text{ of } Ind_{x2} + Ap \text{ of } Ind_{x3})/3$$

This process was executed for each practice and for each Nexus team. In the end, for each Nexus team, the average achievement values were calculated on each practice, afterwards the arithmetic averages of all Nexus teams were obtained for each practice. The second stage started 4 months later. In both meeting, it was expected for participants to say the percentage values in five-fold were 85, 60, 15 etc. for each indicator as the achievement value.

The results of the first stage assessments are summarized in Table 1. All values were calculated by arithmetic mean of all Nexus teams.

Table 1 is separated into 4 sections according to ISO/IEC 15504-2 standards (ISO/IEC 15504-2, 2003). As seen on Table 1, in case the average values are calculated, two practices were achieved less than 15% at level 5. Additionally, 4 practices at level 5, 1 practice at level 4 and 1 practice at level 3 were achieved less than 50%. In order to get a progress in maturity level, it was decided that these 8 practices should be prioritized and; primarily, the improvement strategies were defined for them. According to the results of the first case study, the practices with the low achievement percentage are listed in Table 2. The reasons of these low level achievement percentages were examined and the improvement strategies were identified in regarding their reasons as seen in Table 3. The improvement strategies are implemented for 4 months by all teams. 4 months later, the second case study was conducted with the same people and the same format. In the end, the results obtained are shown in Tables 4 and 5.

## RESULTS

To assess H3, the improvement from the first situation to the second situation in each level, the results are compared in Table 6. The aims of the first case study are;

- (1) To define 'as is' situation and to state the practices having low Ap,
- (2) To determine the practices which need improving primarily,
- (3) To explore the reasons for failure of these practices, and
- (4) To develop improvement strategies to reach higher maturity level

In order to test Hypothesis 1, the average achievement percentages of 9 Nexus teams for each practice in Nexus MM were calculated. The practices with Ap less than 50% were stated. So, H1 is validated. In order to test Hypothesis 2, the reasons for low Ap were identified with the comments from the participants in the case studies. By thinking over the reasons in Table 3 and utilizing the goal and objectives of Nexus MM, the improvement strategies were developed. So, H2 is validated. In order to test Hypothesis 3, the second case study was conducted. As seen in Table 6, the increase in Aps of the practices were observed through the application of the improvement strategies for 4 months. So, H3 is validated.



**Table 2.** The Levels, names and achievement percentages of the practices whose achievement percentages are less than 50.

Levels	Practice name	AP
3	Nexus integration team members are responsible for coaching and guiding the scrum teams in a Nexus	25
4	All products are managed with compliance to all goals, objectives and practices which is defined quantitatively	35
5	Lessons learned are recorded	0
5	The occurred impediments are analyzed daily	10
5	Agreement on how to visualize and track the identified actions	25
5	Nexus sprint retrospective is done as a 3-stage meeting	45
5	Causal analysis retrospective is made and then the corrective actions are taken against impediments	45
5	High level of energy for all scrum teams is observed	45

**Table 3.** The reasons and improvement strategies for the practices.

Levels	Reasons	Improvement strategies
3	Nexus team members don't have enough knowledge of Nexus framework so the consultants provides coaching to the teams	Nexus integration team members are to get Nexus framework courses from Nexus consultants to be able to get high level expertise in Nexus framework
4	Mostly, qualitative definitions or metrics are preferred because it is easier to define and use qualitative values	Nexus teams are to give importance and make effort to use quantitative values, especially when they define the metrics
5	Lessons learned are discussed but they aren't recorded by assuming that everybody keeps in mind	Lessons learned are to be recorded every Nexus sprint retrospective on an excel sheet by the selected participant
5	The impediments are identified daily but not analyzed because it is supposed that analyzing takes long time	Every sprint day, 3-4 minutes are to be arranged for analyzing of the impediments
5	The teams don't want to spend time on visualisation and tracking of identified actions	Every Nexus sprint retrospective, 3 participants are to be selected as the responsible for visualizing and tracking of identified actions
5	The first two stages are held but for the third stage the time isn't remained because Nexus sprint retrospective meetings are held afternoon	Nexus sprint retrospective meetings are to be started before midday
5	Mostly, causal analysis aren't done at the retrospectives, because when the team started to talk about the causes, the topic gets longer and distributed and the team can not reach any solution at the end of the meeting	Nexus Scrum masters are to provide mentoring support to the teams, so they can do causal analysis without waste of time. Also, for causal analysis, some techniques are to be used like fishbone diagram
5	Mostly, the teams have concern about that they can not complete the work which they committed at the planning meeting at the end of the sprint. This concern makes them stressful	At Nexus sprint planning meetings, the teams are to calculate the points with the margins agreed on while scoring

**Table 4.** The levels, names and new achievement percentages of the practices whose achievement percentages are less than 50 at the first case study.

Levels	Practice name	AP
3	Nexus integration team members are responsible for coaching and guiding the scrum teams in a Nexus	60
4	All products are managed with compliance to all goals, objectives and practices which is defined quantitatively	65
5	Lessons learned are recorded	90
5	The occurred impediments are analyzed daily	70
5	Agreement on how to visualize and track the identified actions	45
5	Nexus sprint retrospective is done as a 3-stage meeting	85
5	Causal analysis retrospective is made and then the corrective actions are taken against impediments	75
5	High level of energy for all scrum teams is observed	70

**Table 5.** The results of the second case study.

Levels	Number of Pr <sup>a</sup> Ap <sup>b</sup> >85%	Number of Pr 85%≥Ap>50%	Number of Pr 50%≥Ap>15%	Number of Pr 15%≥Ap≥0	Total number of Pr	Success percentage
1	-	-	-	-	-	-
2	47	2	0	0	49	99
3	32	4	0	0	36	97
4	2	1	0	0	3	87
5	13	16	1	0	30	85

