BUSINESS DIGITALIZATION OF SMEs IN ALBANIA: INNOVATIVE APPROACHES AND THEIR IMPACT ON PERFORMANCE

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DECLARATION OF AUTHORSHIP

I, Erjon Curraj, declare that this thesis and the work presented in it are my own and have been generated by me as the result of my own original research.

I confirm that:

1. This work was done wholly or mainly while in candidature for a doctoral degree at this University;

2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;

3. Where I have consulted the published work of others, this is always clearly attributed;

4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;

5. I have acknowledged all main sources of help;

6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;

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ABSTRACT

Small and medium enterprises (SMEs) in Albania, similar to other markets, operate in complex, fast-paced and unpredictable environments due to their size and nature. In our contemporary knowledge-based economy, business is constantly changing, and SMEs are thus continually faced with the challenge to find new and innovative ways to improve and adapt to the rapid transformations. As a result, there is a growing interest and necessity for SMEs to explore and adapt new and innovative mechanisms for better decision making, which will then lead to improved performance and competitiveness. Digitalization of SMEs with the use of Business Intelligence (BI) and Knowledge Management (KM) systems is one such innovative instrument open to SMEs for a better performance and increased competitiveness.

The research for this doctoral thesis is then set precisely in this configuration whereby: on one hand the current level of adoption and use of advanced ICTs and technological innovation within SMEs, or business digitalization as will be coined later, is relatively limited due to a variety of factors; and on the other hand ICTs themselves as technological systems or tools as well as part of business landscape, i.e. ICT as a sector, are a major driver of innovation, modernization and growth for the Albanian economy. This doctoral thesis addresses the gap in the current state of research regarding the development, adoption and use of advanced ICTs systems, i.e. business digitalization, within SMEs. In addition, the research for the doctoral thesis expands the challenge to the impact of business digitalization on performance of SMEs in Albania. Clearly, SMEs have been selected as the central ground of research not only to contribute towards filling a research gap in management and ICTs studies in Albania, but also because of the central role that SMEs play in Albanian economy and their future potential in the digital world.

The results show that business digitalization impacts positively the overall performance of SMEs in Albania. Size, age and location of the SME dominate performance and are related to the business digitalisation more than strategy. Also, the entrepreneurial characteristics of the owner – manager also impact the digitalization. Having a clear business plan was also found to be important when it comes to using BI. SMEs in Albania are a vital part of the national economy and the research shows that there is growing interest in ICTs, digitalisation, BI and KM, but innovation is still at relatively low levels due to financial and human resources, which are limited. However, the research highlights that SMEs are very flexible and easy to adopt to change and when this is combined with a visionary owner-manager they tend to move towards business digitalisation. Another finding of this study is that digitalisation have lead SMEs to reconsider and re-conceptualise their business models attempting to move towards innovations that impact performance. Also, the concept of business model innovations is also gaining ground in SMEs in Albania. Findings show that

the use of BI and other digitalisation processes is mainly driven by strategic and innovation related motives that are internal to the company and the owner-manager. The use of BI as a result of external technological factors also plays a role. Analysis of the findings show that the use of BI and digitalisation have a positive impact on business performance.

The findings of this research paper have practical implications for the SMEs sector in Albania not only in providing an assessment of the current use of BI, but also in exploring the benefits and potential usage of BI as a necessary activity for deriving improved performance. Findings of this research can be used by owners-managers to better understand how firms can engage with digitalisation and BI and how their adoption and implementation affect business performance. Another implication for business sector is that digitally mature companies have better performance and thus derive more revenue and become more competitive. Finally, the research shows that digitization has a variety of dimensions and can be understood differently by different SMEs, owner-managers and staff, but it is a major contributor to business performance.

Future research is needed to explore further the role of digitalisation processes in SMEs in Albania particularly related to enabling and hindering factors. In addition, further research is needed regarding the business model innovations, particularly in terms of human and organizational factors. This study is one of the first research contributions in the case of Albania to analyse the impact of digitalization, specifically the impact of BI on SMEs in Albania.

ABSTRAKT

Sipërmarrjet e vogla dhe të mesme (SME) në Shqipëri për shkak të madhësisë dhe natyrës së tyre të funksionimit, ashtu sikurse edhe në vende të tjera, veprojnë në një mjedis shumë kompleks, shpesh të paparashikueshëm dhe që ndryshon shumë shpejt. Në ekonominë bashkëkohore të bazuar tek dija, biznesi ndryshon në mënyrë të vazhdueshme dhe SME-të hasin kështu sfida të shumta në gjetjen e mënyrave të reja dhe inovatore për të përmirësuar veprimtarinë e tyre dhe për tu përshtatur me transformimet e shpeshta. Si rrjedhojë, SME-të kanë interes dhe nevojë në rritje për të eksploruar mundësi të reja dhe për tu përshtatur me mekanizma inovatore për një vendimmarrje më të mirë e cila më tej do të mundësojë edhe një performancë të përmirësuar dhe konkurrueshmëri më të lartë në treg. Procesi i digjitalizimit të SME-ve përmes përdorimit të mekanizmave të ndryshëm si sistemet e Biznesit Inteligjent (BI) dhe Manaxhimit të Dijes (KM) është një mënyë inovatore për SME-të për një performancë të përmirësuar dhe konkurrueshmëri të lartë.

Ky studim doctoral është i vendosur pikërisht në këtë konfigurim ku nga një anë përdorimi aktual i digjitalizimit nga SME-të (pra adoptimi dhe përdorimi i sistemeve të avancuara të teknologjive të informacionit dhe komunikimit) është i kufizuar për shumë faktorë dhe nga ana tjetër, vetë këto sisteme të avancuara të teknologjisë së informacionit dhe komunikimit janë shtysat kryesore të inovacionit, modernizimit dhe rritjes së ekonomisë në Shqipëri. Ky studim doktoral trajton një hapësirë të paplotësuar me studime sistematike aktualisht sa i takon zhvillimit, adoptimit dhe përdorimit të sistemeve të avancuara të teknologjive të informacionit dhe komunikimit, pra digjitalizimit të biznesit në SME. Për më tepër, ky studim e zgjeron sfidën edhe më tej duke analizuar ndikimin e digjitalizimit të biznesit në performancën e SME-vë në Shqipëri. SME-të janë përzgjedhur si subjekti themelor i këtij studimi jo vetëm për shkak se rezultatet kontribuojnë në ngushtimin e hendekut aktual në studimet e manaxhimit dhe teknologjisë në Shqipëri, por mbi të fjitha për rolin e tyre qendror në ekonominë e Shqipërisë si edhe potencialit të tyre në ekonominë e dijes dhe botën e digjitalizuar.

Rezultatet e studimit doctoral tregojnë se digjitalizimi i biznesit ndikon pozitivisht performancën e përgjithshme të SME-ve në Shqipëri. Madhësia, vjetërsia dhe vendndodhja e SME-ve ndikojnë performancën dhe janë të ndërlidhura me digjitalizimin më shumë sesa ekzistenca e strategjive. Gjithashtu, karakteristikat sipërmarrëse të pronarëve-manaxherëve të SME-ve gjithashtu ndikojnë nivelin e digjitalizimit. Të pasurit e një plani biznesi të qartë gjithashtu është i rëndësishëm sa i takon përdorimit të BI. SME-të në Shqipëri janë një pjesë shumë e rëndësishme e ekonomisë kombëtare dhe ky studim doktoral tregon se ka një interes në rritje në teknologjitë e informacionit dhe komunikimit, digjitalizimit, BI dhe KM, por inovacioni është ende në nivele relativisht të ulta për shkak të kufizimeve në burime financiare dhe njerëzore. Megjithatë ky studim thekson se SME-të janë fleksible dhe

lehtësisht të përshtatshme me ndryshimin dhe kur këto karakteristika kombinohen me një pronar – manaxher vizioner atëherë SME-të tentojnë të ecin më shpejt drejt digjitalizimit. Gjetjet e këtij studimi doktoral kanë edhe implikime praktike për vetë sipërmarrjet në Shqipëri jo vetëm pasi ofrojnë një vlerësim të nivelit dhe ndikimit të digjitalizimit të biznesit, por edhe sepse paraqesin përfitimet e përdorimit të digjitalizimit si një aktivitet që shërben për performancë më të mirë dhe konkurrueshmëri më të lartë.

DEDICATION

"My family is the source of inspiration and motivation of my wellbeing"

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This has been a long and challenging process, but I am grateful for the support and encouragement as well as insights and critiques I have received from my professors, peers, colleagues, friends and family.

Scientific Supervision and Research Fellowship

This thesis has been prepared while conducting my research primarily at the European University of Tirana under the supervision of Prof. Mimoza Durrësi as part of my doctoral degree. While balancing professional workload with research activities has been proven particularly challenging in the past four years of completing my doctoral studies, I successfully applied and was awarded a scholarship to do a *research fellowship as a PhD student at the School of Business and Management, Lappeenranta University of Technology, in Finland*. This was accomplished under the project Erasmus Mundus Sigma Agile, funded by the European Commission and led by the University of Warsaw, whereby the European University of Tirana is one of the partners in the consortium.

This research fellowship was conducted for the period between September 2015 and March 2016 under the supervision of *Prof. Andrzej Kraslawski*, Professor of Systems Engineering and head of unit for Operations Management and Systems Engineering at the School of Business and Management, Lappeenranta University of Technology, in Finland. This research fellowship served me for two main purposes: first, to consolidate the theoretical and conceptual framework of the doctoral thesis and second, to improve the methodology chapter and work on data analysis. The research fellowship resulted in a paper submission in peer-reviewed Jufo 2 journal, currently under review. The cooperation with Prof. Kraslawski was very fruitful. He participated as a guest speaker at the Albanian Studies Days 2016 international conference organizes at the European University of Tirana in April 2016. In addition, Prof. Kraslawski has invited me to join his research group of doctoral students and post-docs to further carry on research on business use of information and communication technologies, such as Business Intelligence and Knowledge Management, in the case of Albania.

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LIST OF ABBREVIATIONS

ANT – Actor – Network Theory
BI – Business Intelligence
EU – European Union
EIB – European Investment Bank
GoA – Government of Albania
HER – Higher Education and Research
ICTs – Information and Communication Technologies
IS – Information Systems
IT – Information Technologies
KM – Knowledge Management
R&D – Research and Development
R&I – Research and Innovation
PS – Private Sector
SMEs – Small and Medium Enterprises
WBs – Western Balkans
WB – World Bank

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CHAPTER I

INTRODUCTION

This introductory chapter presents the overall aim, content and structure of thesis. The chapter is organized as follows: the first part sets the research background and highlights the motivation for carrying out this research. The second part outlines the research problem statement and objectives. The third part of the chapter sets the scope of the research by pointing out the research questions, hypothesis and definition of key concepts, which are all extensively explained later on the subsequent chapters. The forth and the fifth part present and overview of the theoretical framework and research methodology. In addition, the research relevance and contribution are presented in a separate section. Finally, the organization of the thesis is introduced here.

1.1 Research Background: Why studying SMEs?

Small and medium-sized enterprises (SMEs) are important to maintain strong economic growth, but how to sustain their performance in the long term is a considerable challenge (Ates et al., 2013). The multi-dimensional transformations brought about by what has been coined as the information-networked society (Castells, 2010) or the digital economy, also impact the performance of SMEs and their role in economy. SMEs are not just smaller versions of large firms. They have distinctive characteristics, which are also depending on a particular economic, cultural and political context. SMEs differ from larger firms by governance structure and meaning, for example, personalized management with little devolution of authority or family run business and kinship; they have resource limitations in terms of human capital as well as finance and are usually dependent on a small number of customers and operate in limited markets (Hudson et al., 2001; Hausman, 2005). On the other

hand, they also may have flat and flexible structures, high innovatory potential, reactive mentality, and informal, dynamic strategies (Hudson et al., 2001).

It has been argued that business digitalization and innovation are of key importance in maintaining SMEs performance in the long run. Innovation has been emphasized as one of the crucial organizational capabilities, because, firms need innovation to improve their performance in real-life changing business environments. In addition, research in performance management also shows that innovation is a key business process (Kaplan and Norton, 1996; Kaplan and Atkinson, 1998). As such performance management models are also extending their scope beyond traditional functions such as finance and manufacturing to go deep into innovation, digitalization and R&D where intangibles such as information and knowledge play more of a role (Davila, 2012). It is thus important to understand better the performance of SMEs as a process and how it relates to innovation and digitalization within the SMEs.

Previous studies dealing with the conditions of successful business have focused on large companies rather than SMEs. However, changes in the environment cause more uncertainty in SMEs than in large companies. Their resources for acquiring information about the market and changing the course of the enterprise are more limited. The response to environmental changes is different in SMEs than in large companies (Chen & Hambrick 1995). The options for responding are limited by the firms' resources and strategic choices as well as by the opportunities offered by the industry and location. Those ways may also differ between the development stages of the firm.

Research into SMEs and entrepreneurship has grown immensely during the last decade and research interest also can be identified in the case of Albania too. A vast majority of firms in Europe are SMEs, although the definition of SMEs varies, and they play a significant role in the economy. Consequently, the performance of the SME sector is closely associated with the performance of the entire economy. SMEs make a concrete contribution to regional economic development as they generate societal growth in terms of new jobs and revenues. SMEs have the potential to and do create innovations, and they form flexible production networks (Hudson et al., 2001; Hausman, 2005). This research focuses on factors

affecting SMEs performance by looking particularly at the role of digitalization or advanced ICTs systems such as Business Intelligence and Analytics and Knowledge Management. SME success is often closely associated with firm growth (Johannisson 1993a), so this research concentrates largely, but not solely, on firm's growth as will be explained in the section on the scope of research.

1.2 Research Problem: Why studying SMEs in Albania?

SMEs in Albania play an important role in terms of employment, turnover, and value added to the economic landscape. A thorough report on assessment of SMEs in Albania (BFC, 2016) confirms that trade still dominates and drives the SME sector, but other sectors have the potential to grow, such as agriculture, tourism, hydro-power generation, and ICT sectors with the highest potential for growth. Despite a number of reforms that made it easier to do business in Albania, traditional bottlenecks remain unsolved and various challenges are faced by SMEs (EC Report 2015; BFC, 2016). It is widely recognized that Albanian firms have a weak technological capacity to upgrade by absorbing existing advanced technologies (EC Report 2015; BFC, 2016). The GoA has launched several programmes to support innovation and the supporting environment for SMEs innovation is gradually improving as will be detailed in the following chapters. The primary focus of policy as well as research remains on the financial constraints and opportunities for SMEs in Albania.

What is more, according to the European Commission 2015 SBA Fact Sheet, there is no data available for Albania for the indicators related to innovation within the SME sector. This is coupled also with limited systematic research on innovation and advanced ICTs adopted and used in SMEs in Albania as the dominant research focus remains on large firms and corporations.[1] Despite this gap, other studies and observations (BFC, 2016; Bazini, 2011; Start Up Profile Albania, 2016) show that there are SMEs that introduce product, process, marketing, or organizational innovations in Albania, although the number might be low and

[1] For example, in UET Doctoral School the work of Vladi (2015) on innovation in large firms or the work of Beqiri (2015) on Business Intelligence for large companies in Albania.

there are yet no reliable data and analysis on this. The screening of the current state of affairs also shows that in-house innovation remains weak and as the entire economy, SMEs are skewed towards relatively low levels of advanced technology. The national and European policy recommendations in this regard highlight the necessity to enhance innovation capacity by establishing stronger links between science, technology, higher education and businesses.[2] The ICT sector currently leads the innovation process in Albania (EC Report 2015; BFC, 2016). The second National Strategy for Development and Integration 2014–2020 defines new priority sectors for research, which include ICTs, as a major driver of modernization and innovation.

The research for this doctoral thesis is then set precisely in this configuration whereby: on one hand the current level of adoption and use of advanced ICTs and technological innovation within SMEs, or business digitalization as will be coined later, is relatively limited due to a variety of factors; and on the other hand ICTs themselves as technological systems or tools as well as part of business landscape, i.e. ICT as a sector, are a major driver of innovation, modernization and growth for the Albanian economy. This doctoral thesis addresses the gap in the current state of research regarding the development, adoption and use of advanced ICTs systems, i.e. business digitalization, within SMEs. In addition, the research for the doctoral thesis expands the challenge to the impact of business digitalization on performance of SMEs in Albania. Clearly, SMEs have been selected as the central ground of research not only to contribute towards filling a research gap in management and ICTs studies in Albania, but also because of the central role that SMEs play in Albanian economy and their future potential in the digital world.

1.3 Research aim and objectives

The growing emphasis on SMEs as future economic engines for Albania directly relates to performance and growth of SMEs as well as to the challenges and opportunities offered by

[2] As covered by the author in Chapter V on Research Context and also in Curraj, 2016 article on research and innovation in Albania and also in Curraj, 2018 on social sciences research and private sector collaboration – a study supported by PERFORM.

the digital economy, information-networked or the knowledge-based society. As a result, business digitalization and innovation become key themes in this debate in policy, practice and academic research. The current state of knowledge with respect to performance management and measurement in SMEs seems to be also limited to the study of SMEs from more traditional performance measurement perspectives (Bititci et al., 2012). Especially research related to performance management and measurement of business digitalization and innovation remains limited. In addition, in the case of Albanian academic research, the number of studies concerning the drivers and outcomes of business digitalization for SMEs, remains rather limited and primarily focused on large firms. This research investigates the degree of digitalization of SMEs and the drivers of business digitalization in SMEs in an integrated manner.

Secondly, it is important to understand how business digitalization delivers firm performance in order to manage firm innovation in the future. A possible way to advance this research is to test the connection between identified business digitalization determinants and firm performance (Crossan and Apaydin, 2010), as this research attempts to do. The research is though aware that this is still an area that is being developed because further work is needed on the effects that performance management and measurement has on innovation. Also, there seems to be little agreement about what should be measured and how. There are limited cross-disciplinary studies that connect the fields of performance management and innovation management to increase understanding of this issue. While it is not the primary scope of this research to dwell on performance management and innovation management, it suggests that the two fields should thus be more connected.

There is a growing use of business intelligence for better management and decision-making processes in the business sector. For instance, Gartner (2008; 2009) reports that the BI was at the top of the priority agendas in firms also BI skills are highly pursued (Brandel 2009). BI is a major advanced ICTs application and technology, which is also under further development (Gartner, 2009). Not only empirical research on BI is scarce, but the existing studies show inconsistent results regarding the contribution of BI in firms performance (Watson et al. 2002; Gessner and Volonino 2005; Watson et al. 2006). As such, the

significance of BI is not yet certain either in industry or in academic research. The question marks on BI' effects are even bigger when it comes to SMEs, which are deemed to use less or not at all BI and other related systems and infrastructure. This research investigates the fundamental question of whether or not BI and other related advanced ICTs systems have a significant impact on firm performance by looking precisely at the SME sector.

Business intelligence is an umbrella term that "*describes the technologies, applications, and processes for gathering, storing, accessing, and analysing data to help users make better decisions*" (Wixom and Watson 2010:14). Studies have shown that firms that invested in BI and coupled it with scrupulous practices have seen increased revenue and enormous cost savings (Watson et al. 2006). Nevertheless, some other firms that invested in BI did not obtain the promised benefits (Watson et al. 2002; Gessner and Volonino 2005; Lonnqvist and Pirttimaki 2006). Jourdan et al. (2008) reviewed the BI literature up to 2006 and indicated that although there had been much published BI research, much of the research was still in the early stage (i.e., exploratory state). BI has become a new information systems (IS) fashion since the late 2000s. However, there is a large discrepancy between the business popularity of BI and the extent of academic research on BI. Although BI has been a hot topic in practice, there is a paucity of empirical BI academic research on why BI is important, particularly for SMEs. The lack of empirical research on why BI is important makes the rationale to invest in BI weak, especially when researches show inconsistent returns on investment in BI for large firms let alone for SMEs. This research answers the question of why BI is critical in business and how BI and more broadly digitalization interacts with other business resources to create strategic values, i.e. impact SMEs performance.

Based on the above, in a concise manner, the aim and specific objectives are presented as follows:

The principal aim of this research is to investigate the impact of business digitalization on the performance of SMEs in Albania.

The specific objectives of the research are:

a) to investigate the current degree of business digitalization within SMEs in Albania by looking at the deployment of advanced ICTs systems such as BI and Analytics;
b) to investigate the determinants of business digitalization within SMEs by looking at firm characteristics, leadership, business strategy and external environment;
c) the explore the effects of digitalization on SMEs performance by considering growth in terms of turnover, employment and profitability;
d) to provide recommendations for the policy sector and the business sector in regard to the relevance of digitalization within SMEs as the driving engine of the economy in Albania.

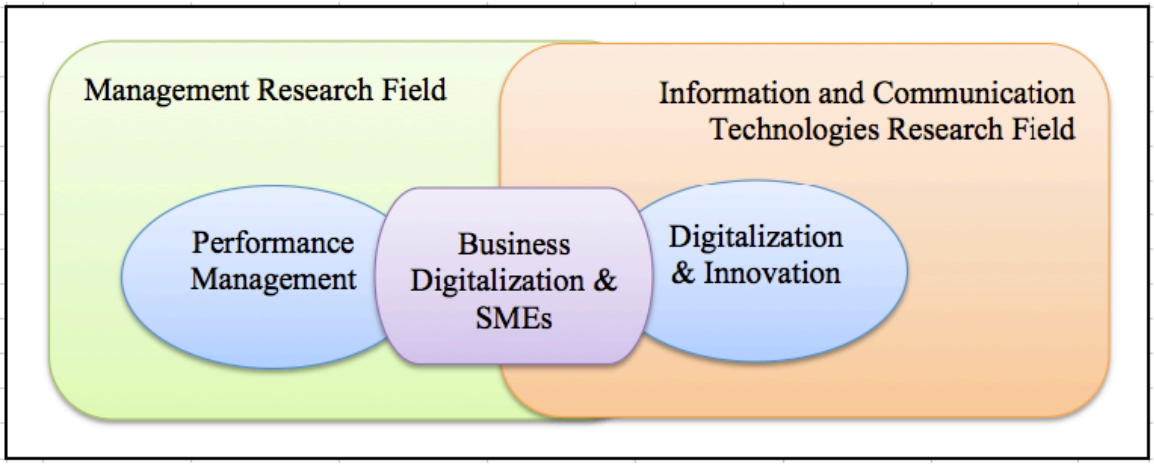
1.3 Research scope, questions and hypotheses

1.3.1 The research scope: Cross-cutting management and ICTs field

The scope of this research is derived from two theoretical perspectives or fields of study: performance management of SMEs and digitalization and innovation in the business sector, which are in fact both parts of the management research field, but which cross paths with the information systems and ICTs field. The performance of SMEs in academic research has two main streams, i.e. performance management and measurement. However, there are many streams when it comes to digitalization and innovation for example open innovation, practice-based innovation, and employee-driven innovation etc. In this research, the approach is crosscutting, because no single research stream is adopted. Rather, the focus is to investigate business digitalization of SMEs as a phenomenon, not through any specific research field. The literature streams or theoretical perspectives are combined so that the ideas and mechanisms introduced in the literature on business digitalization and innovation are applied to performance of SMEs to observe the issues that affect the performance of SMEs. Thus, the research seeks to connect digitalization and innovation research, coming from information systems and ICTs research field, with performance and management research and deepen their integration, while mainly contributing to the specific academic

research in Albania in regard to digitalization and SMEs performance. The scope is illustrated in Figure 1.