**Table 6.** The comparison of the results of two case studies (before and after improvement strategies).

Levels	Success percentage (before)	Success percentage (after)	The improvement exists or not
1	-	-	-
2	99	99	Yes (slightly)
3	96	97	Yes
4	83	87	Yes
5	82	85	Yes

## CONCLUSIONS

This study was based on creating an example of the use of Nexus MM in different organizations and questioning its applicability. A sample case study was conducted with the method of testing 3 hypotheses established. Because Nexus MM is a new model, the introduction of a sample application is another important goal of this paper. It has been tested and verified that the Nexus MM was created as a guide for the companies to use as a tool for their progress towards adopting Nexus framework better (Firat and Can, 2018). Since the company in which the case studies were conducted is a successful company in the international software development market, the application percentages are high. However, for the future, it is imperative to pursue the higher achievement rates, and for this, the improvement strategies must be defined constantly. Agile transformations are the iterative and incremental organizational development processes. For this reason, the companies that decide to adopt the Nexus maturity model, identify the reasons for failure, and develop the improvement strategies periodically to reach higher maturity levels.

## LIMITATIONS

The biggest advantage of the model is its detailed structure, which means the model provides detailed information for each step of the adoption. Every goals, objectives and practices are well-defined level by level; thus, it can be used easily without any need for a consultant. The second advantage of the model is that it provides a roadmap that fits the desired goal, since the

model clearly shows which practices foster the goal through which objective.

There are two main advantages of the case studies; they shed light on how Nexus MM should be used in business life. It provides information about the path to be followed and the time to be spent. The case studies also emphasize that the model is a tool which teams can implement easily without getting any support; moreover, this study encourage Nexus teams to take advantage of using and improving Nexus MM.

The more detailed the indicators defined to measure the practices in the model, the longer it will take to define the indicators and collect the percentages from the teams. For this reason, care should be taken to ensure that the indicators or questionnaires to be determined for the practices to be measured are as clear and concise as possible. Otherwise, applying the model may take a long time. Moreover, after the method of collecting data from the teams is determined, the participants (questionnaire respondents, meeting participants, interviewees, etc.) should be selected meticulously.

The data should be collected from the most knowledgeable team members of Nexus, the members who have been in Nexus teams from the beginning and, if possible, the different titles like scrum master, product owner, development team member etc. If the meeting method is preferred, it should be emphasized that the number of participants should not be more than optimum number. In these case studies, a structured interview technique was chosen as the data collection technique and face-to-face meetings were held. For future studies, it is also possible to measure the indicators in the form of questionnaire and to collect data by questionnaire method.

The most important contribution of the model is not to

define only the maturity level of the Nexus teams. On the contrary, in compatible with agile transformation spirit, the main goal is always to be better instead of labeling the teams as 'mature at level 3'. In this paper, the measurements at the practice level were presented and hypotheses H1, H2 and H3 were constructed to assess the model in accordance with its main aim. Moreover, since the collected data are quantitative values, it is possible to infer and calculate Aps for goals and objectives, if desired.

The most important limitation of this study was the time. Only a 4-month recovery period has been observed. But agile transformation process and Nexus adoption process takes longer time. The firms can determine their own time period themselves. They can experience an iterative improving process by making these measurements multiple times, with more frequent or less frequent time intervals.

Lastly, because Nexus MM is a new model, the execution of case studies in different organizations can show the companies more alternative ways to use it more easily and to explore potential risks behind Nexus adoption.

#### CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

#### REFERENCES

- Ahmed A, Ahmad S, Ehsan N, Mirza E, Sarwar SZ (2010). "Agile software development: Impact on productivity and quality" Management of Innovation and Technology (ICMIT), IEEE International Conference, Singapore. Available at <http://ieeexplore.ieee.org/document/5492703/?part=1>
- Beck K, Beedle M, Bennekum AV, Cockburn A, Cunningham W, Fowler M, Grenning J (2011). Agile Manifesto available at: <http://agilemanifesto.org/principles.html> (accessed 11 September 2017).
- Cobb CG (2015). The Project Manager's Guide to Mastering Agile: Principles and Practices for an Adaptive Approach. New Jersey: John Wiley & Sons. pp.4-11.
- Dominguez J (2009). The curious Case of The Chaos Report 2009 available at: <https://www.projectsmart.co.uk/the-curious-case-of-the-chaos-report-2009.php> (accessed 21 January 2017).
- Firat P, Can E (2018). "A New Scaled Agile Maturity Model for Software Development Projects" 107th International Conference of Science, Technology, Engineering and Management, Prague, Czech Republic, IASTEM. pp.1-6.
- Gandomani TJ, Zulzalil H, Nafchi MZ (2014). "Agile Transformation: What is it about?" Software Engineering Conference (MySEC), 8th Malaysian, IEEE. Available at <http://ieeexplore.ieee.org/document/6986021/>
- ISO/IEC 15504-2 (2003). Software Engineering – Process Assessment – Part 2: Performing An Assessment available at: <https://webstore.iec.ch/corrigenda/iso/isoiec15504-2-cor1%7Bed1.0%7Den.pdf> (accessed 14 April 2017).
- Laitinen M, Fayad ME, Ward RP (2000). "Thinking Objectively: The problem with scalability" Communications of the ACM. 43(9):105-107.
- Michael LJ, William LP, Barbara F, Chuck K (2003). "The agile workplace" Corporate Real Estate. 5(4):293-311.
- Stoica M, Marinela M, Bogdan G (2013). "Software development: Agile vs. traditional" Informatica Economica 17(4):64-76.

**Related Journals:**