Figure 1: Research scope



As a result, the scope of the research is interdisciplinary between the field of management and ICTs or information systems research.[3] The theoretical perspectives and the conceptual framework for this research will be examined in the theoretical background chapters.

1.3.2 Research questions

The current research contributes to the existing discussion and growing interest on the impact of business digitalization on SMEs performance. First, it attempts to make the concept of business digitalization in SME context more explicit by providing an encompassing definition and concrete indicators of degree measurement. Secondly, the research operationalizes and empirically tests the effect of business digitalization on SMEs performance. Thus, the research brings to the light the importance and relevance of digitalization even for SMEs by taking into account their characteristics, the role of the leadership (owner-manager), business strategy as well as the external environment. Third,

[3] As it is clear with my supervision from the Department of Informatics and my doctoral thesis within the Department of Management at the European University of Tirana.

the research provides empirical evidence on the current use of business digitalization in SMEs in Albania and provides clarification on its role in SMEs performance and therefore points out implications for policy, business practice and research. To reach its objectives, the research poses two main research questions and their sub-questions are addressed.

The research questions are as follows.

1. In what ways and to what extent, if at all, business digitalization affects the performance of SMEs in Albania?
    a. What is the degree of digitalization in SMEs in Albania?
    b. What are the determinants of business digitalization of SMEs, i.e. how do SMEs characteristics, leadership, business strategy and external environment effect digitalization?
    c. What are the effects of business digitalization on SMEs performance?

2. What are the main implications that derive for policy and business sectors in Albania with respect to the business digitalization of SMEs?
    a. What are the policy implications with respect to the business digitalization of SMEs in Albania?
    b. What are the practice and managerial implications for the business sector itself in regard to the relevance of digitalization of SMEs?

1.3.3 Research hypotheses

Based on the key research aim and question, this doctoral thesis tests two main hypotheses:

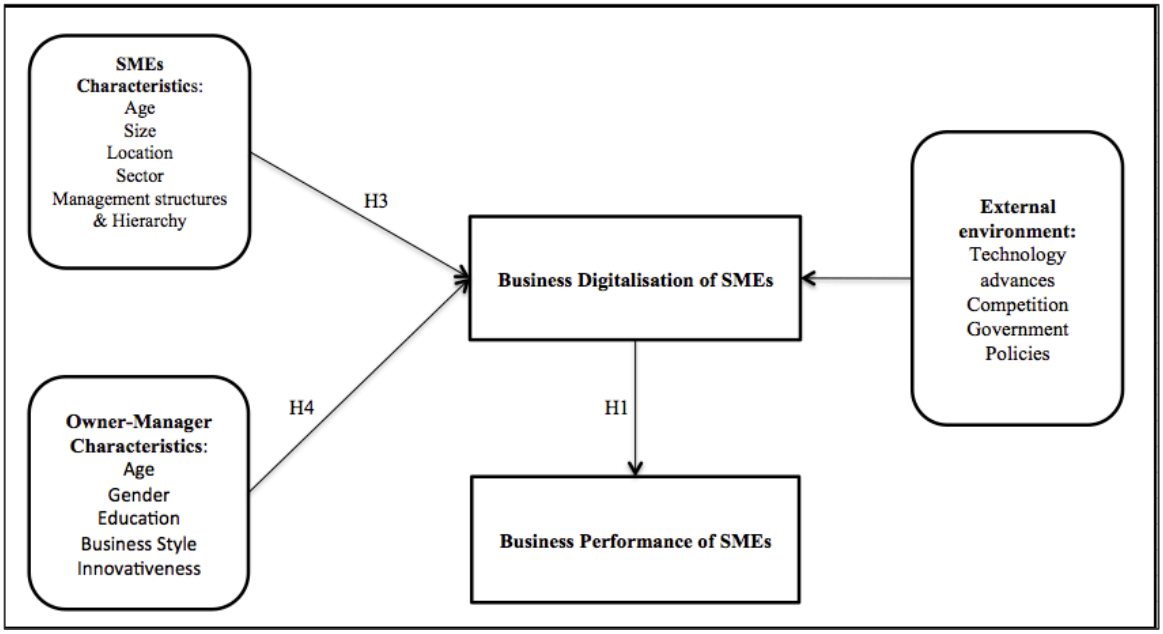
> **H1:** *Business digitalization impacts positively the overall performance of SMEs in Albania.*
>
> **H2:** *SMEs characteristics and owner-manager characteristics as well as external environment, mediate the impact of business digitalization on SMEs performance.*

These are then mediated by other sub-hypothesis which related to the sub-research questions as demonstrated in Table No. 1 below.

Table 1: Variables and hypothesis

Variables	Hypothesis
Business digitalisation – Business Performance	**H1:** Business digitalization impacts positively the overall performance of SMEs in Albania. **H2:** SMEs characteristics, owner-manager and external environment mediate the impact of business digitalization on SMEs performance.
SME characteristics and Business Digitalization	**H3.** SME characteristics have a direct effect on the adoption, implementation and usage of business digitalization.
Owner-manager characteristics and Business Digitalization	**H4.** Owner-manager characteristics have a direct effect on the adoption, implementation and usage of business digitalization.

Figure 2: Research Model



1.3.4 Definition of key concepts

1.3.4.1 Innovation

Innovation has been conceptualized in a variety of ways in the literature. The definitions can

be divided into two categories: those pertaining to innovation as a process and those relating to innovation as an outcome (Crossan and Apaydin, 2010; Jiménez-Jiménez and Sanz-Valle, 2011). There are various definitions of innovation as a process. Wan et al. (2005, p. 262) have defined innovation as "*a process that involves generation, adoption and implementation of new ideas or practices within the organization*". Tidd et al. (2005: 66) consider innovation as "*a process of turning opportunity into new ideas and of putting these ideas into widely used practice*". Dimensions pertaining to innovation as a process should answer the question 'how.' Driver and source of innovation can be either internal or external. An internal driver of the innovation can be available knowledge and resources, internal idea development etc., whereas an external driver would be a market opportunity, policy or regulations or adoption of innovation invented elsewhere. Innovation can also be a closed process or open process. The innovation process might be top-down or bottom-up. The level dimension delineates the split between individual, group, and firm processes (Crossan and Apaydin, 2010).

In addition, innovation as outcome has various definitions. Since the earliest work on innovation, five areas have been introduced: (i) the introduction of a new good or a new quality of a good - product innovation; (ii) the introduction of a new method of production, including a new way of handling a commodity commercially - process innovation; (iii) the opening of a new market - market innovation; (iv) the conquest of a new source of supply of raw material or intermediate input - input innovation; and (v) the carrying out of a new organization of industry - organizational innovation (Schumpeter, 1934: 66). Dimensions pertaining to innovation as an outcome should answer the questions 'what' or 'what kind' (Crossan and Apaydin, 2010). Also, scholars differentiate three forms of innovation: product or service innovation, process innovation, and business model innovation.

The distinction between innovation as a process and as an outcome is sometimes blurred (Crossan and Apaydin, 2010). Thus, in this research two definitions of innovation are drawn together. Wan et al. (2005) defined innovation as a process that involves generation, adoption, and implementation of new ideas or practices within the organization. Damanpour (1991) utilized a theoretical base where innovation is the adoption of an idea or behavior new to the adopting entity, which involves all dimensions of firm activities, such

as a new product or service, a new production process technology, a new structure or administrative system, and a new plan or program within the firm. By drawing these two definitions together, innovation in the context of this research is considered in its broadest sense, considering innovation as a process and outcome with relation to business digitalization of SMEs.

1.3.4.2 Digitalization

The first contemporary use of the term "digitalization" came into use in the 1970s in conjunction with computerization and it referred to the "digitalization of society" in the context of the start of proliferation of information and communication technologies. From this beginning, writing about digitalization has grown into a massive literature—one concerned less with the specific process of converting analogue data streams into digital bits (digitization) than the ways that digital media structure, shape, and influence the contemporary world – digitalization (Atkinson, 2012; Castells, 2010). In this sense, digitalization has come to refer to the structuring of many and diverse domains of social life around digital communication and ICTs infrastructures.

As such Castells (2010) observes the digitalization of the new economy, society and culture and views digitalization as one of the – if not *the* – defining characteristics of the contemporary society. The mediator variable thus is the advancements in information and communication technologies. Scholars have focused on the rise of globalization, a process that has both facilitated, and been facilitated by, the expansion of the economy beyond national borders through digitalization (Vogelsang, 2010). The digitalization and globalization of the economy has subsequently eroded national sovereignty, reshaped conceptions of materiality and place, and facilitated new circulations of culture, capital, commodities, and people (Atkinson, 2012).

Digitalization is linked to *infrastructural convergence*. Because digitized information can be manipulated and understood by any digital system, "*any network can be used to transmit all kinds of digital signals*" (Storsul & Fagerjord, 2008: 1320). This means that a

single physical means—t wires, cables, or airwaves—may carry services that in the past were provided in separate ways. Second, *device* or *terminal convergence* refers to how digitization entails the consolidation of multiple media devices into one (Storsul & Fagerjord, 2008: 1320). The best example here is the smartphone, which now takes the place of a number of former devices (telephone, computer, camera, audio recorder, calendar, calculator, notepad, etc.). As network infrastructures and devices converge, there is a corresponding *functional convergence* in "services" (Storsul & Fagerjord, 2009: 1320).

The smartphone again offers a telling example. Not only does the smartphone physically consolidate a number of devices, but also it performs a number of functions associated with other mediums. The convergence works in both directions: not only can a single device now perform multiple functions, but also a service can now be provided in several different physical ways. As different services converge through common infrastructures as a result of digitization, there is often a corresponding market convergence. For example, computing, telecommunications, and media and information are no longer separate business sectors. Also, there is a blurring of the distinctions between infrastructures and services, software and content.

In this research, business digitalization refers to the structuring of a firm's multiple dimensions around digital communication and ICTs infrastructures. More concretely it refers to the process of developing, adopting and using ICTs systems, tools, application and infrastructure starting from the basics ones such as computers to advanced ICTs such as Business Intelligence, Analytics or Knowledge Management tools. As such digitalization can be conceived in terms of business processes facilitated by advanced ICTs systems and the technological foundation of the Internet.

1.3.4.3 Advanced Information and Communication Technologies

Information Technologies refers to anything related to computing technology, such as networking, hardware, software and the Internet. Information and Communication Technologies refers to technologies that provide access to information through telecommunications. It thus adds to the IT definition the focus on communication. ICTs

include the Internet, wireless networks, cell phones, and other communication mediums. For the purposes of this research advanced ICTs is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them such as BI and analytics.

1.3.4.4 Business Intelligence and Analytics

BI is a systematic process, by which knowledge needed for an organization to compete effectively, is created, captured, shared and leveraged (Foo et al., 2007). The source of such knowledge may be internal or external, individual or collective, historical or forecasted. BI hence consists of a dynamic and continuous set of processes and practices embedded in individuals, as well as in groups and organizational structures. At any point in time, any part of a given organization may be engaged in several different aspects of BI that attempts to constitute a 360 view of its business health status (Sharma, and Djiaw, 2012: p.114). According to Alavi and Leidner (2001), it is not the quantity of knowledge capital that is a strategic advantage but the organization's ability to effectively apply the existing knowledge to create new knowledge.

Other ways of conceptualizing BI is that of Business Intelligence is defined as systems that collect, transform, and present structured data from multiple sources (Negash, 2004) reducing the needed time to obtain relevant business information and enable their efficient use in management decision making process (Den Hamer, 2004), allowing dynamic enterprise data search, retrieval, analysis, and explanation of the needs of managerial decisions. Business Intelligence focuses on collecting, process and present data concerning customers, competitors, the markets, technology, product and the environment.

Business intelligence (BI) is a new business-driven phenomenon that can add values for organizations. Watson (2009) defined BI as "*a broad category of applications, technologies, and processes for gathering, storing, accessing, and analyzing data to help business users make better decisions*". This study adopts the broad definition of BI. At the

conceptual level, BI is an umbrella term for systems and procedures that transform raw data into useful information for managers to make better decisions (Wixom and Watson 2010). At the operational level, BI is an information system that has three elements: (i) *a technological element* that collects, stores, and delivers information and includes the general technology of BI that performs basic functions to support generic actions in BI: gather, store, access, and analyze data; (ii) a *human competencies element* on the abilities of human beings to retrieve data and deliver it as information, to generate knowledge, and to make decisions based on the new knowledge; and (iii) a third element that supports specific *business processes* that make use of the information or the new knowledge for increasing business values (Laursen and Thorlund 2010). The aim of this research is to investigate the significance of BI by empirically demonstrating the way BI can contribute to firms' performance. BI and analytics are thus conceived within the broader business digitalization frame of this research.

1.3.4.5 Performance

Performance is considered as an umbrella term for all concepts that consider the success of a firm and its activities (Atkinson, 2012). Performance can refer to actual results/outputs of certain activities, how an activity is carried out, or an ability to achieve results (Lönnqvist, 2004). Atkinson (2012) defined performance as the achievement of results ensuring the delivery of desirable outcomes for a firm' s stakeholders. There are two basic types of performance measurement in any organization: those that are related to results such competitiveness, financial performance, growth and those that focus on the determinants of the results, such as quality, flexibility, resource utilization (Neely et al., 2000). In this research, performance refers to results. A firm' s performance is divided into two main areas: operational performance and financial performance. Financial performance is related to the actual results, ex profitability, growth, turnover etc., and operational performance to the determinants of the results such as agility, flexibility, productivity, quality, etc. In this

research, performance is related to the results and more concretely to growth measured by profitability, employment and turnover.

The dimensions related to operational performance such as productivity, quality, agility and flexibility are also important in examining the impact of business digitalization on SMEs, but due to scoping and other limitations performance has been considered as financial performance based on firm growth. In line with Atkinson (2012), this research conceives performance measurement as the regular collection and reporting of data to track work produced and results achieved. In other words, it is the process of quantifying the efficiency and effectiveness of action (Neely et al., 2000).

Performance management can be considered as a process by which the firm manages its performance in line with its corporate and functional strategies and objectives. Performance management is thus an action based on performance measurement, which results in improvements in behaviour, motivation, and processes (Radnor and Barnes, 2007). Atkinson (2012) concludes that performance management is about what you do with the information developed from measuring performance. It means using performance measurement information to focus on what is important, to manage the organization more effectively and efficiently, and to promote continuous improvement and learning. In this regard, the research's suggestions for the business sector relate to performance management drawing from the performance measurement as determined by business digitalization.

1.4 Overview of theoretical framework

The theoretical framework of this research, as shown in the research scope, represents a crosscutting area between management and ICTs research fields. Primarily it looks into theories of SMEs performance, growth and role of innovation as a process and outcome. Secondly, it looks onto the digitalization of business, models of ICTs adoption and emerging trends such as the deployment of BI and its success factors. The research argues that performance is a very complex and multidimensional concept. As such, the conceptualization of performance only in terms of results serves the scope of this research. Therefore the

concept of growth is used to operationalize performance. Growth as a concept and unit of analysis is more objective. This research operationalizes growth in terms of financial dimension by looking at change in turnover, profit and employment. These are also the key financial metrics of SMEs.

The research is, however, wary of the argument that turnover and profitability do not equally contribute to building value in an entrepreneurial sense and therefore do not automatically imply success and that not all growth is profitable. It is though argued here that change in turnover, profit and employment are indicators of the fitness of an SME and therefore of growth. This research draws from empirical studies that view growth of an enterprise, especially an SME, as one of the most significant performance indicators (Atkinson, 2012; Watson, 2011) Business growth is dependent on various factors and it is a complex process. This research focuses on: SMEs characteristics such as size, location and sector; business strategy and management, leadership or entrepreneur or owner-manager characteristics such as age, gender, education, style and innovativeness and external environment.

This research adopts the Actor-Network Theory as designed by Mahring et al., 2004; Latour, 1987; Callon, 1999. ANT was adopted for this research because traditional adoption theories have limitations in capturing the constant technology advancements and the dynamic and evolutionary nature of technology adoption (Eze et al., 2011). Also it is better suited for the particular features of SMEs. The literature review suggests that Actor Network Theory (ANT) may be suitable for this research because it is associated with the emerging perspective –that is the process that shaped the outcome of the interaction between technology, process and people (Cordella and Shaikh, 2006). This implies that this research approach challenges technology determinism and also looks at other social aspects such as the role of owner-manager or staff in ICTs adoption. In addition, this research does not consider ICTs adoption as one-off decision, but as a multidimensional process and that it is why it uses the term digitalization to encompass the complexity of the process. ANT is particularly relevant in a small business context because SMEs are flexible, unique, and associated with complex tasks and operate in a much more dynamic and unpredictable

business environment. Using ANT as a theoretical lens, the theory may help to unveil how SMEs progress in the digitalization journey. In this way a better balance between technology and society will be provided in the analysis.

1.5 Overview of methodology

This research follows a combined methodology approach or a pragmatic approach that best serves to answer the research questions. The research has as a starting point the positivist approach but argues that the research scope is complex, and it requires complementing the positivist approach with the interpretivism in order to compensate for each other shortcomings and better respond to the research question. This research draws from the assumption that reality exists objectively and can be measured, but the dimension of the construction of reality cannot be neglected, i.e. the reality one seeks to study is multiple. Perceptions are important, because they are the basis for entrepreneurs' actions. Secondly, from an epistemological point of view, this research is based on the idea that objective observation and subjective meanings and interpretations can provide substantive knowledge. This thesis is thus focused on applied research and uses various perspectives to respond to research question best way possible.

What is more, deductive reasoning logic is adopted. The basic principle of deductive approach are applied: a search to explain causal relationships between variables; structured methodology to facilitate replication; concepts need to be operationalized in a way that enables facts to be measured quantitatively; reductionism, which means that problems as a whole are better understood if they are reduced to the simplest possible elements; and generalization by selecting a sample of sufficient numerical size. Cautious is shown in generalization of findings and focus is put on economic context. In terms of research design, triangulation is used and complemented with secondary resources, which serve for the validity and reliability of the research. The main methods used are document analysis with a total of 24 documents consulted, in-depth interviews with 15 in-depth interviews conducted and survey of 121 SMEs in Albania. In line with this assumption, the entrepreneur or small

firm owner-manager is seen to be the most appropriate informant, and the research methods used is believed to provide valid information about the research phenomena. Therefore, the research is conducted from a firm-internal viewpoint, which in the case of SMEs – means the entrepreneur's viewpoint.

1.6 Research relevance and contribution

Conducting research on business digitalization and SMEs performance in Albania is highly relevant there is relatively limited systematic research on the performance of SMEs and the adoption and use of advanced ICTs within SMEs in Albania. In the past decade, some systematic research has been conducted regarding the role of SMEs in Albanian economy, the balance between export and import, the financial barriers to development of SMEs and the use of e-commerce or websites and other basic ICTs tools by SMEs as well as innovation of SMEs. However, there is relatively limited research on the impact of advanced ICTs systems such as Business Intelligence and Analytics or the integration of Business Intelligence with Knowledge Management on the performance of SMEs. What is more, most of the research on innovation or advanced ICTs use in Albania as in other places is focused on large firms and not on SMEs. What is more, this research project is highly relevant as it tackles some of the major priorities regarding the perspectives of the Albanian economy in the digital world. The recommendations of the research are relevant both for the policy and enterprise sector as presented in the final chapter of the doctoral thesis. Findings of the research will add to the knowledge and understanding of the merits and limits of the adoption of advanced ICTs within SMEs in Albania.

This research contributes thus to the management scholarly field in Albania in the sense that it does:

a) provide systematic and thorough research on the merits and limits of the adoption of advanced ICTs within SMEs in Albania in a context whereby there is very limited prior research;

b) support and enrich theory with an in-depth case study from a relatively under-explored region such as the South Eastern Europe region;
c) provide useful knowledge to relevant policy stakeholders regarding the future business digitalization of SMEs with a focus on Business Intelligence and Analytics or the integration of Business Intelligence with Knowledge Management on the performance of SMEs;
d) provide insights, instruments and data the business sector in Albania on how to employ business digitalization, i.e. advanced ICTs systems to improve SMEs performance.

This study is one of the first research contributions in the case of Albania to analyse the impact of digitalization, specifically the impact of BI on SMEs in Albania.

1.5 Organization of thesis

In addition to the introductory chapter, the research thesis is organized in four main parts and each of them is divided in chapters, sections and sub-sections: (i) theoretical framework; (ii) research methodology; (iii) research context; and (iv) findings, analysis and discussions.

After the introductory chapter, the first part of the thesis is the theoretical framework, which consists of two chapters, namely Chapter II and III. Chapter II deals with the first pillar of the thesis, i.e. the performance of SMEs and potential explanatory frameworks for SMEs performance. This chapters provides a thorough analysis of factors impacting SMEs growth by looking particularly at the dimensions of analysis mentioned in the research scope such as: strategy, resources, leadership and characteristics of SMEs as well as the external environment and the role of innovation. Chapter III concentrates on the theoretical background on digitalization of businesses with a special focus on Business Intelligence and analytics. In addition, the models of ICTs adoption and use by SMEs are presented here. These chapters form the basis for the presented research model and conceptual framework, which are then further explained in the following methodology part.

The second part of the doctoral thesis is that of research methodology. This part contains Chapter IV, namely research methodology and design. This chapter is structured as follows: the first section introduces the research methodology approach by looking at both positivism and interpretivism as research methodology approaches and it also provides the rationale for the choice made. The second section justifies the research design by looking at deductive and inductive approached. The third section, details the methods, data collection and analysis. This section provides in depth analysis and justification of the research process and methods applied from sampling to sample size, challenges of data collection and models of analysis. The last part of the methodology chapter explains the quality of research by looking at validity, reliability and ethical considerations of the data collection.

The third part of the doctoral thesis is the research context, which sets the research questions into concrete contextual settings in Albania. It looks briefly at the overall picture of the Albanian economy, particularly in the recent developments in terms of innovation, digitalization and knowledge-based economy. The second section provides an overview of the SMEs in Albania, their role in economy and current trends. The third section explores the ICTs developments in Albania and then the research and innovation policy. This chapter used secondary resources and insights from informed interviews and part of it have been already published as mentioned in the Publication section of the doctoral thesis.

The fourth and final part of the doctoral thesis is that of presentation and discussions of research findings and analysis. This part is divided in three main chapters, namely Chapter VI, Chapter VII and Chapter VIII. Chapter VI deals with the mainstreaming of ICTs in SMEs in Albania and corresponds to the first main objective and research question of the thesis. This chapter presents the findings from the data collection of survey in phase I and looks at the importance of ICTs within SMEs, the ICTs systems in place and innovative capabilities of SMEs as well as the challenges and opportunities for SMEs in Albania to adopt and use advanced ICTs systems as reported by the data collection. Then Chapter VII presents the findings in regard to the impact of digitalization on SMEs performance by looking at Business Intelligence and Analytics current use and future trends as well as the factors impacting SMEs performance. The final chapter is that of conclusions which provides not

only the key findings and conclusions, but also theoretical implications of the findings vis a vis the conceptual framework of the doctoral thesis. In addition, it also provides policy implications and recommendations for enterprises. This chapter presents the limitations of the doctoral thesis and provides recommendation for future research.

THEORETICAL FRAMEWORK

After the introductory chapter, the first part of the thesis is the theoretical framework, which consists of two chapters, namely Chapter II and III. Chapter II deals with the first pillar of the thesis, i.e. the performance of SMEs and potential explanatory frameworks for SMEs performance. This chapters provides a thorough analysis of factors impacting SMEs growth by looking particularly at the dimensions of analysis mentioned in the research scope such as: strategy, resources, leadership and characteristics of SMEs as well as the external environment and the role of innovation. Chapter III concentrates on the theoretical background on digitalization of businesses with a special focus on Business Intelligence and analytics. In addition, the models of ICTs adoption and use by SMEs are presented here. These chapters form the basis for the presented research model and conceptual framework, which are then further explained in the following methodology part.

CHAPTER II

IN SEARCH OF AN EXPLANATORY FRAMEWORK FOR SMEs PERFORMANCE

2.1 Perspectives on Firm Performance

Performance is considered as an umbrella term for all concepts that consider the success of a firm and its activities (Atkinson, 2012). Performance can refer to actual results/outputs of certain activities, how an activity is carried out, or an ability to achieve results (Lönnqvist, 2004). Atkinson (2012) defined performance as the achievement of results ensuring the delivery of desirable outcomes for a firm' s stakeholders. There are two basic types of performance measurement in any organization: those that are related to results such competitiveness, financial performance, growth and those that focus on the determinants of the results, such as quality, flexibility, resource utilization (Neely et al., 2000). In this research, performance refers to results. A firm' s performance is divided into two main areas: operational performance and financial performance. Financial performance is related to the actual results, ex profitability, growth, turnover etc., and operational performance to the determinants of the results such as agility, flexibility, productivity, quality, etc. In this research, performance is related to the results and more concretely to growth measured by profitability, employment and turnover.

Firm performance refers to the firm's success in the market, which may have different outcomes. Firm performance is a focal phenomenon in business studies. However, it is also a complex and multidimensional phenomenon. Performance seems to be conceptualized, operationalized, and measured in several ways. Strategically, firm performance is often referred to as firm success or failure. In business life, success is a key term in the field of management, although it is not always explicitly stated. Thus, the concept of success is often used to refer to a firm's financial performance. However, there is no universally accepted definition of success, and business success has been interpreted in many ways (Atkinson,

2012). Due to the central role of an entrepreneur in a small firm, and since different stakeholders may have different objectives and aspirations for a firm, it would be appropriate to regard an entrepreneur as the primary stakeholder and to begin by considering how s/he might define success and failure. There are at least two important dimensions of success: 1) financial vs. other success; and 2) short- vs. long-term success. Hence, success can have different forms, e.g. survival, profit, return on investment, sales growth, number of employed, happiness, reputation, and so on (Brockman, Jones & Becherer, 2012: 30). In other words, success can be seen to have different meanings by different people. In spite of these differences, people generally seem to have a similar idea of the phenomenon, i.e. of what kind of business is successful.

The main goals and objectives of the small firm can be other than financial, and they can change over time. However, in the long run, even firms with lifestyle goals should attain at least a minimum profitability in their operations, i.e. their incomes should exceed costs, to ensure the continuity of operations. The definition of success may depend on the time frame: SME performance can be approached as a short- or long-term phenomenon. Even one-year high economic output can be interpreted as success. However, the existence of the firm in the long run, i.e. longevity, can be interpreted as success meaning firm survival. As a matter of fact, it has been argued that the most important and most challenging business goal is long-term survival (Veliyath & Tan, 2013: 12). Moreover, survival is, at least in the long term, a prerequisite for success in other terms, such as market share or profitability. To date, however, studies of firm longevity have focused on large companies. On the one hand, the probability of survival decreases over time. On the other hand, the probability of survival of new firms is lower than that of older firms, which refers to their 'liability of newness'.

The dimensions related to operational performance such as productivity, quality, agility and flexibility are also important in examining the impact of business digitalization on SMEs, but due to scoping and other limitations performance has been considered as financial performance based on firm growth. In line with Atkinson (2012), this research conceives performance measurement as the regular collection and reporting of data to track

work produced and results achieved. In other words, it is the process of quantifying the efficiency and effectiveness of action (Neely et al., 2000).

Performance management can be considered as a process by which the firm manages its performance in line with its corporate and functional strategies and objectives. Performance management is thus an action based on performance measurement, which results in improvements in behaviour, motivation, and processes (Radnor and Barnes, 2007). Atkinson (2012) concludes that performance management is about what you do with the information developed from measuring performance. It means using performance measurement information to focus on what is important, to manage the organization more effectively and efficiently, and to promote continuous improvement and learning. In this regard, the research's suggestions for the business sector relate to performance management drawing from the performance measurement as determined by business digitalization.

Performance measurement and management are an important link in the control structure of organizations (Ferreira and Otley, 2009). Firms use performance measurement for various purposes. A typical performance measurement helps businesses in setting business goals periodically and then providing feedback to managers on progress towards those goals (Simons, 2000). Franco-Santos et al. (2007: 797) identified five roles of performance measurement. The first refers to monitoring progress and measuring or evaluating performance. The second is strategy management and it includes planning, strategy formulation, strategy implementation, and focusing attention on issues important to an organization. The third role, communication, refers to internal and external communication, benchmarking, and compliance with regulations. The fourth encompasses rewarding or compensating behaviour, managing relationships, and control. Finally, "learning and improvement" comprises feedback, double -loop learning, and performance improvement. Similarly, Henri (2006a: 80) classifies four types of performance measurement use: monitoring, attention focusing, strategic decision-making and legitimization. Performance measurement is used to provide feedback regarding expectations and to communicate with various stakeholders (monitoring). During the decision-making process, it is employed as a facilitator (strategic decision-making) and to justify decisions or actions

(legitimization). In addition, top managers use performance measures to send signals throughout the firm (attention focusing).

SMEs performance is the main dependent variable in this thesis. SMEs performance in this thesis is an aggregate construct that reflects multiple self-reported measures of firm performance. It is conceptualised in the management research tradition and it draws from measures widely applied in empirical studies with large and small-scale samples of SMEs (Brockman, Jones & Becherer, 2012; Li, Veliyath & Tan, 2013). This measure of SMEs performance in terms of growth with three indicators is adopted in an attempt to overcome construct validity problems experienced with single measurements. It also provides an appropriate measure for capturing most dimensions of the performance as researched in this thesis. A more detailed discussion of SME growth and performance as operationalized in this thesis is provided in the following sections of this chapter.

2.2 Conceptualizing SMEs Growth

As stated in the introduction, the main justification for viewing SMEs as unique study object stems from the realization that SMEs are not only smaller versions of large firms (Coad, 2009). There are crucial structural differences between SMEs and large firms. As such in the case of SMEs, agency costs impede access to long-term debt and equity capital, making them more reliant on internally generated funding. It could therefore be argued that as firms grow, organization, co-ordination and communication problems arise due to managerial limits on control and direction, which necessitate structural change (Veliyath & Tan, 2013). This is closely related to Penrose's (1959) argument that administrative efficiency, coupled with learning, cognition and co-ordination abilities, ultimately determines growth potential (as quoted in Veliyath & Tan, 2013). Growth is therefore an important structural determinant, giving rise to treating business entities of different sizes as non-homogeneous. This is why performance is conceived in this thesis primarily through the result perspective, i.e. growth.

Firm size has long been considered as one of the most important contingency variables in firm growth and performance studies. Numerous researchers have argued the

benefits and drawbacks of different firm sizes (see Coad 2009 for an overview). Larger firms tend to possess more resources; greater experience and specialization, higher market share and brand recognition; greater economies of scale and scope, translating to efficiency, lower costs and higher net income growth. Large firms are however structurally more complex leading to higher bureaucracy and slower information-processing systems (Coad, 2009). In contrast, SMEs exhibit higher flexibility in organizational structure; faster decision-making and responsiveness to their external environment; more entrepreneurial drive, motivation, risk-seeking behavior and perseverance; proximity of management to customers and the shop floor; greater ability to respond to qualitative market demand changes; flexible production technologies; flexible specialization; as well as greater ability to absorb demand fluctuations. The disadvantages associated with small size are referred to as the "liability of smallness" and is primarily associated with resource constraints and problems of legitimacy (Brockman, Jones & Becherer, 2012; Li, Veliyath & Tan, 2013). Small firms therefore have financial and human resource disadvantages (Vermeulen, 2005) but behavioural advantages (Brockman, Jones & Becherer, 2012).

Table 2: Comparison of Features: Large Firms vs. SMEs

Large Firms	SMEs
Large firm size	Small scale firms
Ample resources (capital, equity, credit)	Limited resources (internal funding)
Experience, portfolio and specialization	Limited experience/no specialization
Higher market share	Small market share
Brand recognition	No brand recognition or very limited
Higher net income growth, lower costs/high efficiency	Lower net income and no economy of scale
Very complex in structure and management	Flexibility and agility due to no complex structures
Slower decision making and bureaucratic	Faster decision-making
Difficulty to respond to changing external environment	Responsiveness to external environment
Resistance to change	Entrepreneurial drive, motivation, risk-seeking behavior and perseverance
Complex processes to manage customer relations	Proximity to customer relations
Liability of being to big	Liability of smallness and newness
Complex production lines/processes	Flexible production and absorption of demands
Deployment of advanced ICTs to manage business processes	Limited deployment of ICTs, but flexibility of adaptation
Legitmacy, social ties and networks	No or limited legitimacy & acceptance, no social ties and limited networks

Source: Adopted from literature review (Laforet and Tann, 2006; Rhee et al., 2010)

With the advent of the knowledge-based economy the importance of scale economies is decreasing, which makes small firms more competitive as they are more flexible and poses more knowledge-based assets (van Stel, Millan & Roman, 2014). This also relates to the argument that sustained competitive advantage results from both tangible and intangible resources such as knowledge and information. Although SMEs are at a disadvantage when it comes to physical resources, they may possess intangible resources that have been found to have the greatest strategic potential in developing sustained competitive advantages (van Stel, Millan & Roman, 2014). Despite the potential of these intangible resources offered to SMEs and the deployment of digitalization for their management, the liability of newness is still a major impediment of growth for SMEs. The liability of newness (Su, Xie and Li, 2011) attribute to three factors: First, it is well established that young SMEs tend to have limited resources, impairing their ability to exploit opportunities for growth. Second, legitimacy and

network ties are developed over time, implying that new firms lack both of these resources, which in turn inhibit their access to other resources needed to survive and grow (Delmar & Shane, 2004; Hite & Hesterly, 2001). Last, new firms lack formalised roles and routines, which provides them with the initial flexibility to exploit opportunities, especially in changing or evolving business sectors.

In addition to firm size, tangible resources, liability of newness, the structure of SMEs also effects growth. Studies have demonstrated a lack of structure in SMEs, which later results in ambiguity and uncertainty, impeding firm performance (Sine, Mitsuhashi & Kirsch, 2006). This it is of vital importance for new firms with limited resources to embrace basic structural features in creating more formalised organisational roles. New small firms therefore differ substantially from their larger more established counterparts in that they lack resources, legitimacies and social ties as well as role formalisation. It seems that the majority of small firms do not grow because they consciously do not want to evolve into larger business organisations as this would mean suffering the negative consequences of loss of control and bureaucracy associated with increasing employee numbers. There is a limit to growth with some entrepreneurs choosing to remain independent SME owners rather than becoming managers in large organisations (Sine, Mitsuhashi & Kirsch, 2006: 43). The patterns and determinants of firm growth have recently re-emerged as a key research topic (Lee, 2010), but viewed as performance.

For the scope of this research, it is important how performance and growth as conceived, operationalized and measured as the key unit of analysis in this thesis. This research does not equate firm performance to growth. The research argues that performance is a very complex and multidimensional concept, as seen in the beginning of this chapter. As such, the conceptualization of performance only in terms of results serves the scope of this research and therefore it is operationalized by using the concept of growth. Growth as a concept and unit of analysis is more objective. Firm growth is applied to minimize the subjectivity inherent in performance measurement, and conform it to a degree objectivity and verifiability, making independent replication and verification of past research possible (Watson, 2010). This research operationalizes growth in terms of financial dimension by

looking at change in turnover, profit and employment. These are also the key financial metrics of SMEs. The research is, however, wary of the argument that turnover and profitability do not equally contribute to building value in an entrepreneurial sense and therefore do not automatically imply success and that not all growth is profitable. It is though argued here that change in turnover, profit and employment are indicators of the fitness of an SME and therefore of growth. It would be the scope of other research to measure performance by referring to the process dimension too and thus reflect the argument that not all profit is growth.

This research draws from empirical studies that view growth of an enterprise, especially an SME, as one of the most significant performance indicators. Business growth is dependent on various factors and it is a complex process. Traditionally, growth in small firms has been studied with four main perspectives. They are personal characteristics of the entrepreneur, organizational development, business management and the sector and location (Reijonen and Komppula, 2007). This is why this research focuses on: SMEs characteristics such as size, location and sector; business strategy and management, leadership or entrepreneur or owner-manager characteristics such as age, gender, education, style and innovativeness and external environment.

2.3 Strategy, Leadership and Characteristics of SMEs

Managing performance within the context of SMEs requires an understanding of SME characteristics that influence the design and implementation of performance measurement (Garengo et al., 2005; Ates et al., 2013). Garengo et al. (2005) identified two types of obstacles to introducing performance measurement in SMEs: ‘exogenous’ barriers, e.g., the lack of financial and human resources, and ‘endogenous’ barriers, e.g., short-term strategic planning and the perception of performance measurement as a bureaucratic system that causes rigidity. Scarcity of resources has been considered as one of the main problems and typical characteristic of SMEs (Singh et al., 2008). Limitation of resources can be in the form of human resources, finances, time, and security (Hudson et al., 2001; Singh et al., 2008;

Ates et al., 2013). This resource scarceness restricts SMEs' capability in external orientation (Ates et al., 2013). Lack of human resources also causes difficulties in performance measurement when the employees are involved in the activities of managing daily work and have no extra time for additional activities such as performance measurement (Garengo et al., 2005).

In addition to the limited skills among employees (Singh et al., 2008), also managers (entrepreneurs, leaders, owners) often do not have enough managerial expertise, which can result in poor strategic business planning and human resource management (Pansiri and Temtime, 2008). SMEs may lack a managerial culture, and therefore managerial tools and techniques are perceived as being of little benefit to the firm (Garengo et al., 2005). This is related to the SME characteristic that the processes are not very structured. The flexible nature of SMEs results in they often adopt less structured systems and processes in decision-making and managing the whole business (Hudson et al., 2001; Ates et al., 2013). SMEs are characterized by personalized management, with little devolution of authority (Hudson et al., 2001). Many SMEs are owner-managed with entrepreneurs acting as dominant leaders who set direction and run the business on the basis of their experience and common sense, which generally results in a command and control management style (Ates and Bititci, 2011). Thus, management practices are closely linked to the individual' s skills and the characteristics of the entrepreneur, and emerge mostly in response to internal operational needs. Usually, managers hold multiple roles and are in charge of both operational and strategic functions (Ates et al., 2013).

SMEs operate in highly competitive, turbulent, and uncertain markets. What is more, they do not have control or influence over the market and thus they need to adopt a reactive approach and adapt to market changes (Hudson, 2001). When SMEs behave in a reactive manner, the level of strategic planning is poor and there are no formalized decision-making processes (Garengo et al., 2005; Garengo and Bernardi, 2007). The lack of explicit strategies and methodologies to support the control process promotes both a short term orientation and a reactive approach to managing the firm' s activities (Garengo et al., 2005). When this behavior is amplified by a lack of dedicated resources, SME managers struggle with multiple

short-term and long-term priorities at the same time. Strategic management and long-term priorities may be forgotten when day-to-day operational issues and customer needs take hold (Ates et al., 2013).

In SMEs, knowledge is mainly gained through experience and is often absorbed by means of tacit learning (Ates et al., 2013). Sousa et al. (2006) found that the training of employees and difficulty in defining new performance measures were highlighted as the major obstacles to the adoption of new performance measures. Since knowledge is mainly tacit and context-specific, the information required to implement and use performance measurement is difficult to gather (Garengo et al., 2005). SMEs often do not understand the potential advantages of implementing performance measurement (Garengo et al., 2005). SMEs are not always capable of adopting new ways of action and new techniques. For example, lack of time, resources, and know-how are obstacles to developing their operations. Even though size represents a weakness, for example in terms of available resources and long-term planning, on the other hand it favors a flat organizational structure with a lack of bureaucracy, which results in flexibility, adaptability, and rapidity in responding to the changing environment (Garengo et al., 2005). For this reason, SMEs usually have a high potential for innovation and the ability to satisfy customers' emerging and evolving requirements. A structure with few management layers favors face-to-face relations, simplifying communication processes, and offering the manager high visibility of the processes and the opportunity to directly influence employees (Singh et al., 2008).

2.4 SMEs and the External Environment

Firm performance is often seen to relate to the match between the firm and its environment (Johnson & Scholes 1993; Powell 1992a). The environment carries needs and expectations, i.e. market opportunities, which the firm tries to respond to with its resources and capabilities. The better the match, the better the success (Singh et al., 2008: 271). Firm performance is the result of a proper alignment of firm design with the context it operates in (Garengo et al., 2005). Similarly, there is no one best way to organize, and contextual factors should be taken

into account. In the configurational approach successful firms are considered to be aligned in a small number of typical patterns. However, as the environment of many firms is changing all the time, there is a continuous need for adjustment of the fit between the firm and its environment. From the firm's viewpoint, this process of adapting to changes in its environment is called strategic management (Garengo et al., 2005). Firm performance can be approached from many perspectives, e.g. from an internal (firm) or external (environment) perspective. In other words: do firms shape their destiny, or are they powerless victims of changes in their environment? Studies of firm performance have discovered the benefits of an integrated approach, i.e. a dialectical approach. This research considers internal environment as seen in section 2.3 above an external environment.

In the integrative model of IT business value, Melville et al. (2004) emphasized the impacts of industrial characteristics on the relationship between IT-enabled resources and firm performance. Dess and Beard (1984) defined a turbulent business environment as the frequency and extent of change in critical market variables. These market variables may include changes in market conditions and technology (Jaworski and Kohli 1993). A turbulent environment is also referred to as a hypercompetitive environment (Mithas et al. 2011) and generally defined as "*general conditions of uncertainty*" (Rai and Tang 2010: 521). El Sawy and Pavlou (2008:139) characterized a turbulent environment with "*unpredictability arising from unexpected changes in market demand and consumer preferences, new technology developments, and technological breakthroughs*." They found that there are three types of capabilities that influence strategic advantage in such turbulent environments: (i) operational or ability to execute processes; (ii) dynamic or the planned ability to reconfigure operational capabilities; and (iii) improvisational or the learned ability to spontaneously reconfigure operational capabilities. How a turbulent environment moderates business digitalization's value for SMEs has not been thoroughly researched. This research investigates the impact of business digitalization on performance and it also examines how environmental turbulence influences those impacts.

2.5 SMEs Performance and Innovation: Towards Business Digitalization

As analysed above, firm performance is now favoured over growth and arguably the most important construct in strategic management and entrepreneurship research. The existence of a positive link between innovation and performance seems almost obvious (Baldwin & Gellatly, 2003; Goudis, Skuras & Tsegenidi, 2003; Klomp & van Leeuwen, 2001; Prajogo, 2006; Roper, Hewitt-Dundas, Smallbone, North, & Vickers, 2002). Yet, empirical studies have not reached definitive conclusions about the relationship between innovation and firm performance in SMEs (Rosenbusch, Brinckmann & Bausch, 2011). Uncertainties and contradictions exist regarding the nature and role of innovation as complex and varied phenomena. Issues such as the temporality, linearity and directionality of the innovation – performance relationship remain unclear (Mansury & Love, 2008). Inquiry into the innovation – performance relationship of SMEs is only starting to draw attention (Rosenbusch et al., 2011). So far studies have shown that innovative firms succeed when they align multiple innovations with value-creating outcomes for particular groups of customers (Spencer, 2013).

SMEs are fundamentally different from large firms in innovation (Garengo et al., 2005). This research is based on the assumption that innovation is a sound antecedent of performance (Rhee et al., 2010). However, SMEs usually have some drawbacks regarding innovation compared to large firms. These include, for example, customer dependency and lack of resources such as knowledge, skills, training, networking, and finances (Laforet and Tann, 2006; Rhee et al., 2010) as shown above. Despite these constraints, SMEs usually have a high innovatory potential (Hudson et al., 2001), because they seek to secure success with their core assets such as innovative technology. Thus, the role of innovation as a critical source of competitiveness may be even greater in small firms than larger firms (Rhee et al., 2010.) Whereas the strengths of large firms lie mostly in resources and is predominantly material (e.g., economies of scale and scope, financial and technological resources), the strengths of SMEs are in the form of behavioral characteristics, e.g. entrepreneurial dynamism, flexibility, efficiency, proximity to the market, motivation (Laforet and Tann,

2006).

In addition, SMEs have advantages over large firms such as being close to customers and having a flexible and informal environment (Laforet and Tann, 2006). This flexibility may cause SMEs to be even more innovative and improve performance more by adapting to market changes and improving and having shorter and faster decision chains. SMEs have a greater capacity for customization and are capable of learning quickly and adapting routines to improve performance (García-Morales et al., 2007). Additionally, they often have the courage to take risks and are prepared to try new ways of working (Laforet and Tann, 2006). This is the setting where digitalization as part of SMEs innovation takes place. Laforet and Tann (2006) found that SME innovation mostly consists of developing new ways of working and incremental product innovations. According to Forsman and Rantanen (2011), incremental innovation in SMEs concern all innovation types: products, services, processes, production methods, and modes of actions, whereas radical innovation usually refers to products, services, and modes of actions.

Innovation is not directly available to all organizations at all times, rather only to firms with the appropriate internal characteristics (Aragón-Correa et al., 2007). In order to achieve the benefits of innovation, resources need to be dedicated to the innovation task (Rosenbusch et al., 2011), but also the routines and processes, which determine the state of innovation capability, need to be in order. Innovation capability itself is not thus a separately identifiable construct. The capability is composed of reinforcing routines and processes within the firm. These processes are a key mechanism for stimulating, measuring, and reinforcing innovation (Lawson and Samson, 2001). As shown by the study done by Aragón-Correa et al. (2007), innovation is based on multiple and simultaneous influences of individual and collective determinants.

First, culture and leadership are one of the relevant internal conditions of innovation in SMEs (Laforet and Tann, 2006; Aragón-Correa et al., 2007). According to Smith et al. (2008), culture relates to the values and beliefs of the organization and how these affect the ability to manage innovation. Culture has to do with the way people handle failure, the motivation from a leadership supporting innovation, the willingness to exchange knowledge,

and the targeted promotion of innovators within the firm (Bullinger et al., 2007). The ability to lead, direct, and support the creation and sustaining of innovation behaviors is important for a firm (Bessant, 2003). The importance of leadership style lies in the opportunities of the leader to directly decide to introduce new ideas into an organization, set specific goals, and encourage innovation initiatives from employees (Harbone and Johne, 2003; Aragón-Correa et al., 2007). Regarding SME innovation, it is important for the managers to share power and control and be willing to manage conflict with individuals over change, although it may be at odds with his/her career experience where power normally comes with the hierarchical level (Kallio et al.,2012). Leadership that fosters innovation enables setting task boundaries, sharing information, obtaining resources, instilling a positive attitude, and a leadership style that keeps the employees challenged and focused (McDonough, 2000).

Second, in addition to its culture, the firm' s capability to innovate is dependent on its internal processes (Neely et al., 2001; Hashi and Stojcic, 2013). In such a dynamic context, SMEs face the challenge to find the right balance between control and flexibility and adaptability. This means providing sufficient freedom to allow the employees to explore creative possibilities but retaining sufficient control to manage innovation in an effective and efficient fashion (Bullinger et al., 2007). Reward systems are powerful motivators and foster creative behaviour (Lawson and Samson, 2001). A supportive structure also plays an important role in improving communication in the organization.

Third, an appropriate work climate is crucial for innovation. Climate creates a specific mode of beliefs, attitudes, and behaviors (Harbone and Johne, 2003). Van Hemert et al. (2013) showed that openness towards knowledge sharing is important in reinforcing innovation, especially in SMEs that might lack sufficient financial and human resources to solely rely on internal processes. In addition, mutual trust and respect create an atmosphere that encourages individuals to try new ideas without fear of failure and its consequences.

Fourth, SMEs operate in a highly dynamic and rapidly changing environment (Hudson et al., 2001), where they need to regenerate in order to survive. Firms need to be tolerant of the mistakes that will occur and allow for recovery and learning from failures (Lawson and Samson, 2001). Innovation capability requires a collaborative, open culture and

incentives that reward challenging current actions.

Fifth, current literature also suggests that the source of innovation resides in the creativity and innovation capability of employees (Hotho and Champion, 2011; Kallio et al., 2012). It is important that for an employee to be innovative, he or she should believe in innovation, willingness to take risks, and willingness to exchange ideas. As business realities change, the employees' behavior and actions need to adjust accordingly (Dobni, 2008).

Sixth, Romijn and Albaladejo (2002) have defined the internal and external factors that affect a firm' s innovation capability. Internal factors include the knowledge and skills brought into the firm by the entrepreneurs and workforce, obtained through experience. Organizations with high levels of innovation include not only the key individuals but also the continuing and stretching of individual development (Tidd et al., 2005). Innovation is enhanced by training both in terms of formal education and also through learning on the job (Hausman, 2005) as it allows new knowledge to be shared and incorporated into the organization. García-Morales et al. (2007) conclude that firms with a high level of innovation have effective learning systems where human resources are developed and where firms learn to maintain competitiveness today while aggressively preparing for tomorrow.

Seventh, the internal characteristic that determines the state of innovation is the capability to understand the external environment (Neely et al., 2001; Akman and Yilmaz, 2008). Networks are important for SMEs, because interaction with suppliers, customers, industry associations, competitors, and the like can provide SMEs the missing external inputs that the firm itself cannot provide (Lawson and Samson, 2001; Romijn and Albaladejo, 2002; Hausman, 2005). Successful SMEs are more externally oriented, and they actively scan general economic and business conditions, technological trends, and capabilities and regularly analyse their competitive position in the market. In addition, activities related to the systematic search for new markets and business opportunities, and participation in conferences or trade fairs can be renewing to SMEs (Guzmán and Santos, 2001). Through establishing networks, SMEs can overcome their internal resource constraints and obtain the advantages often associated with larger size.

2.6 Chapter Concluding Remarks

This chapter provided the theoretical framework in regard to the first pillar of the thesis, i.e. the performance of SMEs and potential explanatory frameworks for SMEs performance. This chapters provides a thorough analysis of factors impacting SMEs growth by looking particularly at the dimensions of analysis mentioned in the research scope such as: business strategy, entrepreneur leadership, i.e. owner - manager and characteristics of SMEs. In addition, the relation between performance and the external environment was examined based on current literature. Finally, the determinants of innovation in SMEs were also reviewed.

This research is based on the assumption that innovation is a sound antecedent of performance and that SMEs enjoy challenges and opportunities that offer potential for innovation. In this case business digitalization is seen as a type of innovation. SMEs performance is the main dependent variable in this thesis. SMEs performance in this thesis is an aggregate construct that reflects multiple self-reported measures of firm performance. It is conceptualised in the management research tradition and it draws from measures widely applied in empirical studies with large and small-scale samples of SMEs. This measure of SMEs performance in terms of growth with three indicators is adopted in an attempt to overcome construct validity problems experienced with single measurements. It also provides an appropriate measure for capturing most dimensions of the performance as researched in this thesis. Based on the literature review it is thus argued here that growth is an important structural determinant to SMEs performance. This is why performance is conceived in this thesis primarily through the result perspective, i.e. growth.

This research does not equate firm performance to growth. The research argues that performance is a very complex and multidimensional concept. As such, the conceptualization of performance only in terms of results, i.e. growth, serves the scope of this research. Growth as a concept and unit of analysis is more objective. Firm growth is applied to minimize the subjectivity inherent in performance measurement and conform it to a degree objectivity and verifiability. This research operationalizes growth in terms of financial dimension by looking

at change in turnover, profit and employment. These are also the key financial metrics of SMEs. This research draws from empirical studies that view growth of an enterprise, especially an SME, as one of the most significant performance indicators. This research focuses on: SMEs characteristics such as size, location and sector; business strategy and management, leadership or entrepreneur or owner-manager characteristics such as age, gender, education, style and innovativeness and external environment.

CHAPTER III

DIGITAL ECONOMY, DIGITAL SMES

3.1 Digital and Knowledge-driven Economy: All for Innovation[4]

The concept of a knowledge-based society and economy implies that science; technology, innovation and research are the drivers of social, political and economic development. In a knowledge-based society, the production and dissemination of knowledge is not confined to the higher education settings and research institutes, rather science and technology have become part of political discourses and public policy development (Nowotny et al., 2001). In this light, science and technology, particularly so information and communication technologies, have become significant social institutions due to increasing demands for innovation, quality research and reliable scientific knowledge that could contribute to development (Thorlindsson & Vilhjalmsson, 2003). In addition, science and technology and the knowledge related to them are contextualised, i.e. impacted by the particular social, economic and political contexts (Nowotny et al., 2001).

The central role of science and technology and as such of innovation and research in contemporary society entails that science is becoming more a transgressive system with fluid boundaries rather than a demarcated subsystem of society (Gibbons et. al., 1994). Following the argument of Bell (1973) regarding the functions of knowledge and innovation in post-industrial society, other scholars have argued that the production of knowledge and its application are central characteristics of social organisation and successful economic performance (Gibbons et. al., 1994; Nowotny et al., 2001). In addition, knowledge

[4] This work on this chapter was done in the framework of the project "Joint research and workshop on Knowledge-Based Regional Development in Albania and Kosovo - Reducing social and economic disparities through social and economic innovation", led by The Vienna Institute for International Economic Studies (wiiw), Austria. Researchers at Riinvest Institute, Kosovo and UET Centre, Albania conducted the project. It was support by the Zentrum für Soziale Innovation (ZSI), Austria.

production and application, innovative research and information and communication technologies are considered as drivers of social, economic and political development in the political discourse and policy-making processes (European Union, Horizon 2020). Intensive research is being conducted in order to investigate the ways in which knowledge-based society and economy impact regional development. The transition of emerging economies and regions towards a knowledge-based society and innovation-driven development are of particular research interest.

In the context of a knowledge-based society, the sources of economic growth are more and more linked to the role of knowledge, innovation and research within and across economies. As such, the concept of a knowledge-based economy emerges from the acknowledgment of the central role of knowledge production and dissemination within economies (Huggins & Strakova, 2012). Knowledge is seen as the key to competitiveness of a production unit, but also as a crucial element of achieving regional competitiveness, whereby regions are treated as an economic entity on their own (Huggins et al., 2008). While the desired impact of a knowledge society and economy, based on research and innovation, is the endogenous regional growth and reduction of social and economic disparities, the processes of endogenous development underpin the growth trajectories of regions (Vazquez-Barquero, 2007).

The principle of endogenous development of regions refers to the role of collective learning and cooperative behaviour play in the establishment of an innovative milieu that facilitates knowledge creation and flow (Huggins, 2008). The implication here is that regional development and economic growth should be enhanced through bottom-up approaches, which concentrate on strengthening local production systems, initiatives and enterprises based on social and economic innovation rather than bottom-up approaches of redistribution of resources. The paradigm of endogenous regional development is particularly relevant to emerging regions such as South East Europe, which require the transformation of economy through innovation (Huggins & Strakova, 2012). As Garofoli (2002) points out, endogenous development refers to the capacity of regions to innovate and

produce collective intelligence that is contextualised to their environments and recognises the importance of knowledge creation, diffusion and accumulation.

The knowledge-based models of endogenous regional development imply that through fostering and supporting clusters, the triple helix, innovation systems and networks so as to establish an innovative milieu, whereby by knowledge production and flow is of central importance, it is possible to achieve innovative outputs and economic growth and thus contribute to sustainable regional development. In this sense, the efforts to enhance the knowledge-based society and economy are strongly related to sustainable regional development and economic growth. This debate is also relevant in the case of Albania and the entire Western Balkan region. The table below summarizes the recommendations of European Commission on the innovation of the WB.

Table 3: EC Recommendations for R&D and innovation in the WBC

Improve Research Excellence	• Brain gain • Investment in human capital • Increase research funding • Improve research infrastructure • Incentive for research performance • Attract talented researchers from the scientific diaspora • Promote researchers' mobility
R&D and innovation policy	• Completion of the reforms of the higher education and research systems • Development of research management competences • Regional collaboration
Research-Industry Collaboration and Technology Transfer	• Research-Industry Collaboration and Technology Transfer • Enhancing the performance of technology parks and incubators • Enable Business Investments in Research and Innovation and in the Creation of Start-Ups

Under the auspice of the Regional Cooperation Council and the funding of the EU and WB, in October 2013 the ministers responsible for science and education in seven Western

Balkans countries met in Zagreb to sign a declaration endorsing the *Western Balkans Regional R&D Strategy for Innovation* (Polajnar, 2014: 66). This is a clear confirmation of the importance placed the WBC countries and the international community on the R&D and innovation sectors in the region. The aim of the Strategy and the Action Plan is to create a regional common framework to address the WBC's priority of improving their R&D, innovation, economic growth and thus prosperity. The Strategy seeks to propose institutional and policy reforms in order to improve the quality of R&D, which then contributes to innovation and therefore to the establishment of knowledge-based economies that will generate growth. The target of the Strategy is to '*to mobilize additional resources from public and private sources, the EU and other stakeholders to reach an average of 1.5% of GDP of Gross R&D expenditures at the regional level by 2020*' (Polajnar, 2014: 68). This will facilitate the integration of WBC in the European Research Area and improve their innovation capacity, which can lead to the convergence of the R&D set by the EU.

The concrete results of the Strategy and Action plan are still to be evaluated in terms of the impact they will bring in the WBC R&D and innovation systems. The concern is that they will remain yet again good strategies in paper, rather difficult to be implemented in practice in the region due to various constraints of the research system. As shown in Table 3 the first recommendation coming from the *Western Balkans Regional R&D Strategy for Innovation,* is that of improvement of research excellence through investments in the development of human capital. The lack of funding from governments in WBC and the brain drain remain obstacles in improving the research excellence. The competition with the frontier research of the EU and other regions in the world makes this even harder. Thus the action plans supported by the EC shall focus more on the applicable research and its social and economic relevance for the needs of the region. The recommendations for R&D and innovation policy as well as research and industry collaboration also highlight the necessity for regional cooperation and business investments in research as well as technology upgrade and investments in start-ups.

The European Commission, for example, recognizes that the digital economy is developing rapidly worldwide, and it is the single most important driver of innovation,

competitiveness and growth, and it holds huge potential for European entrepreneurs and SMEs (EC, 2015). Unfortunately, only two percent of European enterprises are currently taking full advantage of new digital opportunities. How European businesses adopt digital technologies will be a key determinant of their future growth.[5] New digital trends such as cloud computing, mobile web services, smart grids, and social media, are radically changing the business landscape, reshaping the nature of work, the boundaries of enterprises and the responsibilities of business leaders. These trends enable more than just technological innovation. They spur innovation in business models, business networking and the transfer of knowledge and access to international markets (EC, 2015). In addition, according to the OECD Digital Economy Outlook 2015, the full potential of digital economy has yet to be achieved and the role that SMEs could play through their innovation is recognized.[6] From the Tascott (1997) coining of the term 'digital economy', it has come now to be considered mainly as a metaphor of the rapidly and multidimensional changes of the way firms operate in markets nowadays due to the proliferation of ICTs in every aspect of life.

3.2 Models of ICTs Development, Adoption and Use within SMEs

The literature review reveals that a substantial number of theories in academic research have been used to examine ICTs adoption, but the majority of these theories have focused on a variance or factor approach. Parker and Castleman, (2009) for example, analysed adoption theories and stressed that those most commonly used to explain ICTs adoption decisions in small business contexts are innovation models (Rogers, 1983; Rogers, 1995), intention-based models (Ajzen and Fishbein, 1980; Davis, 1989), Resource Based View (RBV), and Porter's model (Porter, 1985). In addition, several other meta-analyses (Premkumar, 2003) and extensions (Adams et al., 1992; Pavlou and Fygenson, 2006; Venkatesh et al., 2003) of these

[5] See the EC dedicated platform to Digital Economy at https://ec.europa.eu/growth/sectors/digital-economy/importance_sv (Accessed, December 2015).
[6] OECD Digital Economy Outlook 2015 available at http://www.oecd.org/internet/oecd-digital-economy-outlook-2015-9789264232440-en.htm (Accessed, May 2016).

theories have been proposed. While these theories have contributed to adoption studies in the past, they have always focused on conceptualising the constructs as variables and predicting the levels of ICTs adoption in organisations. This approach appears to have ignored the explanation of how these organisations develop and adopt ICTs over time. This approach is not in any way proportionate to the variety of approaches used to investigate ICTs adoption research or the amount of effort made to understand ICTs adoption and development. It is argued that to understand the complex issues involved in ICTs adoption, studies should not only rely on theories that predict levels of outcome but also explore other theories that can help explain the phenomenon in greater detail (Silva, 2007).

The Tab. No. 4 below presents all the ICTs adoption models as screened by the literature review for this research. It also points out the characteristics of each model or approach as well as the critiques and the linkages to the scope of this research.

Table 4: ICTs Adoption Theories and Implications for this Research

Theory	*Key dimensions*	*Authors*	*Critique*	*Authors*	*Implication for this research*
Theory of reasoned action (TRA)	Awareness- attitude-behaviour TRA is deterministic in nature and actions chosen are rational and fall within the decision-making school	Fishbein and Ajzen, 1975	TRA deals with behaviours and not actions that result from behaviours TRA focuses on the determinants and performance of a single action or behaviour	Sheppard et al., 1988; Benbasat and Barki, 2007	TRA may not be appropriate for this research since 38 individual behaviours about the technology can be predicted if their beliefs, attitudes and intentions are well understood.
Technological acceptance model (TAM)	Traditional adoption theories specifically developed to help determine IT adoption behaviour The most widely used theory in explaining and predicting ICT adoption	Davis, 1989	not addressed how technology is shaped by diverse actors TRA has been criticised for focusing on predicting or explaining just a single behaviour	Benbasat and Barki, 2007	TAM is deterministic since it considers one aspect of interplay (technology aspect of ICT adoption) and neglects the interplay of human agency

	TAM assumes two characteristic constructs—perceived usefulness (that is technology's use values) and perceived ease of use (that is technology's simplicity and effortlessness).		it is static in nature- TAM does not capture the dynamic and evolutionary nature of technology adoption in SMEs.	Lawrence (2010)	
Theory of planned behaviour (TPB)	Specific for issues relating to information guiding decision making	Awa et al., 2010	The majority of studies that have applied TPB ignore the complex interactions and interrelationships between small business CEO's, designers and developers, customers, government agencies in the adoption process	Venkatesh et al., 2003;	Researchers exploring SMEs' adoption of new technology require more explanatory theories instead of proposing individualist theories like TRA, TAM and TPB. These theories mainly have the features of the decision making school.
Innovation diffusion theory (IDT)	The theory seeks to explain when and how a new ICT is adopted and/or rejected Innovation Diffusion Theory is a decision process that helps to measure the probability rates of adoption. This process happens through a channel within a period among the members of a social system The use of opinion leaders and change agents Five innovation characteristics—relative advantages, compatibility, complexity, trialability and observability	Rogers, 1995	TAM and IDT of innovation are variance models and cannot adequately explain the complexities and diversity associated with adoption of ICT in SMEs	Lawrence, 2010	Used for this research to some extent

Michael Porter's models	The degree of competition, the threat of entry, the threat of substitutes, buyer power, and supplier power on business strategy	Porter, 1995	One of the limitations of Porter's model is that the model is generally applicable to large organisations because their risk taking behaviours to economic goals are high.	Butler et al., 2007; Beckinsale et al., 2006	Used for this research to some extent
	The model considers the entrepreneurial nature which appears to be relevant in ICT adoption in a small business setting	Ukoha et al., 2011	It failed to take into account the various roles played by actors on issues relating to IT adoption behaviour by SME managers.	Parker and Castleman, 2009	
Resource - based theory (RBV)	It explains how firms can use ICT to gain competitive advantage and high performance	Calderia and Ward, 200; Parker and Castleman, 2009	It may only be effective in large organisations. This places SMEs in a difficult situation owing to flexibility, limited resources, owner-family's influence and lack of skills	Duan et al., 2002	An important concept that has also emerged from the resource based theory that may be relevant in research like this is the concept of dynamic capabilities.
	The theory is of the view that competitive advantage and high performance can only be achieved if a firm owns unique operating competences/resources (human, physical, or organizational) or obtains customer-value and difficult-to-copy distinctiveness.				
	One key advantage of the model is that it points out those capabilities (tangible and intangible resources) firms must possess to be able to adopt technology infrastructures.	Calderia and Ward, 2001; Parker and Castleman, 2009	RBT did not sufficiently take into account external forces like customers, suppliers and even non-entrepreneurial firms including government agencies; though studies show that external forces play pivotal roles in influencing ICT adoption and internal technology capabilities.	Parker and Castleman, 2009	
	The theory is designed to assist managers to understand how competences can become one of the most valuable assets and allow businesses to understand how to improve their performance				

Technology-organisation-environment (TOE) framework	The TOE framework was developed to examine the factors affecting technology adoption and its diffusion and/or the characteristics of technology adoption	Merono-Cerdan, 2008	it is static in nature and focuses on barriers and drivers to adoption.	Rantapuska and Ihanaine 2008	This framework appears to be unsuitable for SMEs because it neglected the flexible nature as well as the complexities associated with these small businesses.
	TOE identified three contexts that influence a firm's ICT adoption; Technological context; organizational context and environmental context	Tornatzky and Fleische, 1990; Ukoha et al., 2011	TOE fails to reveal the complex and dynamic nature of ICT adoption activities in organisations	Xu et al.,2007	It provides a large number of variables which make it a richer theoretical model, it is not primarily suitable for small businesses because of their peculiarities.
Social-technical theories	Social shaping of technology	Mackenzie and Wajcman (1999)	However, social shaping of technology does not account for the emerging and evolutionary nature of technology innovations and how technology is constructed and reconstructed in the society	(McGrath, 2003).	as in ANT
Social construction of technology	Social construction of technology is of the assumption that the social processes in which different technology emerged from and negotiated by the meaning different people attached to it within a social context determine technology change.	Trevor Pinch and Wiebe Bijker (Bruun and Hukkinen, 2003).	One of the key limitations of this theory is that the roles played by technology are still less accounted for	(Markus and Robey, 1998; Bostrom et al., 2009).	as in ANT
Structuration theories	The core argument of the theory is that structures are only represented in the mind of human actors and/or as traces of human action	(Giddens, 1979)	Structuration theory has not paid adequate attention to technology, rather it was developed to study social systems within the society	Handseth,(1996)	as in ANT

Actor Network Theory (ANT)	ANT attempts to address the role technology plays in a social setting and the process by which the technology bilaterally influences the social setting over time	Mahring et al., 2004; Latour, 1987; Callon, 1999	The theory does criticize both the philosophy of technology and social determinism for downplaying the on-going interaction between social and technical and may be more appropriate in underpinning this research.	Latour, 1987; Faraj et al., 2004; Hanseth et al., 2004	The extensive literature review suggests that Actor Network Theory (ANT) may be suitable for this research because it is associated with the emerging perspective –that is the process that shaped the outcome of the interaction between technology and people (Cordella and Shaikh, 2006).
	ANT rejects both the philosophy of technology and social determinism for neglecting the on-going and dynamic interaction between the society and technology		The strength of ANT in understanding ICT adoption lies on studying both the human and non-human entities	Latour, 2005	Andrade and Urquhart,(2010P.353) pointed out that "*We live in the world made of both social and technology artefacts; we cannot detach society from technology –neither can we isolate technical in the abstrac*t".

Source: Author - Screening Literature and Secondary Resources, 2012-2015

Adoption and development are used interchangeably throughout this research. Raza and Standing (2010) note, "*technology in an organisation relates to new applications that use some methods to process information*". It provides services/products that are capable of satisfying the needs of different actors in society; as a result, the adoption of technology also means the development of a successful technology using the new process systems. The activities include designing, modifying and aligning relevant aspects of organisational operating procedures (Parker & Castleman, 2009). As seen from the screened of ICTs adoption models, this research applies a social and technology approach, i.e. integrates both technology and the social aspects and applies a combined methodology of triangulation. An overview of the perspectives of technology and organizational transformation is provided in Tab. No.5 below, which is based on the detailed models analysed previously.

Table 5: Perspectives on technology and firm transformation

Perspectives on technology and firm transformation	Key Features
Decision Making School	▪ Technology determinism ▪ Static models ▪ Positive research approach
Institutional School	▪ Social constructivism ▪ Pure process model ▪ Interpretative research approach
Social-Technology School	▪ Centres on technology and society ▪ Approaches are integrated: processes, technology and people ▪ Combined methodology approach

Source: Author - Screening Literature and Secondary Resources, 2012-2015

Considering the advantages and disadvantages of each of the models and in line with the social-technology school, this research adopts the Actor-Network Theory as designed by Mahring et al., 2004; Latour, 1987; Callon, 1999. ANT was adopted for this research because traditional adoption theories have limitations in capturing the constant technology advancements and the dynamic and evolutionary nature of technology adoption (Eze et al., 2011). Also, it is better suited for the particular features of SMEs. The literature review suggests that Actor Network Theory (ANT) may be suitable for this research because it is associated with the emerging perspective –that is the process that shaped the outcome of the interaction between technology, process and people (Cordella and Shaikh, 2006). As pointed out by Andrade and Urquhart (2010: 353) "*we live in the world made of both social and technology artefacts; we cannot detach society from technology –neither can we isolate technical in the abstrac*t". The key concepts of the ANT theory are presented in Tab. No. 6.

Table 6: Key concepts of Actor-Network Theory

ANT concepts and definitions	
Concept	***Definition***
Inscription	Inscription is a process where actors form values towards the technology or the extent the innovators determine or formulate what the technology or its functionalities are or should be (Faraj et al., 2004). Inscription is often influenced by an organisation's beliefs, previous patterns of IT use and expectations over what the technology is about and can do (Callon, 1991).
Transcription	The process of aligning numerous interests and beliefs of different actors with that of the key actors within the network. "Key Actors" are the competing actors that ensure that other actors support their claims in technology development and deployment (Sarker et al., 2006). It involves understanding how actors seek the interest of other human actors or convince others, directly or indirectly, in adopting new technologies (Callon, 1991).
Framing	Framing recognizes that actors not only inscribe beliefs, interests and values over technology, but such values may be dissimilar and detached from one another (Orlikowski and Gash, 1994).
Stabilization	Stabilization is where the relevant actors consider the problem as being solved (Bijker et al., 1989). Stabilization of technology does not evidently mean that technology is not amendable. Indeed, technology and business processes might change or adjust over time or as Bijker et al (1989) put it "closure by redefinition of a problem" which leads to inscription again.

This implies that this research approach challenges technology determinism and also looks at other social aspects such as the role of owner-manager or staff in ICTs adoption. In addition, this research does not consider ICTs adoption as one-off decision, but as a multidimensional process and that it is why it uses the term digitalization to encompass the complexity of the process. ANT is particularly relevant in a small business context because SMEs are flexible, unique, and associated with complex tasks and operate in a much more dynamic and unpredictable business environment. Using ANT as a theoretical lens, the theory may help to unveil how SMEs are likely to articulate their emerging ICTs needs and align the relevant actors in order to create a unique technology capability (Wenick, 2008: 322). In this way a better balance between technology and society will be provided in the analysis.

3.3 Digitalization of SMEs as a Journey

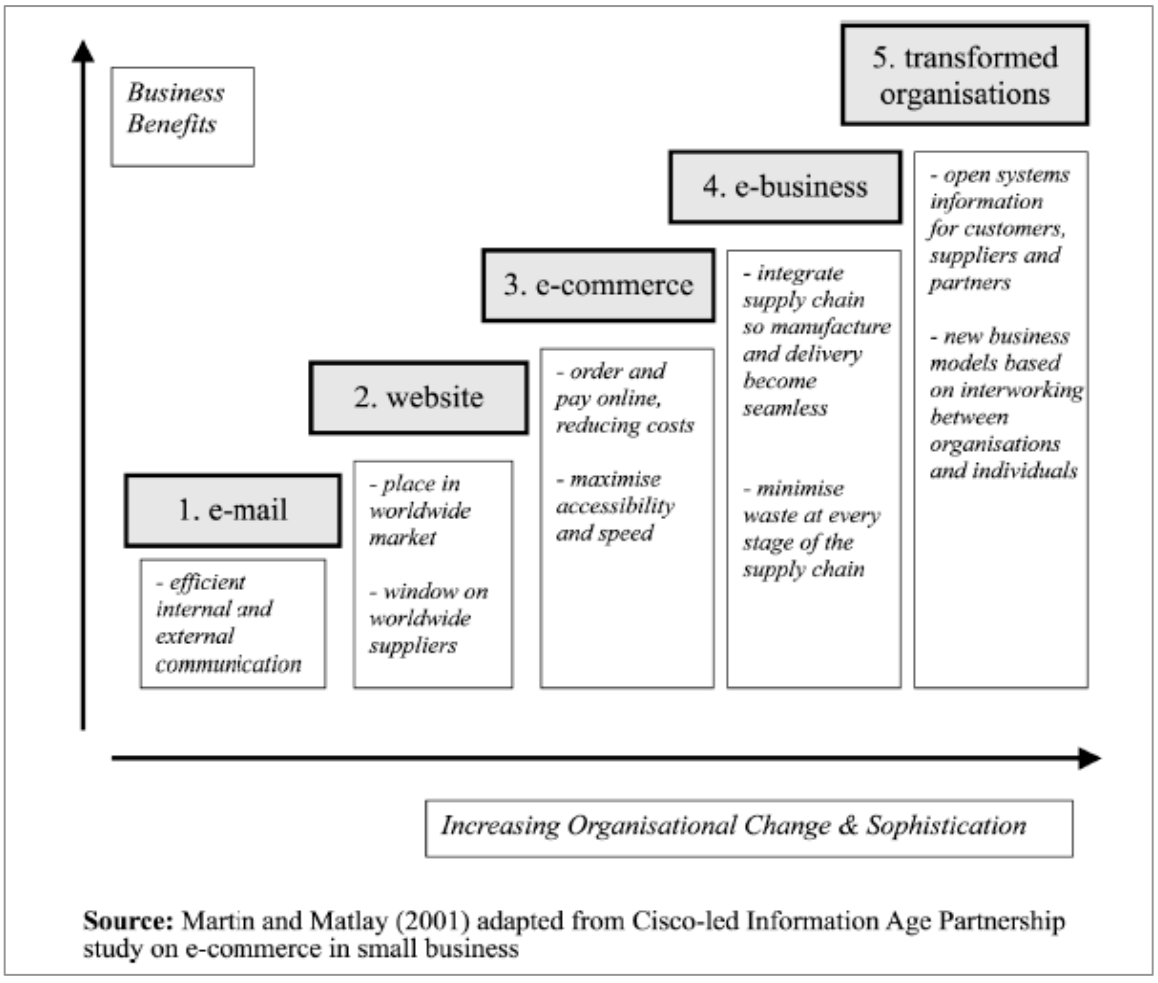
In lieu of the digital economy or knowledge-driven economy, all terms related to the rapidly and multidimensional changes of the way firms operate in markets nowadays due to the proliferation of ICTs in every aspect of life, SME sector has become more and more important. Studies show that currently the majority of SMEs worldwide struggle, on the one hand, against the difficulties caused by the economic crisis after 2008, while on the other hand they try to keep pace with a highly competitive and demanding market. SMEs are constantly looking to discover new ways to reduce costs, as well as seeking business opportunities that would provide them with an advantage in their competition with other companies. The implementation of ICTs solutions may represent the starting point for both the reduction of costs and the creation of new opportunities (EC, 2015; OECD, 2015). In addition, the mutual reliance between ICTs, business needs and economic factors has been the decisive factor that led to the emergence of business digitalization. This recent phenomenon marks a new stage in SMEs development and influences both the present and future dynamics of SME sector as to the way in which small businesses will use information technology in their daily activities.

The implementation of new technology has been recognized as an important process for transforming a business (Yu and Tao, 2009). These transformations are not only enabled by ICTs, but also dependent on the ability of organizations to adopt and implement emerging ICTs to streamline their business processes and sustain business competitiveness and growth continually (Yu and Tao, 2009). Organizations that constantly keep up with the new ICTs can take advantage of these technology applications. However, existing studies have shed limited light on how and why SMEs are adopting and implementing new ICTs applications over time (Ramsey et al., 2008). This research aims to advance our understanding of emerging ICTs adoption in SMEs or otherwise referred to as digitalization of SMEs from a dynamic and integrated process perspective in order to provide new insights on how SMEs continually adopt emerging ICTs. In order to do this, it is important to look at the literature

more specifically on the adoption process, the roles of actors, the factors influencing its adoption and the challenges facing actors.

There are different stages or levels of business digitalization. According to Matlay and Martin (2009) this process can be understood in the form of a business digitalization ladder as presented in Fig. No. 3 below.

Figure 3: Business Digitalization Ladder



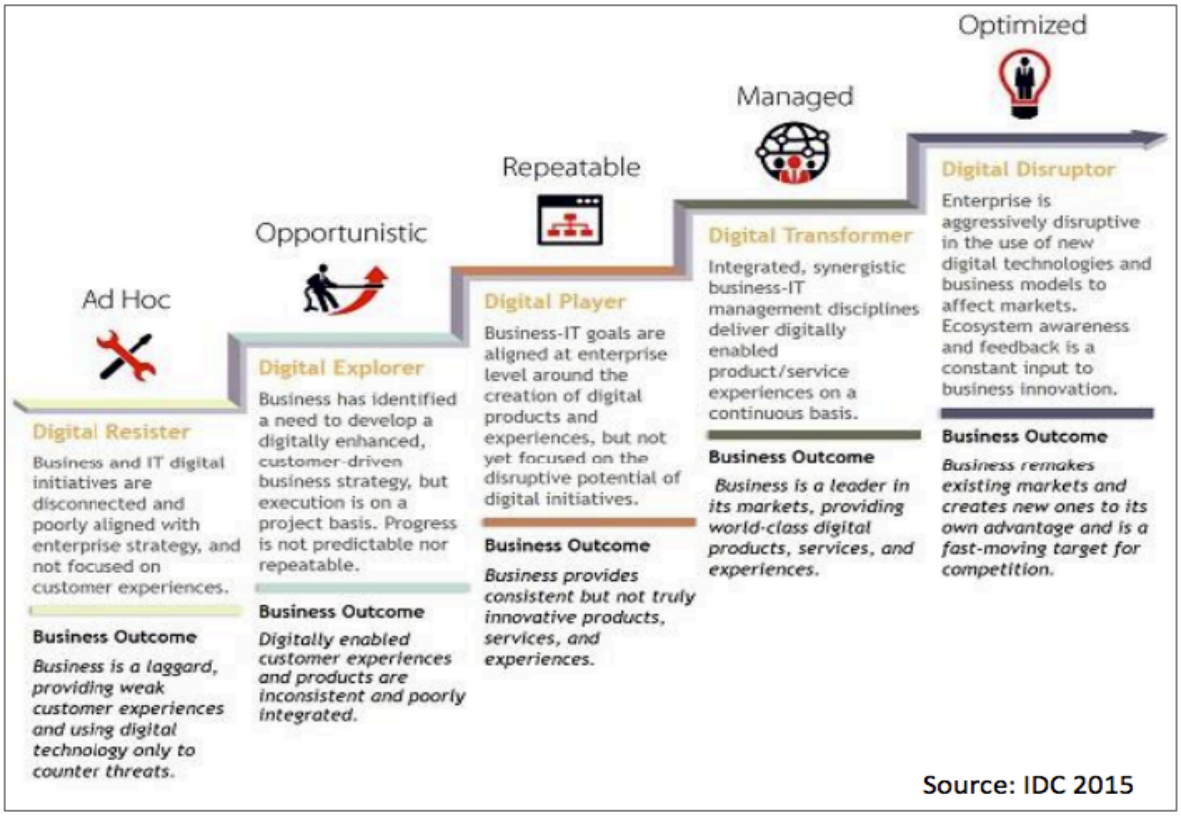
Source: Martin and Matlay (2001) adapted from Cisco-led Information Age Partnership study on e-commerce in small business

According to this model, business digitalization usually starts from using the internet for communication purposes through e-mail and then to developing website to be used as an introductory 'window' to the global market; then as the utilization level grows to the ecommerce ladder come the actual transactions of taking orders, buying, selling and payment

through the Internet. As the sophistication of the enterprise grows to e-business level, supply chain management comes to picture in easing the flow of materials. The ultimate level of utilization, according to the model, comes with systems built on total integrated engagement in the technology (Matlay & Martin, 2009). The model implies that advantages of utilization are obtained from the organizational change and the increase in ICT sophistication that the Internet facilitates. It also implies that change is progressive and greater sophistication of businesses arises from the supposed four unique qualities of the Internet namely; its ubiquity in allowing access from anywhere; its interactivity in facilitating collaboration; its speed in helping businesses to grow fast; and its intelligence in providing capability to retrieve, store and process information (Taylor & Murphy, 2004: 283). Consequently, as the organizational sophistication increases (the independent variable x-axis) the level of utilization and business benefit (the dependent variable y-axis) increases with it.

In order to attain the goal of full sophistication of business digitalization, firms must cross two digital divides. The first one is the possession of basic skills in ICT to operate e-mail and browse simple brochure websites for information. The second digital divide is the doorstep to e-business stage which requires advanced skills in ICT including research and development, as well as a range of specialist business skills and knowledge in areas like management, strategy and marketing (Taylor & Murphy, 2004: 283). The business digitalization ladder implies a deterministic view of change because it implies that SMEs have to follow the steps and if they do not finish the course of climbing to the top of the ladder, they have somehow failed in their growth endeavours. However, rather than considering these steps as clearly separate from one another, it is best to consider them as interlaying with each other. In addition, the process of business digitalization is always in transformation due to the emerging technologies and rapidly changing environment.

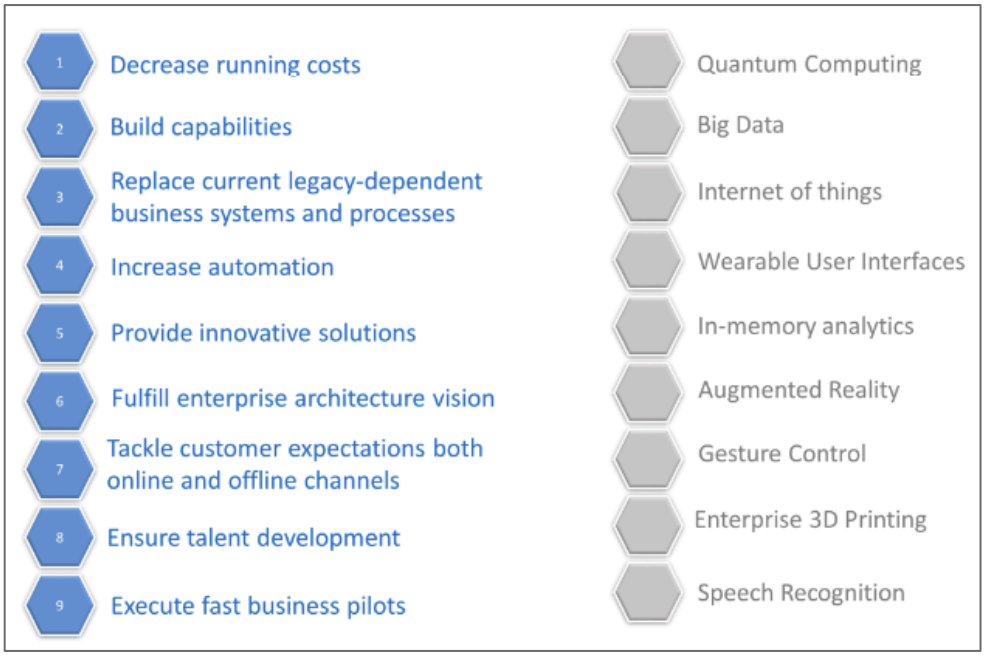
Figure 4: Business Digitalization Game



In business practice, it has been suggested that SMEs need to keep up with the Digitalization Game. This is also in line with the business digitalization ladder, but instead of providing the steps towards digitalization, it highlights the different roles played by SMEs in the so-called Digitalization Game. As shown in Fig. No. 4, the transformative processes go from a digital register or the ad hoc use of ICTs in SMEs to an optimized business digitalization or a digital disruptor, where there is constant usage and evaluation of ICTs. This model highlights also the business outcome per each of the stages. For example, with managed business digitalization, the SME is a digital transformer that delivers digitally enabled products and services and thus it is a leader in the market. In the digitalization journey of SMEs, those with a low degree of digitalization move along the blue bricks, whereas the leading SMEs move along the grey bricks by embracing the emerging technologies as seen in Fig. No. 5. Understanding where the SME is on the digitalization journey, also determines the amount

of change expected and the strategy on moving forward. This research will explore the degree of digitalization of SMEs in Albania by considering the ladder model and adopting it to the economic and social context in Albanian market.

Figure 5: Business Digitalization Game Board



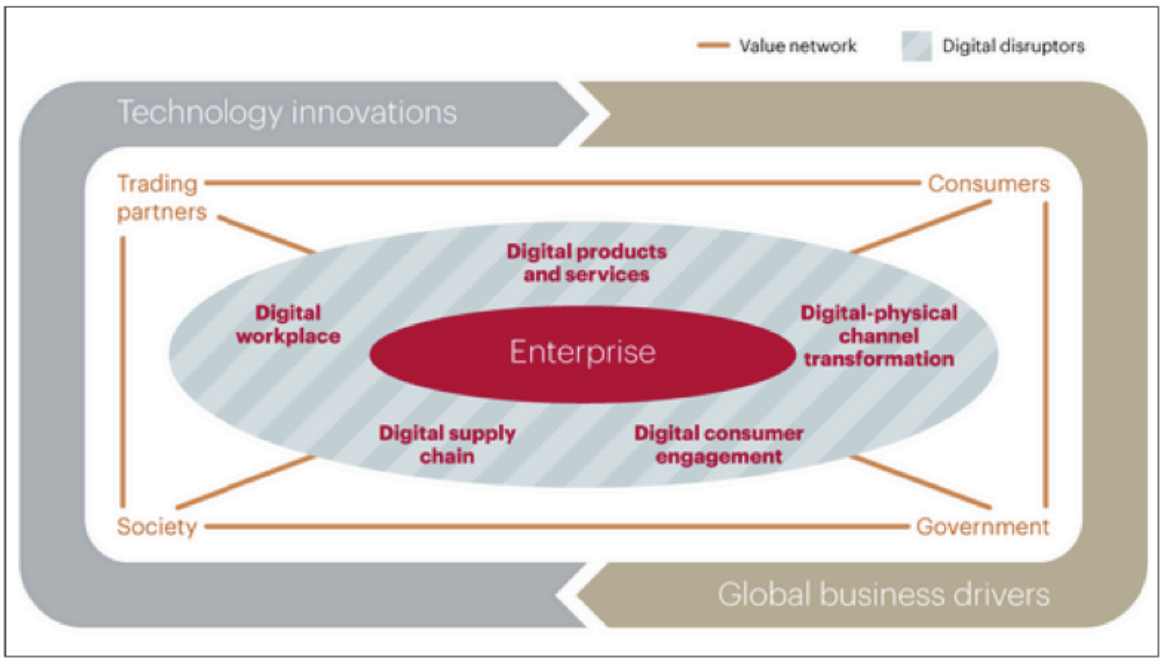
Source: IDC, 2015[7]

As such for SMEs is of paramount importance knowing which digital innovations truly disruptive, and which ones will be will not as this can mean the difference between success and failure as seen in the previous Chapter. As argued above no business sector or firm is immune to the transformative impact of digitization in the knowledge-driven or digital economy. Yet only those with sound strategies and a digital roadmap to harness the opportunities will be among tomorrow's leaders (EC, 2015; OECD, 2015; Gartner, 2014). Development of strategies for business digitalization is crucial for entrepreneurs, leaders, owners or managers in SMEs. Realizing breakthrough success in digital business requires not only forward-thinking strategies but also a transformation of the company's underlying

[7] Also refer to the Digital Business Forum and Gartner Publications.

functions and organizations (Matlay & Martin, 2009; Gartner, 2014). Ultimately, it still comes down to the basics: people, processes, and systems. Thus, while digital transformation may "*require a sweeping change across the organization, it can also be more targeted—toward improving business operations within a specific function by leveraging the power of digital*" (Gartner, 2014: 1). For instance, business consultancy services focus on the digital foresight as the key aspect of the business digitalization process as shown in Fig. No. 6 below.

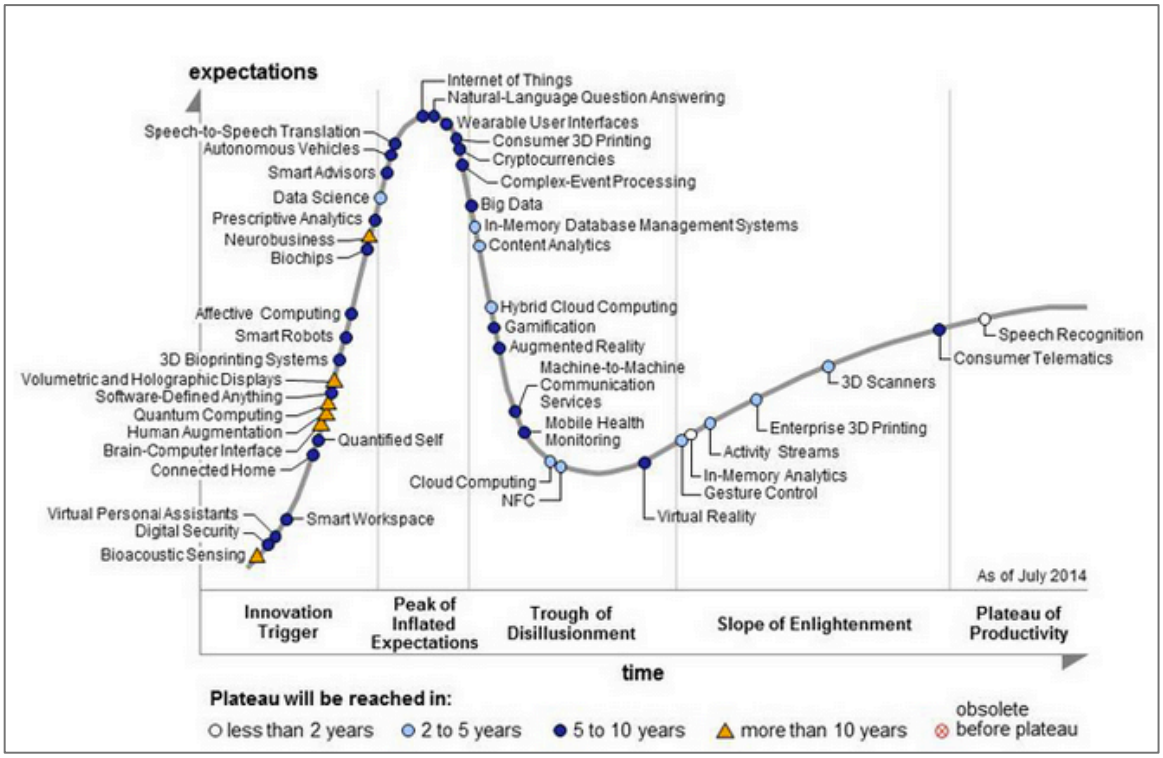
Figure 6: Framework for Strategic Digital Foresight as in Business Practice



Source: A. T. Kearney, 2015.

In addition to the above analysed business digitalization journeys, Gartner (2014) introduce a cycle for the business digitalization by considering the emerging technologies as well, which is presented in Fig. No. 7. As set out on the Gartner road map to digital business, there are six progressive business era models that enterprises can identify with today and to which they can aspire in the future: Analog, Web, E-Business, Digital Marketing and Autonomous. Since the Hype Cycle for Emerging Technologies is purposely focused on more emerging technologies, it mostly supports the last three of these stages: Digital Marketing, Digital Business and Autonomous (Gartner, 2014).

Figure 7: Hype Cycle for Digitalization & Emerging Technologies



Source: Gartner, 2014.

According to the Hype Cycle, the Digital Marketing stage sees the emergence of the mobile, social, cloud and information. Enterprises in this stage focus on new and more sophisticated ways to reach consumers, who are more willing to participate in marketing efforts to gain greater social connection, or product and service value. The following technologies on the Hype Cycle represent the Digital Marketing stage: Software-Defined Anything; Volumetric and Holographic Displays; Neurobusiness; Data Science; Prescriptive Analytics; Complex Event Processing; Big Data; In-Memory DBMS; Content Analytics; Hybrid Cloud Computing; Gamification; Augmented Reality; Cloud Computing; NFC; Virtual Reality; Gesture Control; In-Memory Analytics; Activity Streams; Speech Recognition.

Digital Business is the first post-nexus stage on the road map and focuses on the convergence of people, business and things. The Internet of Things and the concept of blurring the physical and virtual worlds are strong concepts in this stage (Gartner, 2014).

Physical assets become digitalized and become equal actors in the business value chain alongside already-digital entities, such as systems and apps. 3D printing takes the digitalization of physical items further and provides opportunities for disruptive change in the supply chain and manufacturing. Emerging technologies can be identified in this stage: Bioacoustic Sensing; Digital Security; Smart Workspace; Connected Home; 3D Bioprinting Systems; Affective Computing; Speech-to-Speech Translation; Internet of Things; Cryptocurrencies; Wearable User Interfaces; Consumer 3D Printing; Machine-to-Machine Communication Services; Mobile Health Monitoring; Enterprise 3D Printing; 3D Scanners; Consumer Telematics.

Autonomous represents the final post-nexus stage. This stage is defined by an enterprise's ability to leverage technologies that provide humanlike or human-replacing capabilities. Using autonomous vehicles to move people or products or using cognitive systems to write texts or answer customer questions are all examples that mark the Autonomous stage. Enterprises seeking to reach this stage to gain competitiveness should consider these technologies on the Hype Cycle: Virtual Personal Assistants; Human Augmentation; Brain-Computer Interface; Quantum Computing; Smart Robots; Biochips; Smart Advisors; Autonomous Vehicles; Natural-Language Question Answering.[8]

3.4 Digitalization and ICTs emerging trends in SMEs: Where does BI stand?

The first contemporary use of the term "digitalization" came into use in the 1970s in conjunction with computerization and it referred to the "digitalization of society" in the context of the start of proliferation of information and communication technologies. From this beginning, writing about digitalization has grown into a massive literature—one concerned less with the specific process of converting analogue data streams into digital bits (digitization) than the ways that digital media structure, shape, and influence the

[8] See also Gartner Publications on Business Digitalization, available at http://www.gartner.com/newsroom/id/2819918 (Accessed, February, 2014).

contemporary world – digitalization (Atkinson, 2012; Castells, 2010). In this sense, digitalization has come to refer to the structuring of many and diverse domains of social life around digital communication and ICTs infrastructures. As such Castells (2010) observes the digitalization of the new economy, society and culture and views digitalization as one of the – if not *the* – defining characteristics of the contemporary society. The mediator variable thus is the advancements in information and communication technologies. Scholars have focused on the rise of globalization, a process that has both facilitated, and been facilitated by, the expansion of the economy beyond national borders through digitalization (Vogelsang, 2010). The digitalization and globalization of the economy has subsequently eroded national sovereignty, reshaped conceptions of materiality and place, and facilitated new circulations of culture, capital, commodities, and people (Atkinson, 2012).

Digitalization is linked to *infrastructural convergence*. Because digitized information can be manipulated and understood by any digital system, "*any network can be used to transmit all kinds of digital signals*" (Storsul & Fagerjord, 2008: 1320). This means that a single physical means—t wires, cables, or airwaves—may carry services that in the past were provided in separate ways. Second, *device* or *terminal convergence* refers to how digitization entails the consolidation of multiple media devices into one (Storsul & Fagerjord, 2008: 1320). The best example here is the smartphone, which now takes the place of a number of former devices (telephone, computer, camera, audio recorder, calendar, calculator, notepad, etc.). As network infrastructures and devices converge, there is a corresponding *functional convergence* in "services" (Storsul & Fagerjord, 2009: 1320). The smartphone again offers a telling example. Not only does the smartphone physically consolidate a number of devices, but also it performs a number of functions associated with other mediums. The convergence works in both directions: not only can a single device now perform multiple functions, but also a service can now be provided in several different physical ways. As different services converge through common infrastructures as a result of digitization, there is often a corresponding market convergence. For example, computing, telecommunications, and media and information are no longer separate business sectors. Also, there is a blurring of the distinctions between infrastructures and services, software and content.

In this research, business digitalization refers to the structuring of a firm's multiple dimensions around digital communication and ICTs infrastructures. More concretely it refers to the process of developing, adopting and using ICTs systems, tools, application and infrastructure starting from the basics ones such as computers to advanced ICTs such as Business Intelligence, Analytics or Knowledge Management tools. As such digitalization can be conceived in terms of business processes facilitated by advanced ICTs systems and the technological foundation of the Internet.

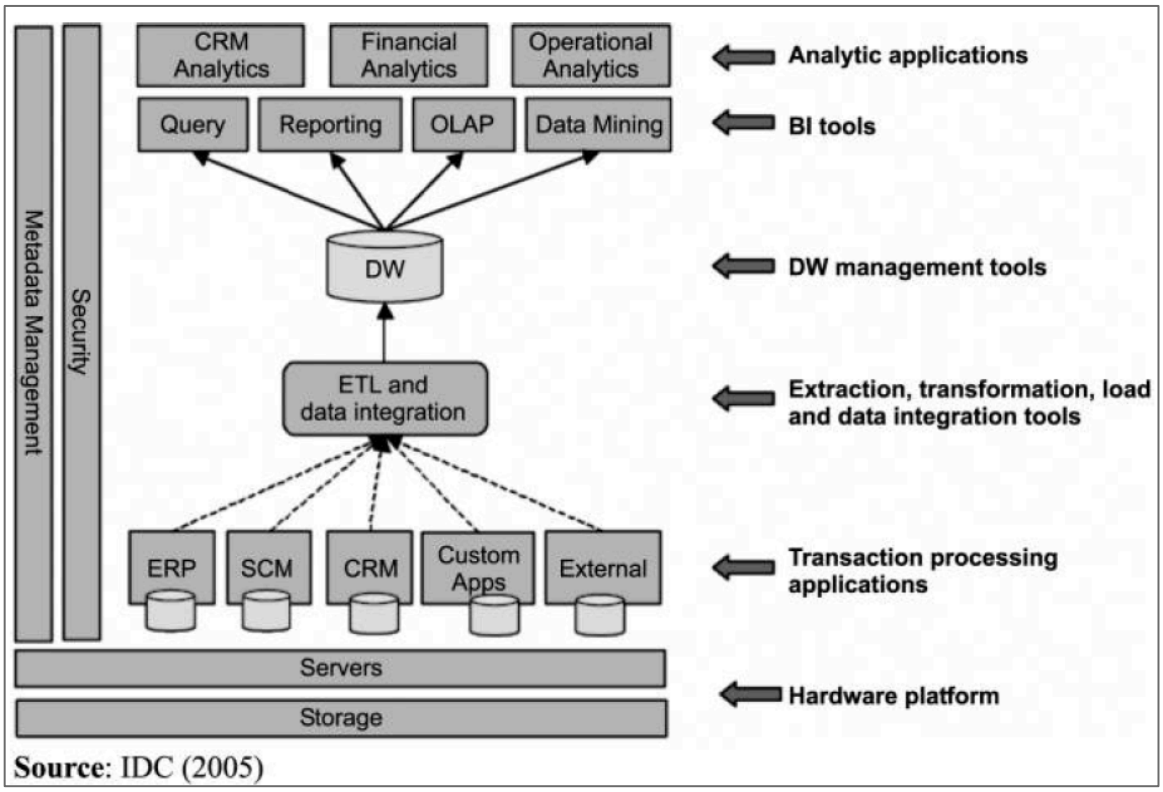
Information Technologies refers to anything related to computing technology, such as networking, hardware, software and the Internet. Information and Communication Technologies refers to technologies that provide access to information through telecommunications. It thus adds to the IT definition the focus on communication. ICTs include the Internet, wireless networks, cell phones, and other communication mediums. For the purposes of this research advanced ICTs is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them such as BI and analytics.

BI is a systematic process, by which knowledge needed for an organization to compete effectively, is created, captured, shared and leveraged (Foo et al., 2007). The source of such knowledge may be internal or external, individual or collective, historical or forecasted. BI hence consists of a dynamic and continuous set of processes and practices embedded in individuals, as well as in groups and organizational structures. At any point in time, any part of a given organization may be engaged in several different aspects of BI that attempts to constitute a 360 view of its business health status (Sharma, and Djiaw, 2012: p.114). According to Alavi and Leidner (2001), it is not the quantity of knowledge capital that is a strategic advantage but the organization's ability to effectively apply the existing knowledge to create new knowledge.

Other ways of conceptualizing BI is that of Business Intelligence is defined as systems that collect, transform, and present structured data from multiple sources (Negash, 2004) reducing the needed time to obtain relevant business information and enable their

efficient use in management decision making process (Den Hamer, 2004), allowing dynamic enterprise data search, retrieval, analysis, and explanation of the needs of managerial decisions. Business Intelligence focuses on collecting, process and present data concerning customers, competitors, the markets, technology, product and the environment. Fig. No. 8 below shoes a model of BI implementation.

Figure 8: Business Intelligence Implementation Model



Business intelligence (BI) is a new business-driven phenomenon that can add values for organizations. Watson (2009) defined BI as "*a broad category of applications, technologies, and processes for gathering, storing, accessing, and analysing data to help business users make better decisions*". This study adopts the broad definition of BI. At the conceptual level, BI is an umbrella term for systems and procedures that transform raw data into useful information for managers to make better decisions (Wixom and Watson 2010). At the operational level, BI is an information system that has three elements: (i) *a technological element* that collects, stores, and delivers information and includes the general technology of

BI that performs basic functions to support generic actions in BI: gather, store, access, and analyse data; (ii) a *human competencies element* on the abilities of human beings to retrieve data and deliver it as information, to generate knowledge, and to make decisions based on the new knowledge; and (iii) a third element that supports specific *business processes* that make use of the information or the new knowledge for increasing business values (Laursen and Thorlund 2010). The crucial success factors of BI implementation are presented in Tab. No. 7 below as analysed by the literature review.

Table 7: Business Intelligence Critical Success Factor in Literature Review

Author	Factors
Farley (1998)	Fast implementation, Ability to adjust to business requirements, Useful information, Ease of navigation
Watson and Haley (1997)	Management support, Adequate resources, Change management, Metadata management
Chen et al (2000)	User satisfaction
Sammon and Finnegan (2000)	Business driven approach, Management support, Adequate resources including budgetary and skills, Data quality, Flexible enterprise model, Data stewardship, Strategy for automated data extraction methods/tools, Integration of data warehouse with existing systems, Hardware/software proof of concept.
Little and Gibson (2003)	Management support, Enterprise approach, Prototyping data warehouse use, Metadata, Sound implementation methodology, External support (consultants)
Mukherjee and D'Souza (2003)	Data quality, Technology fit, Management support, Defined business objectives, User involvement, Change management.
Rudra and Yeo (2000)	Technical factors (data quality and data consistency, etc.)
Joshi and Curtis (1999)	Project-related factors (project plan must match with business demands and the scope of project management), Technical factors (DBMS selection, data loading, and efficiency of data access, etc.)
Wixom and Watson (2001)	Data quality, System quality, Management support, Adequate resources, User participation, Skilled project team.
Chenweth et al (2006)	Management support, Champion, Architecture (data marts), Organisational Fit/User Acceptance
Yeoh and Koronios (2010)	Management support, Clear vision and business case, Business champion, Balanced team, Iterative development approach, Change management, Suitable technical framework, Data quality

**Source: Author based on literature review*

There are many studies that support BI initiatives and their contribution in aligning organizational goals with objectives. One of them is from report based on a survey of 423 organizations from Europe and the USA (KPMG, 2000). In the survey, KPMG identified several expected BI outcomes. They are:

- better decision making;

- better customer handling;
- faster response to key business issues;
- improved employee skills;
- improved productivity;
- increased profits;
- sharing best practices;
- reduced costs;
- increased market share;
- creation of new business opportunities; and
- improved new product development (Sharma, and Djiaw, 2012: p.115).

The aim of this research is to investigate the significance of BI by empirically demonstrating the way BI can contribute to firms' performance. BI and analytics are thus conceived within the broader business digitalization frame of this research.

3.5 Chapter Concluding Remarks

This chapter provided the analysis of the literature review in regard to the digital economy and knowledge-driven economy concepts and the prevalence of innovation. Secondly, the chapter looked into the models for ICTs adoption and offered a thorough review of the literature developed so far on the main models and also the implications for the scope of this research. The third part concentrated on the theoretical background on business digitalization as a journey by proving the ladder model as well as the cycle hype roadmap of digitalization that encompasses emerging technologies. In addition, a special focus was placed on Business Intelligence and analytics. This chapter also presented the research model and conceptual framework for this doctoral thesis, which is then further explained in the following methodology part.

RESEARCH METHODOLOGY

The second part of the doctoral thesis is that of research methodology. This part contains Chapter IV, namely research methodology and design. This chapter is structured as follows: the first section introduces the research methodology approach by looking at both positivism and interpretivism as research methodology approaches and it also provides the rationale for the choice made. The second section justifies the research design by looking at deductive and inductive approached. The third section, details the methods, data collection and analysis. This section provides in depth analysis and justification of the research process and methods applied from sampling to sample size, challenges of data collection and models of analysis. The last part of the methodology chapter explains the quality of research by looking at validity, reliability and ethical considerations of the data collection.

CHAPTER IV

RESEARCH METHODOLOGY AND DESIGN

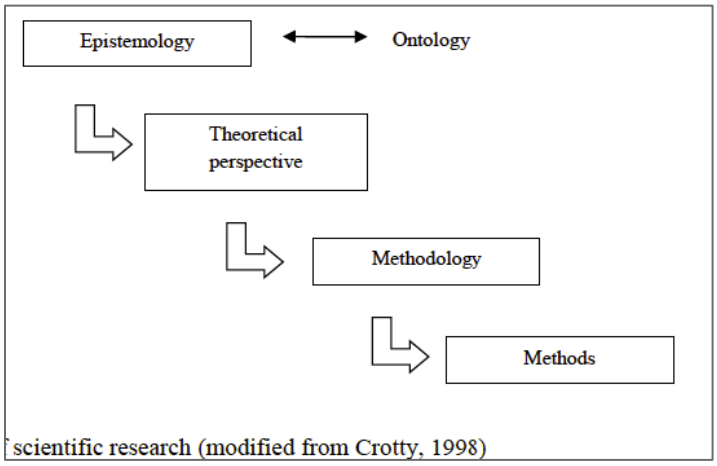
4.1 Methodology Approach and Rationale[9]

The starting point of the research methodology is to situate the research model and design with a certain approach and provide a rationale for the choices made by the researcher. The literature on methodology points to four basic elements any research as shown in Fig. 9 below, i.e. epistemology and ontology, theoretical perspective, methodology and methods. Epistemology is a way of understanding and explaining how we know what we know (Mathews & Ross, 2010).

There are two main epistemological views: objectivism or positivism and interpretivism. Objectivism is the epistemological view that things exist as meaningful entities independently of consciousness and experience. In this objectivist view, understandings and values are considered to be objectified in the people we are studying and, if we go about it in the right way, we can discover the objective truth. Interpretivism rejects this view of human knowledge. Truth, or meaning, comes into existence in and out of our engagement with the realities in our world. Meaning is not discovered, but constructed (Mathews & Ross, 2010). In the management field, there are many researchers who adopt a pragmatic view by deliberately combining methods drawn from different traditions (Mathews & Ross, 2010; Sander, 2009).

[9] This chapter has been developed particularly with the help of Research Methodology Professor at the Lappeenranta University of Technology during the Fellowship in 2015-2016.

Figure 9: Basic Elements of Research



scientific research (modified from Crotty, 1998)

In addition to epistemological considerations, the philosophical foundation of scientific research can be characterized by the means of ontology. Ontology is the study of being (Crotty, 1998). The central point for orientation here is the question of whether social entities can and should be considered objective entities that have a reality external to social actors, or whether they can and should be considered social constructions built up from the perceptions and actions of social actors (Bryman, 2008). Finally, axiology influences research, in addition to epistemology and ontology. Axiology refers to the role of values in performing a particular research (Saunders et al., 2009). Based on literature review, Tab. No. 8 presents a comparative perspective between positivism and interpretivism, which helped to make the adequate research methodology choice.

Table 8: Comparison between Positivism and Interpretivism

Philosophical Assumption	Positivism	Interpretivism
Ontology (Researcher's view of the nature of reality)	The reality is external, objective and is not dependent on any social actions. It is independent of the researcher.	The reality is intrinsic, subjective and is dependent on social actions and socially constructed. It is multiple in nature and may change. It may be perceived differently by researchers.
Epistemology (Researcher's view on what constitutes valid and acceptable knowledge)	Phenomena that are observable can provide credible data and facts. The researcher is independent of the phenomena or the participants being researched. The research subject is reduced to causality and law, like phenomena.	Research phenomena can subjective and socially motivated. The researcher interacts with the phenomena or the participants being researched. The research focuses on the details of the situations and subjective reality and motives behind the situations and social actions.
Axiology (Researcher's view on role of value in research)	The researcher is unbiased and the research is carried out in a value-free environment.	The researcher acknowledges their personal values and beliefs. The researcher is subjective and the researcher is an integral part of the research process. The research is value-bound.
Methodological Approach (Research process)	Deductive approach. Research is context-free. Generalisation leads to prediction, explanation and understanding.	Inductive approach. Research is context-bound. Patterns and/or theories are developed for understanding.

Source: Adopted by Saunders, et.al., 2009.

The second element of scientific research is theoretical perspective. Theoretical perspective means the philosophical stance informing the methodology and thus providing a context for the process and grounding its logic and criteria. Based on the above, according to Saunders et al. (2009), there are four main traditions of management research: positivism, realism, interpretivism, and pragmatism as shown in Tab. No. 9. In management research, the basic separation is usually made by positivism and interpretivism or a combination of both.

Table 9: Theoretical Perspectives on Management Research

	Positivism	*Realism*	*Interpretivism*	*Pragmatism*
Ontology: the researchers' view of the nature of reality or being	External, objective, and independent of social actors.	Is objective. Exists independently of human thoughts and beliefs or knowledge of their existence, but is interpreted through social conditioning.	Socially constructed, subjective, may change, multiple.	External, multiple, view chosen to best enable answering of research question.
Epistemology: the researchers' view regarding what constitutes acceptable knowledge	Only observable phenomena can provide credible data, facts. Focus on causality and law like generalizations, reducing phenomena to simplest elements.	Observable phenomena provide credible data, facts. Focus on explaining within a context or contexts.	Subjective meanings and social phenomena. Focus upon the details of situation, a reality behind these details, subjective meanings motivating actions.	Either or both observable phenomena and subjective meanings can provide acceptable knowledge dependent upon the research question. Focus on practical applied research, integrating different perspectives to help interpret the data.
Axiology: the researchers' view of the role of values in research	Research is undertaken in a value-free way; the researcher is independent of the data and maintains an objective stance.	Research is value laden; the researcher is biased by worldviews, cultural experiences, and upbringing. These will impact on the research.	Research is value bound; the researcher is part of what is being researched, cannot be separated, and so will be subjective.	Values play a large role in interpreting results; the researcher adopting both objective and subjective points of view.
Data collection techniques most often used	Highly structured, large samples; measurement, quantitative, but can use qualitative.	Methods chosen must fit the subject matter; quantitative or qualitative.	Small samples, in-depth investigations, qualitative.	Mixed or multiple method designs; quantitative or qualitative

Source: Adopted by Saunders, et.al., 2009.

Theoretical perspective also informs the methodology used in research. Methodology refers to the strategy, plan of action, process, or design lying behind the choice and use of particular methods and linking the choice and use of methods to the desired outcomes. Finally, methods refer to the techniques or procedures used to gather and analyse data related to some research

question or hypothesis (Crotty, 1998). Tab. No. 10 presents the key features of both paradigms and the concrete methods that derive from each of one.

Table 10: Methodology deriving from each paradigm

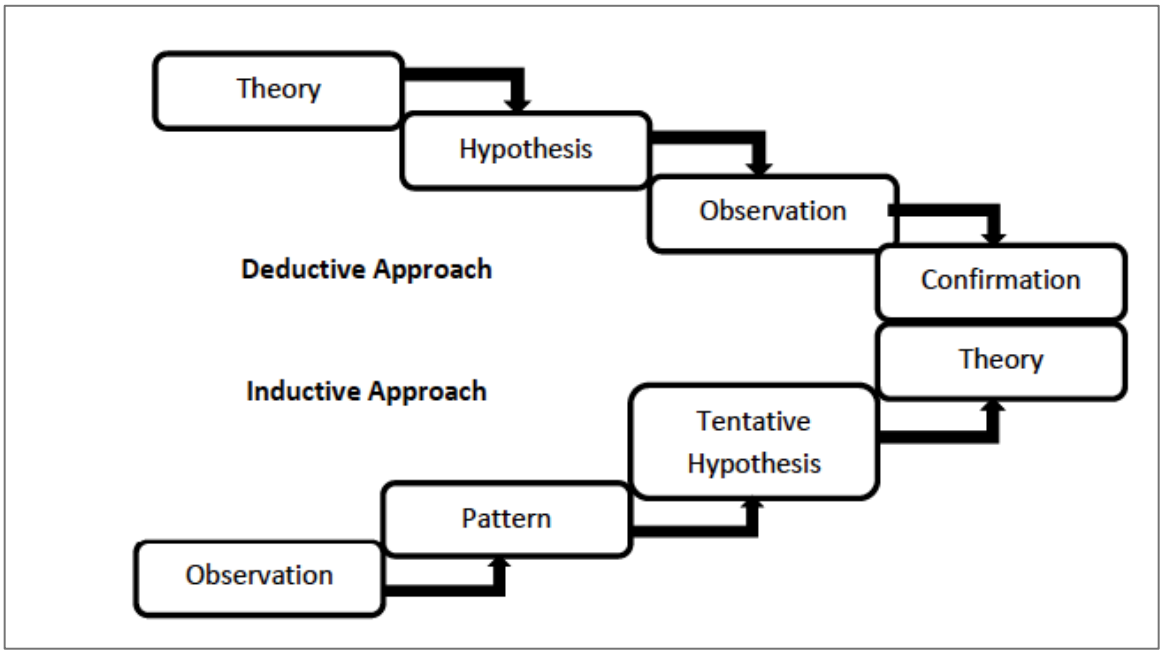
Positivist paradigm	Interpretivist paradigm
Common terms	
Mainstream	Alternative
Quantitative	Qualitative
Objectivist	Subjectivist
Scientific	Humanistic
Experimentalist	Constructivist
Traditionalist	Nominalist
Main features	
Tends to produce quantitative data	Tends to produce qualitative data
Uses large samples	Uses small samples
Concerned with hypothesis testing	Concerned with generating theories
Data is highly specific and precise	Data is rich and subjective
The location is artificial	The location is natural
Reliability is high	Reliability is low
Validity is low	Validity is high
Generalises from sample to population	Generalises from one setting to another
Methodologies	
Cross-sectional studies	Action research
Longitudinal studies	Ethnography
Surveys	Feminist perspective
Database analysis	Grounded theory
Meta-data analysis	Hermeneutics
	Participative enquiry

Source: Adopted by Saunders, et.al., 2009.

Another distinction made following the different methodological paradigms is the one between deductive and inductive approach. The deductive approach implies that the research

design starts from theory in order to develop a hypothesis and continues with objective observation and then either confirms or rejects the hypothesis. The inductive approach implies the opposite research design, i.e. it is not a theory testing, but a theory constructing. It starts from observation and moves on to build up of theory. In practice of research, combined approaches are in fact used (Mathews & Ross, 2010). The differences between deductive and inductive approach is demonstrated in the following figure.

Figure 10: Deductive vs. Inductive Approached



Source: Saunders, et.al. 2009

This research follows a combined methodology approach and an exploratory approach that best serves to answer the research questions. The research has as a starting point the positivist approach but argues that the research scope is complex, and it requires complementing the positivist approach with the interpretivism in order to compensate for each other shortcomings and better respond to the research question. From the positivist approach this research understands that reality is external and objective, but at the same that our perceptions about the reality are also crucial and therefore knowledge is of significance if it is based both on observations and constructions. Research cannot be undertaken in a value-free way. This

means that the researcher attempts to be independent of the data and maintains an objective stance (Saunders et al., 2009), but the researcher cannot be fully and entirely free of its experiences and value system. Therefore, these values play a role in interpreting the findings of the document analysis and in-depth interviews. Based on the combined methodology approach, a triangulation method is used of document analysis, survey and in-depth interviews. The Tab. No. 11 summarizes the rationale for this research methodology approach.

Table 11: Summary of the Research Methodology Focus and Rationale

Ontology	Reality exists objectively and can be measured, but the dimension of the construction of reality cannot be neglected – Reality is multiple. Perceptions are important, because they are the basis for entrepreneurs' actions.
Epistemology	Objective observation and subjective meanings and interpretations can provide substantive knowledge. Focused on applied research and use of various perspectives to respond to research question best way possible.
Axiology	Values of researcher play a role in interpreting the data. Researcher adopts both subjective and objective stance.
Methodology and Theory Building	Deductive reasoning logic is adopted. The basic principle of deductive approach are applied: a search to explain causal relationships between variables; structured methodology to facilitate replication; concepts need to be operationalized in a way that enables facts to be measured quantitatively; reductionism, which means that problems as a whole are better understood if they are reduced to the simplest possible elements; and generalization by selecting a sample of sufficient numerical size. Cautious is shown in generalization of findings and focus in put on economic context.
Research Design	Triangulation and complementation with secondary resources
Methods	Document analysis, survey, in-depth interviews
Data Collection and Analysis	Analytical Statistics for quantitative data Thematic Analysis for qualitative data
Role of researcher	The researcher has personal experience in set up and development of ICTs systems and start-up of a SME. The approach of the researcher is independent, but the data analysed based on document analysis and in-depth interviews reflect the values and experiences of the researcher.

Source: Author, January 2016

One of the epistemological assumptions of this study is that the world can be understood not only from objective measurements, but also equally important from the point of view of the

individuals directly involved in the activities in question. In line with this assumption, the entrepreneur or small firm owner-manager is seen to be the most appropriate informant, and the research methods used is believed to provide valid information about the research phenomena. In this research, an entrepreneur is defined as the person who actually leads the firm and is the respondent in empirical surveys and case studies for observations and in-depth interviews. Thus, he or she may be a founder or a successor of the firm, and an owner-manager or a hired manager of the firm. Therefore, the research is conducted from a firm-internal viewpoint, which in the case of SMEs – means the entrepreneur's viewpoint. The information collected is based on the subjective understandings and interpretations made by the entrepreneurs. This is done either via the survey with closed questions or the in-depth interviews with selected case studies. However, the research does not rely only on one source of information. It uses triangulation to ensure reliability as it will be explained the following section.

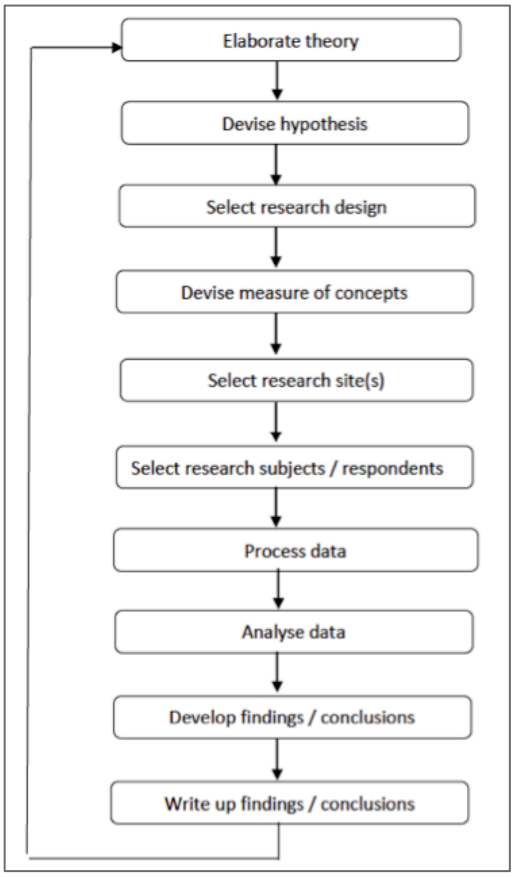
Quantitative data from the survey will be complemented with qualitative data from in-depth interviews and data from secondary resources collected through document analysis. Also, the hypotheses and the unit of analysis have been clearly defined and access to data means that random selection of an appropriate data set is possible. In the case of the survey, the researcher is observing the phenomenon as an outsider for credible data and facts. Hypotheses are formed based on the existing literature and are being tested from the data collected from the unit of analysis of this study. Every research choice has both advantages and disadvantages. However, the combination of approaches attempts to compensate and offer and integrated view.

4.2 Research Design Process

Following the exploration of research methodology approach and rationale, this section presents the research design and process. Mathews and Ross (2010) present a scheme for the main steps of the research process from elaboration of theory to write up of findings as seen in Fig. 11 below. The research process for this thesis involved three main phases: first, the

desk research and literature review, which also served to develop the conceptual framework and the hypotheses; second, the fieldwork, which includes data collection and initial analysis; third, the research thesis write up and provision of recommendations.

Figure 11: Research Design – Key steps

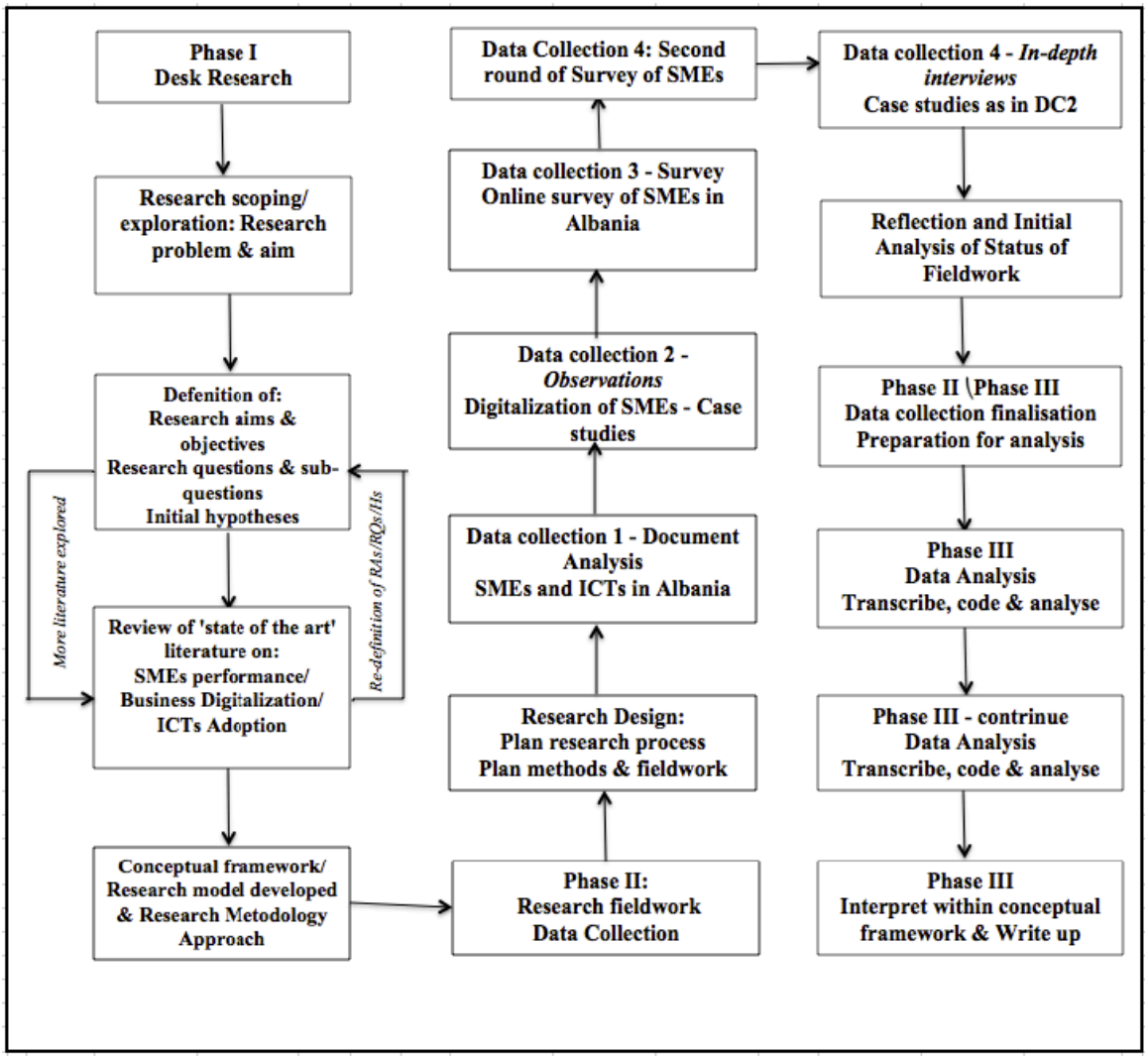


Source: Mathews & Ross, 2010

The desk research served to review and screen the existing literature on management and ICTs research field as the two main study fields informing the scope of this doctoral thesis. After the screening was completed, it was possible to zoom into specific literature, books and journal articles that specifically related to performance of SMEs and adoption of ICTs systems by SMEs. The desk research used secondary resources and served to write up the theoretical background as outlined in Chapter II and III of this thesis. This phase served to develop the conceptual framework and build the research model, which was then

operationalized with the concrete hypotheses. The results of the literature review served also to operationalize the variables, which will be presented in the next section. The methodology approach derived also from the theoretical framework and by the end of the desk research. This phase was followed by the fieldwork and data collection as presented in Fig. No. 12 below.

Figure 12: Detailed Research Process of Doctoral Thesis



Source: Author based on entire research process

During the second phase of the research, four main data collection steps were undertaken followed by the data analysis and interpretation. This will be explained in detail in the next section.

4.3 Quantitative Study: Methods and Data Collection

4.3.1 Survey method

Survey methods are used mainly for two purposes in business and management research studies. The first purpose of the survey is to be able to provide an accurate representation of the phenomena being researched through descriptive surveys, and the second one is to determine the existence of a relationship between variables through analytical surveys (Mathews & Ross, 2010). One of the main objectives of this study is to determine the relationship between business digitalization and firm performance. Hence, a survey method is an appropriate method for collecting the data. The survey method is very popular among researchers in business and management research for various reasons. This method is ideal and economical for collecting a large number of data, targeting a large population. It also gives considerable control over cost and time, as the findings could be generalized to the larger population through appropriate sampling techniques (Saunders et al., 2009). In addition, an investigation of empirical studies in this area demonstrates that survey is the most used method of data collection as illustrated in the following table:

Table 12: Overview of previous empirical studies on the topic

Author & Year of Publication	Research method	Independent variables	Results
Zhu & Kraemer (2005) Activity analysed: E-business usage and value (post-adoption variation)	Quantitative survey Structural equation modelling (PLS) was employed with a data set of 624 retail industry firms across 10 countries. The integrated research model was grounded in the innovation diffusion literature and resourcebased theory which featured technological, organisational and environmental factors used to examine e-business usage and value creation.	E-business use: Technology competence Org. size Org. international scope Org. financial commitment Competitive pressure Regulatory support E-business value: Front-end functionality Back-end integration E-business use	E-business use: Technology competence Org. size Org. financial commitment Competitive pressure Regulatory support E-business value: Front-end functionality Back-end integration E-business use The study reported significant differences in the firms' e-business use and value between developed and developing countries.
Zhu et al. (2003) Activity analysed: Electronic business (EB) adoption	Quantitative survey Data source was ECaTT, a data set developed by Empirica, a research institute based in Bonn, Germany. (The Logit model was used in a data set of 3100 businesses and 7500 consumers from eight European countries.)	Technology competence Firm scope Firm size Consumer readiness Lack of trading partner readiness Competitive pressure Industry dummies Country dummies	Technology competence Firm scope Firm size Consumer readiness Lack of trading partner readiness Competitive pressure Low EB intensity countries were similar to full sample while high EB intensity countries differed.
Molla & Licker (2005) Activity analysed: E-commerce adoption and institutionalisation (developing country perspective)	Quantitative survey Multiple discriminant function analysis was conducted with a data set collected in South Africa.	Perceived org. e-readiness: Awareness Resources Commitment Governance Perceived external e-readiness: Government e-readiness Market forces e-readiness Support industries e-readiness	Organisational factors, especially the human, business and technological resources, and awareness were more influential than environmental factors in the initial adoption of e-commerce. Environmental factors, together with commitment and the governance model that organisations installed, affected ecommerce institutionalisation
Madden et.al (2013) Dependent variable: Small firms online market entry	Quantitative survey Multiple discriminant function analysis was conducted with a data set collected in South Africa.	The study included strategic reasons—efficiency, market expansion, introducing new goods, responding to customer requests, supplier requirements, anticipating competition—for entry into online business and the effect on market performance with various firm characteristics, industry characteristics and web investment.	Firms that enter into the online market for market expansion are successful while firms that targeted cost reduction were disappointed. The study had no evidence that blended firms enjoyed any important advantage over their virtual competitors.
Jehangir & Downe (2011) Activity analysed: Business performance	Quantitative survey. Linear regression was used with a data set of 243 Malaysian manufacturing firms.	Business performance: IT infrastructure IT human resources E-commerce capability	E-commerce capability: IT infrastructure IT human resources Business performance: E-commerce
Powell & Dent-Micallef (1997) Activity analysed: IT and firm performance	Empirical study Quantitative survey	Human resources Business resources Technology resources Dependent variable IT performance Overall performance Profitability Sales growth Decision-maker characteristics included innovativeness and IS knowledge.	Human complementary resources accounted for significant overall performance variance–with the human resources set yielding a large positive coefficient for all performance measures. Technology resources did not account for any significant firm performance variance: they only influenced IT performance.
Thong (1999) Activity analysed: Adoption of information systems (IS) in small businesses	Quantitative survey. Data analysis was carried out with a data set of 166 small businesses. To collect data, a mail order survey was conducted with 1200 small businesses in Singapore: while 294 responses were returned, only 166 were complete responses.	IS characteristics included relative advantage, compatibility and complexity. Organisational characteristics included business size, employees' IS knowledge and information intensity. Environmental characteristics particularly included competition.	CEO innovativeness and IS knowledge, relative advantage and compatibility, complexity, business size and employees' IS knowledge were significantly related to the likelihood of IS adoption while business size, employees' IS knowledge and information intensity played a significant role in explaining the extent of IS adoption.
Kendall et al. (2001) Activity analysed: E-commerce adoption by SMEs in Singapore	Quantitative survey Data analysis was carried out with a data set of 58 SMEs in Singapore.	Perceived innovation characteristics included relative advantage, compatibility, complexity, trialability and observability	Relative advantage, compatibility and trialability played significant roles in the adoption of e-commerce by Singaporean SMEs while complexity and observability were not found to have any significant effect.

**Author based on literature review*

However, there are some limitations to quantitative methods. The survey method cannot be used to investigate phenomena in great depth. Data collected is self-reported, which might be biased, particularly if the required information is sensitive in nature. The main limitations of quantitative methods include internal validity, external validity, reliability and bias (Saunders et al., 2012). To address these limitations, a systematic process needs to be

followed and the questionnaire needs to be designed following the established procedures. It also needs to be tested with the target group for validity and reliability. It is vital that the survey questionnaire is appropriate for the targeted participants of the research and it is measuring what the research study intends to measure. Appropriate selection of the study population and the sample is also very important to collecting the appropriate data. The latter part of this chapter explains in detail how these limitations are addressed in this thesis by explaining step by step the procedure followed.

The advantage of using an online questionnaire is low cost, wider reach to survey participants, anonymity and convenience to the participant. There are a few disadvantages like longer time period in the process of collecting data and continuous follow-ups, low response rate, less control over the situation, and difficulty in collecting detailed and extensive information (Mathews & Ross, 2010). The survey proposed here is inferential because the study tests the relationship between business digitalization and firm performance or growth.

The approach to the sample used to collect the data is determined by the objectives of the research. The size of the sample and geographical dispersion are the two main areas, which determine the way the respondents are contacted. Two main choices involved in collecting data are sending a questionnaire through post or email or administering it through an interviewer either face-to-face or by telephone (Mathews & Ross, 2010). Administering the questionnaire face-to-face or by telephone was not a viable option as it is time-consuming and is not a cost-effective method, as the respondents are dispersed geographically. Following from the combined approach taken by this research, the online survey method was found appropriate for collecting data, and was complemented with the data from in-depth interviews, observations and document analysis.

4.3.2 Sampling and sample size

The data set was gathered with a structured survey questionnaire from a cross-section of firms from the following sectors: trade, services, information and communication

technologies, transport and storage, construction, real estate, and food and accommodation services. Agriculture, hunting, fisheries, mining and manufacturing were excluded from the analysis. The decision to exclude these sectors relates to insights derived from the contextual analysis: first, the size and share within the SMEs sector; second, the characteristics and these SMEs and third, the future prospects of growth. The SME sector is dominated by firms in the trade and services area thus this research prioritized these sectors. Despite the noted share and value added of the agriculture, manufacturing and mining sectors, the future growth of the SME overall sector lies in trade, services and ICTs in Albania as reported by various sources (World Bank, 2015; CFB, 2016; EC SBA Report 2015). The sample frame or population is that of a total of 112,537 active enterprises as reported by the official data on SMEs in Albania as shown in Tab. No. 13 below.

Table 13: Total Number of Active SMEs in 2014

Size	No. of Employees	Annual Turnover	No. of firms in 2014
Micro	0-9	Up to ALL 10 million	106412
Small	10-49	Up to ALL 50 million	4647
Medium	50-249	Up to ALL 250 million	1478
		Total	**112537**

Source: INSTAT, Business Register, 2015

Considering the scope of the research, the digitalization of SMEs and the impact on performance, and based on the insights from literature review and initial informative interviews, the micro enterprises with less than 9 employees were excluded from the sample frame. The selected active enterprises should have at least the initial resources, human and financial, for digitalization. The literature review, context analysis and initial informative interviews showed that the degree of digitalization in micro active enterprises was absent and it was not possible to measure in the same line as with small and medium enterprises.

Therefore, the sample population was then reduced to a total of 6,125 active

enterprises in 2014. The difficulty was in obtaining a detailed and comprehensive list of the entire population frame. Upon various attempts and through professional and personal networking, a list of 2,694 firms was composed as a sample frame. Three additional restrictions were applied to the initial sample population: (i) it was required that the firm had more than 10 employees to ensure the routines and processes of innovation capability to take place and thus digitalization to be possible at all; (ii) the second restriction was made because, collecting data on digitalization of SMEs requires being able to collect the perspectives of the entrepreneur (owner/manager of SMEs) as the key driver in the SME; third, a valid e-mail address for each selected respondent was required, because the survey was web-based.

1,485 firms met these three restrictions based on the created database, which accounts for 25% of the small and medium active enterprises in 2014. The initial sample size of 306 firms was selected randomly among these 1,485 firms. The sample size represented 5% of the small and medium active enterprises in 2014. The survey was conducted between September 2015 and February 2016 in two phases. The initial mail out included 306 surveys of which 268 reached the respondents, as 38 e-mail addresses were invalid. After excluding the invalid e-mail addresses, the survey reached 268 firms. One week after the survey was first mailed, reminder surveys were sent out. Three follow-up e-mails (each at one week after the previous reminder) were sent to those who had not yet responded. This process resulted in 143 responses, which equals a response rate of 53 percent.

Table 14: Detailed sampling steps and size

Steps in sampling	Number	%
Total active enterprises in 2014	112537	
First selection: Initial Sample Population	6125	100,0%
Second selection: Sectors included	4873	79,6%
Final database created as sample frame	2694	44,0%
Selection after three restrictions applied	1485	24,2%
Random sampling leading to final sample size	306	5,0%
Initial email out	306	5,0%
Respondents reached	268	4,4%
Responses received (including reminders)	143	2,3%
Unusable responses, lack of data	21	0,3%
Final usable responses	121	2,0%

*Source: Author

4.3.3 Questionnaire development

Design of the questionnaire plays a very important part in obtaining accurate data and also a better response rate. This research took into account the rules on designing questionnaire as set out in literature (Mathews & Ross, 2010). The design of the questionnaire was based on the research questions and sub-questions as well as the operationalization of variables as shown in Tab. No.14 above. One also has to be very clear about what the researcher wants to know from that particular question and also how the researcher himself would answer the question. The researcher avoided ambiguous terms in questions, avoid long questions, avoid many open questions, avoided very general questions, leading or loaded questions, which might lead the respondent to answer the question in one particular direction, avoided asking two questions in one question and avoid questions that include negatives (Mathews & Ross,

2010).

Presentation of the questionnaire used throughout the process of collecting the data is also very important in increasing the response rate. The length of the questionnaire, the order in which the questions are asked, the number of questions, the way sensitive information questions are designed, user-friendliness, clear instructions, researcher's contact information, professional covering letter was included in the email and first page of survey, pre-contacts and follow-ups were made, anonymity and confidentiality of the respondents was ensured.

The questionnaire was organized as follows: First part looked at the degree of digitalization in the firm and included 6 questions. The second part looked at the performance of the firm by focusing on firm growth and quality of services and all questions had a scale response from 1 to 5. The third part looked particularly at the type of digitalization employed in a firm, i.e. Business Intelligence and Analytics. The fourth part looked at the SMEs characteristics, owner-manager, strategies and environment and the last part included some general information about the firm. A total of 39 closed questions were asked.[10]

There was no comprehensive ready-to-use scale on which to measure digitalization and its impact on performance in SMEs in Albania. Therefore, the scales used had first to be developed based on previous empirical studies. The unit of analysis in the study is the individual respondent's perceptions of digitalization, performance of SME and growth Therefore, in this research, self-reported subjective measures of firm performance were adopted coupled with self-reported statements on SME growth. Performance refers here to organizational level performance perceived by the individual respondent, which reflects the extent and degree to which the employee evaluates how the whole organization performs. Thus, performance is the subjective perception of the individual respondent.

Objective performance measures were not used for multiple reasons: respondents may not have accurate information to provide about performance measures; finding the actual numerical value would have required extra work for the respondent; the respondent may also be more reluctant to provide objective performance information than perceptual,

[10] See Annex I for complete questionnaire

which also advocates the use of perceptual measures. By using subjective data, the aim was to ensure comparability between different kinds of firms. Subjective items are suggested to decrease the effect of contextual factors. Thus, a comparison of SMEs of different sizes and in different sectors is easier. Multiple items of performance were used to increase the reliability. Performance items were measured with the same scale. In addition, three control variables were included, i.e. revenue, number of employees, and sector. All measures used were assessed at the firm level. The operationalization of variables conducted during the desk research is presented in Tab. No.15 below.

Table 15: Indicators and measurement of variables

Variables	Indicators	Type
Business Performance of SMEs	▪ Growth o Turnover o Employment o Profits	Dependent
Business Digitalisation of SMEs	▪ Degree of digitalization – IT Maturity ▪ Business Intelligence	Independent
SMEs Characteristics	▪ Size ▪ Location ▪ Sector ▪ Management structures & Hierarchy	Mediating
Owner-Manager Characteristics	▪ Age ▪ Gender Education ▪ Business Style ▪ Innovativeness	Mediating

*Source: Author

A pilot test was also undertaken administering a mini sample survey using the final version of the questionnaire. A total of 5 SMEs were selected through a convenience sampling technique and surveyed. The questionnaire was further refined through the pilot test. During the pilot test, numerous errors in the questionnaire were detected and a number of suggestions were received from respondents.

4.3.4 Survey sample characteristics

After the responses were received, the data was screened. Responses were excluded if they met some of the following criteria: first, if most of the items included missing values; second, if it was clear that the responses were deliberately incorrect throughout the survey (i.e., the best possible response was selected in all of the survey items); third, if there were inconsistencies in the responses. These actions also assisted in the need to make sure that no contradictory responses were received from the same firm. When data was missing, the response was excluded in the analysis. For example, if the position of the respondent was not known, the response was not included in the analysis that required position information. As a result, 21 responses could not be used as shown in Tab. No. 12 above. Thus, the 119 responses reflect firm level responses.

Table 16: Firm level background information of the responses

		n	Percentage
No. of Employees	10-49	51	42,9%
	50-249	68	57,1%
Annual turnover	Up to ALL 50 million	73	61,3%
	Up to ALL 250 million	46	38,7%
Sector	Trade	29	24,4%
	Services	33	27,7%
	ICTs	24	20,2%
	Transport & Storage	8	6,7%
	Construction	8	6,7%
	Real Estate	11	8,5%
	Other	6	5,0%
Location	Tirana	52	43,7%
	Durres	28	23,5%
	Elbasan	11	9,2%
	Vlora	8	6,7%
	Gjirokastra	6	5,0%
	Korca	14	11,8%

*Author

As shown in Tab. No. 15 above about 43% if the firms had 10 to 49 employees and 57% had more than 50 employees. About 38% has annual turnover up to ALL 250 million. A considerable majority of 61% had an annual turnover of up to ALL 50 million, despite the number of employees. The responses are almost equally distributed between trade (24%), services (27%) and ICTs sector (20%), followed by transport and storage, construction, real estate and others. The survey also asked respondents to indicate the location of the firm. The majority of the responses came from firms located in central Albania, i.e. Tirana, Durres and Elbasan, more than 70%. This also relates to the previous data on the high concentration of SMEs in this region in Albania. Based on access to entrepreneurs from professional experience, responses were gained from other regions such as Vlora, Gjirokastra and Korca, all in the south of Albania. The majority of the responses were received from owner-manager, executives, ICT management.

An analysis of variance test was performed to check the non-response bias.

Comparing the means of the responses in the last quartile to those responses in the first three can assess the potential for non-response bias. It was assumed that those who were among the last to respond most closely resembled non-respondents. The respondents were divided into four groups: the first respondents, the first follow-ups, the second follow-ups, and the third follow-ups for the period September 2015 and February 2016. The analysis of variance test results revealed that there was no significant difference (at the 5 percent significance level) in the responses between the four groups regarding the constructs. Thus, non-response bias was not considered an issue in this study.

Because the sample was selected randomly, the background of the respondents was not checked. Owner-Managers usually have good prerequisites to answer the items. However, employees' view was seen as important because they are not influenced exclusively by formal policies and practices. Moreover, it is what they perceive and experience on a daily basis that matters. A number of methods were used to improve the reliability of self-reported information. For example, ambiguous items were clarified; closed items, where the answer must be taken from a predetermined list, were used to get comparable data; respondents were allowed to bypass an item if they did not have enough information to answer— required because the respondent must have a reasonable amount of information to be able to respond to items. If the respondent did not have knowledge or experience or, or opinion on any item, then an additional option had to be provided. This was anticipated as possibly being the case with employee respondents, and so (in addition to a Likert middle option) they were offered the opportunity to pass over the item by choosing the option "I cannot say".

The sample was selected randomly, which can minimize voluntary response bias and under coverage bias. By assessing this kind of selection biases, the representativeness of the sample can be ensured. In this way, it is likely that different types of SMEs are adequately represented in the sample. Some procedural remedies were also used to minimize the potential effects of the common method bias, which is required when a single key respondent for an organization is used (Saunders, et al., 2003). In the cover letter, the respondents were encouraged to answer the items as truthfully as possible. Respondents were allowed to

answer anonymously, which meant they were less likely to edit their responses to be more socially desirable. Another way of reducing common method biases is careful construction of the items. This technique was used by paying attention to the wording and clarity. The items were also reviewed and revised by supervisor, research methodology professor and fellow doctoral students at LUT, including a pilot testing.

4.3.5 Quantitative data analysis

To ensure the reliability of the measurement and have a comprehensive list of measures, an extensive review of the existing literature on several disciplines such as entrepreneurship, strategic management and digitalisation was executed. All survey items were selected from previously validated measures in other empirical studies as shown in Table no.12. After the responses were received, the data was screened. Responses were excluded if they met some of the following criteria: first, if most of the items included missing values; second, if it was clear that the responses were deliberately incorrect throughout the survey (i.e., the best possible response was selected in all of the survey items); third, if there were inconsistencies in the responses. These actions also assisted in the need to make sure that no contradictory responses were received from the same firm. When data was missing, the response was excluded in the analysis. Thus, the 121 responses reflect firm level responses.

An analysis of variance test was performed to check the non-response bias. Comparing the means of the responses in the last quartile to those responses in the first three can assess the potential for non-response bias. It was assumed that those who were among the last to respond most closely resembled non-respondents. The respondents were divided into four groups: the first respondents, the first follow-ups, the second follow-ups, and the third follow-ups for the period September 2015 and February 2016. The analysis of variance test results revealed that there was no significant difference (at the 5 percent significance level) in the responses between the four groups regarding the constructs. Thus, non-response bias was not considered an issue in this study.

Because the sample was selected randomly, the background of the respondents was

not checked. Owner-Managers usually have good prerequisites to answer the items. However, employees' view was seen as important because they are not influenced exclusively by formal policies and practices. Moreover, it is what they perceive and experience on a daily basis that matters. A number of methods were used to improve the reliability of self-reported information. For example, ambiguous items were clarified; closed items, where the answer must be taken from a predetermined list, were used to get comparable data; respondents were allowed to bypass an item if they did not have enough information to answer— required because the respondent must have a reasonable amount of information to be able to respond to items. If the respondent did not have knowledge or experience or, or opinion on any item, then an additional option had to be provided. This was anticipated as possibly being the case with employee respondents, and so (in addition to a Likert middle option) they were offered the opportunity to pass over the item by choosing the option "I cannot say".

The sample was selected randomly, which can minimize voluntary response bias and under coverage bias. By assessing this kind of selection biases, the representativeness of the sample can be ensured. In this way, it is likely that different types of SMEs are adequately represented in the sample. Some procedural remedies were also used to minimize the potential effects of the common method bias, which is required when a single key respondent for an organization is used (Saunders, et al., 2003). In the cover letter, the respondents were encouraged to answer the items as truthfully as possible. Respondents were allowed to answer anonymously, which meant they were less likely to edit their responses to be more socially desirable. Another way of reducing common method biases is careful construction of the items. This technique was used by paying attention to the wording and clarity. The items were also reviewed and revised by supervisor, research methodology professor and fellow doctoral students at LUT, including a pilot testing.

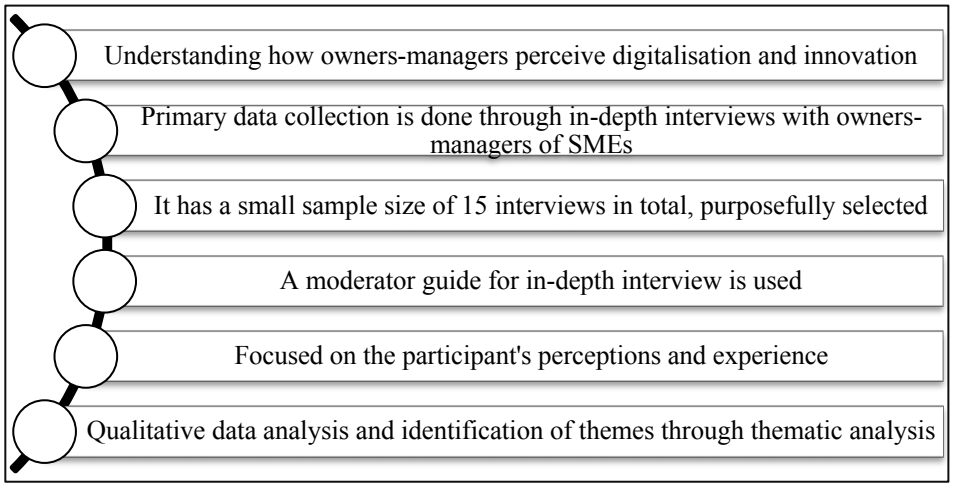
4.4 Qualitative study: Methods and Data Collection

4.4.1 In-depth interviews

Analysis of the information obtained through in-depth interviews, observations and document analysis was guided by the structure and themes of the interview framework. Special attention was paid by the researcher to the factors, which showed a potential, or proven impact on firm performance. Though respondents identified significant occurrences in the firms' history, the final evaluation of their importance was based on the researcher's interpretation. The ways of responding to environmental changes and the strategic choices made by SMEs in each cluster were clarified. The methods of qualitative research used made it possible to acquire an in-depth understanding of the events and processes that can explain a firm's responses and choices. First, the qualities emerging from the data were identified. After this conceptualization, the concepts were classified into categories that emerged from the data. Next, connections between the categories and sub-categories were analysed.

Based on interpretative research approach, the main characteristics of the qualitative research design for this thesis are summarised below:

Figure 13: Steps for qualitative research for this thesis



**Author based on literature review on qualitative research*

The following steps as outlined by Creswell (2007) served as a procedural map for data collection to explore experiences and perspectives of owners-managers of SMEs in Albania regarding digitalization of their business: in-depth interviews are used to gather data; a small sample of participants; data are collected from the individuals who have experienced the phenomenon under investigation; data analysis occurs through organized "clusters of meaning" and from these clusters evolves descriptions of the experience which leads to a composite description that presents the "themes" of the phenomenon (Creswell 2007, pp. 60-62).

Each interview lasted between 45-75 minutes and was conducted in Albanian. Moderator guides were prepared for collecting data through the in-depth interviews. The guide included details on the issues to be explored, but not how these issues were put to respondents as depended also on the flow of the conversation. As this was an open-ended question interview, additional questions related to the main research objectives were asked depending on the input by respondent and relevance to the research objectives. The interviews were structured as follows: the first part was a general introduction, the second and most important was on research issues exploration and the final was dedicated to concluding remarks. The following table illustrated topics covered.

Table 17: Topics for in-depth interviews

Topics covered in in-depth interviews
Overall information on the SME
Digitalization Process
Internal Challenges
External Environment
Collaboration with research for R&D / R&I
Way forward: Future in the digital world

*Author

All interviews were recorded after initial agreement with the participants, as well notes were taken during the interview process. After the interviews, the researcher transcribed the data and added comments to ensure no information was lost, and to enable to return and look for information at any time if needed (Saunders, Lewis & Thornhill, 2012).

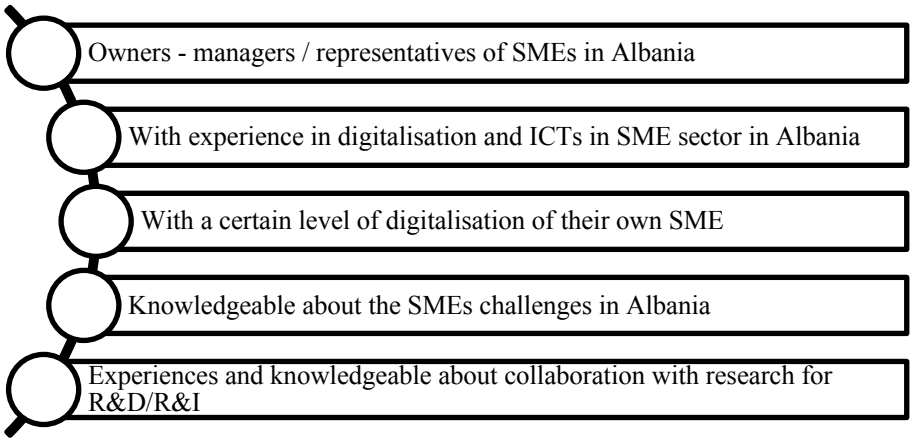
4.4.2 Sampling for in-depth interviews

In qualitative research sampling procedure and the sample is very challenging to be determined as it is difficult to know in advance how much data is needed. In most cases, in qualitative research, researcher gathers data until empirical saturation is reached (Flick, 2008: p. 139). In this doctoral thesis, in-depth interviews are a method that complement on quantitative data collection through online survey, a four-point approach to sampling was followed based on Creswell (2017):

1. a *sample universe was defined*, by way of specifying that potential participation in the doctoral research should be limited only to owners – managers and representatives of SMEs with experience in digitalisation and ICTs;
2. a *sample size was chosen*, through the consideration of data collection requirements and practical concerns of time and location. Conducting in-depth interviews of 45-75 minutes is very intensive on one hand, as well as time consuming on the other and thus a small sample was preferred. Also, because saturation was reached relatively quickly, and additional data collection did not result in having more information;
3. selecting a *sampling strategy*, purposeful and convenience sampling was used in line with qualitative research design. Purposive sampling aims to maximize the depth and richness of data to address the research question (Creswell, 2007).

As a result, certain criteria were established on the basis of which the interviews were performed, and the participants were selected. These criteria were constructed according to the literature review and the theoretical framework as shown below:

Figure 14: Criteria for in-depth interview sampling



*Author

A total of 15 in-depth interviews were conducted during a period of 9 months starting in September 2015 in the first phase, then in September to December 2016 and then finally in February to May 2018. The table below summarises the sample size and main characteristics. Anonymity of respondents is ensured as per the informed consent form signed by each of them.

Table 18: In-depth interviews sample and profiles

SME / Firm	Key characteristics	Size	Position in market	Years in Operation
A	Operating in the field of ICTs, offering hardware and software solutions and services, mainly in Tirana, but national reach	Medium	Consolidated	15
B	Operating in the field of ICTs and offering office supplies materials and services, mainly in Tirana and Durres	Medium	Consolidated	20
C	Offering services in human resources, recruitment and management; operating in Albania, Kosovo, Macedonia and Greece	Small	Consolidated	10
D	Operating in the field of ICTs, offering mainly software solutions and services, mainly in Tirana, but national reach	Medium	Consolidated	9
E	Operating in smart business and smart home, offering automation services in Tirana and national research	Small	Recently entered	5
F	Operating in geo-spatial services and solutions for private and public sectors	Small	Recently entered	6
G	Information services; real estate; human resources services, national reach	Medium	Consolidated	22
H	Home furniture and luxury products, including internal design services for home and offices	Medium	Growing	14
I	Travel agency and car rental services, national reach	Small	Consolidated	15
J	Travel agency and car rental services, Tirana	Small	Growing	11
K	Real estate services, national reach	Medium	Recently entered	3
L	Operating in the field of ICTs, offering mainly software solutions and services, mainly in Tirana, but national reach	Medium	Growing	8
M	Communication services, event organisations, media campaigns, design and media production, Tirana and national reach	Medium	Consolidated	10
N	Lightening products and services in Tirana, Elbasan, Durres	Medium	Consolidated	6
O	Vocational and education training services in Tirana	Medium	Growing	4

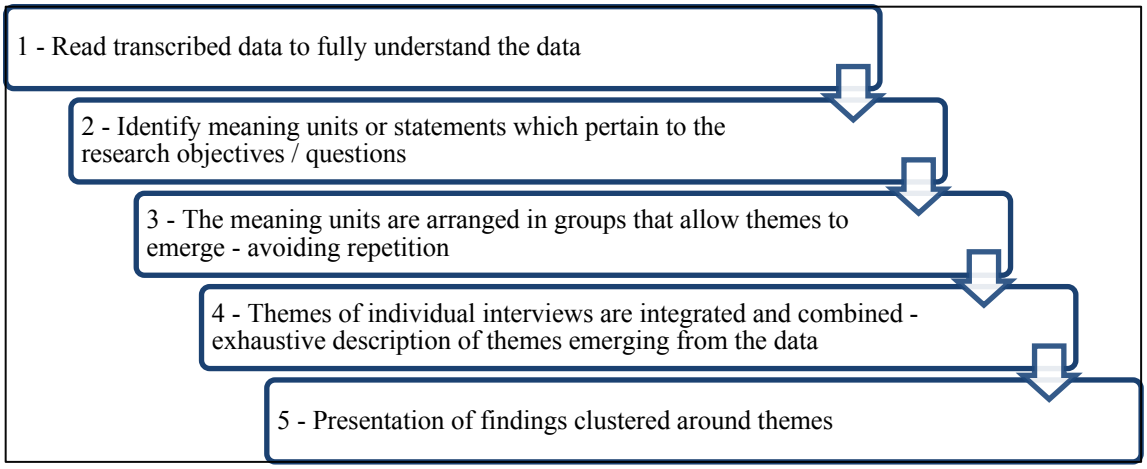
*Author

4.4.3 Thematic Data Analysis Process

The principal technique that is used in this doctoral thesis for the qualitative component of data collection is that of thematic analysis. This is a suitable approach that allows data sources

to be analysed in terms of the principal concepts or themes. The steps for data analysis procedures are illustrated in the following figure.

Figure 15: Data analysis procedure: steps



**Author based on Giorgi, 2009.*

The transcripts were read a number of times in order to achieve a complete understanding of the phenomenon. The transcripts were then divided into meaning units or groups. These were then simplified, that is repeated words were removed, taking care that the essential description was not altered. As a fourth step, the simplified and numbered meaning units were then organized into themes. Then each theme was backed up by the quotes from the participants. Themes were then searched for repetitive statements, which were removed, leaving a non-repetitive list of descriptive meaning statements for each participant. The above steps are carried out for each individual participant and the index of themes can be considered as a personal list of relevant themes. The next step was to combine the individual index of themes into one central structure of themes. From this point on, the data is examined collectively. The combined themes were read thoroughly a number of times to become immersed in the data.

Reaching the final stage of confirmed themes involved summarizing, validating, if necessary, modifying ideas prior to settling on the general and unique themes to make the composite summary. The identified themes based on the thematic analysis are the following

five: readiness of SME to invest in digitalisation; owner-manager innovativeness; policy and legislative framework; technological advancement; competitiveness.

4.4.4 Document analysis

In order to be able to respond to the research questions a third method was employed, that is document analysis, whereby key documents were consulted, and secondary data was collected. This served primarily for the development of the context regarding SME sector in Albania. The documents consulted include policy documents, national strategies, governmental reports, international organisations report and other relevant materials as demonstrated in the table below.

Table 19: List of documents and resources for secondary data collection

Document name	Type of document
European Commission (Ed.). (2016). Open innovation, open science, open to the world: a vision for Europe. Luxembourg: Publications Office of the European Union. European Commission. (2017). Overview of higher education in Albania. Brussels: EACEA. European Commission. (2014, 2015, 2016, 2017) Country Report, Albania. European Commission (2015), Reports on SMEs in Albania.	European Commission annual reports 7 documents consulted
Law No. 80/2015, date 22.7.2015 "On Higher Education and Scientific Research in Higher Education Institutions in the Republic of Albania" Law No. 8957, date 17.10.2002 "On Small and medium enterprises in the Republic of Albania"	National legislation approved in Parliament 2 documents consulted
National Development and Integration Strategy (2015-2020) – Council of Ministers. National Strategy on Science, Technology and (NSSTI 2017-2022) - Ministry of Education, Sports and Youth (MESY). National Action Plan for Innovation and Technology in Business, 2010 Strategic Programme for SMEs Development: Innovation and Technology 2011-2016, Council of Ministers National Strategy for Business and Investments Development, 2007 - 2013, Council of Ministers Cross-cutting strategy on information society, 2016-2020, Council of Ministers, National Strategy for Information Society.	National strategies and policy documents 6 documents consulted
Research and Development in Albania – World Bank World Bank Experience on Research and Science System in Western Balkans Science and Business Cooperation Social Science Research Recent Development in Western Balkans Overview of Higher Education and Research Systems in Western Balkans	International reports 5 documents consulted

OECD (Organization for Economic Co-operation and Development). 2010. "Innovation Vouchers." OECD Policy Brief, OECD, Paris.	Policy briefs 1 document consulted
Competitiveness and SME development in Albania, IBS, S. Xhepa A general overview of ICTs companies in Albania, AITA, 2013 Enhancing SMEs Development in Albania: A Study on Macro-Financial Soundness Indicators, Italian Embassy, Albania, 2014	Research and study reports 3 documents consulted
Total	24 documents

*Author

4.5 Quality of Research

4.5.1 Validity

Validity is an important criterion of good measurement. A valid measurement tool should measure what it is designed to measure (Mathews & Ross, 2010) and the research is considered valid if it measures the factors intended as set out in research scope and model. This research presents a model that measures the intended variable of SMEs performance. The first step to check validity is that of common sense or face validity (Mathews & Ross, 2010). Thus, this research relied on existing literature to ensure face validity. It developed a research model and hypotheses based on existing empirical studies on SMEs performance. The fact that the measure has been used before by researchers and received acceptance in research community is another indication of the validity of this research (Saunders, et.al. 2009). Therefore, this research measures the intended unit to measure, i.e. the SMEs performance by looking at business digitalization as an explanatory variable and by the mediating effect of the SMEs characteristics, owner-manager, business strategy and external environment.

4.5.2 Reliability

Another important criterion of measurement is the reliability. A reliable measurement is a one that, if applied time after time, will yield the same results (Saunders, et.al. 2009).

Reliability can be understood to indicate the extent to which measurement procedures generate the same results on repeated measurement occasions. Other researchers can replicate the research model used in this research and the data is also available for interested researchers. It will be interesting to re-evaluate the same companies that I used in the survey again, after some time has passed to see the progress in the digitalization journey. Such evaluation should utilize the existing data and complete it with more new data reflecting the additional years of analysis incorporated. In addition, the research is cautious in the generalization of findings as universal truths. It rather attempts to provide a thorough analysis of digitalization of SMEs in Albania, to bring to the fore the business digitalization process and point to the factors that mediate its impact on SMEs performance.

4.5.3 Ethical consideration

This research is cautious of the ethical considerations, particularly because it deals with human beings. The SMEs involved in the research were approached in advanced via email and telephone and a meeting was scheduled to conduct the in-depth interviews. During the meeting, the researcher introduced himself and presented briefly an overview of the research, its aim and the ways in which the data will be used. Confidentiality was assured and information on how the collected data will be used was provided to the interviewee in order to gain informed consent. Also, for the survey the same approach was adopted. The online survey contained the same information and ensured informed consent of participants.

In addition, ethical code rules and welfare of respondents guided all steps of the qualitative data collection of this study. A participant information sheet including informed consent was provided to all respondents in advance detailing the aim of the study and the ways in which data will be used. The document indicated that participants were free to withdraw from the study at any moment and anonymity was guaranteed for all participants. For the data analysis and presentation of findings participants were coded based characteristics of SMEs they represented. Thus, this study presented only minimal risk to those who partook. Respondents did not receive any form of payment or service as

compensation for their involvement with the research. A summary of the study will be sent to those who were interested in learning more about the findings after thesis submission and evaluation. Abiding by these ethical principles linked also helped promote trustworthiness of process and guide my subjective efforts throughout every aspect of the study.

4.6 Chapter Concluding Remarks

This chapter presented the methodology approach, research design and methods. The first section provided the theoretical perspectives or paradigms on methodology approach in order to be able to justify the choice made for this doctoral thesis. This research follows a combined methodology approach or a pragmatic approach that best serves to answer the research questions. The research has as a starting point the positivist approach but argues that the research scope is complex, and it requires complementing the positivist approach with the interpretivism in order to compensate for each other shortcomings and better respond to the research question. This research draws from the assumption that reality exists objectively and can be measured, but the dimension of the construction of reality cannot be neglected, i.e. the reality one seeks to study is multiple. Perceptions are important, because they are the basis for entrepreneurs' actions. Secondly, from an epistemological point of view, this research is based on the idea that objective observation and subjective meanings and interpretations can provide substantive knowledge. This thesis is thus focused on applied research and uses various perspectives to respond to research question best way possible.

What is more, deductive reasoning logic is adopted. The basic principle of deductive approach are applied: a search to explain causal relationships between variables; structured methodology to facilitate replication; concepts need to be operationalized in a way that enables facts to be measured quantitatively; reductionism, which means that problems as a whole are better understood if they are reduced to the simplest possible elements; and generalization by selecting a sample of sufficient numerical size. Cautious is shown in generalization of findings and focus in put on economic context. In terms of research design triangulation is used and complemented with secondary resources, which are serves for the

validity and reliability of the research. The main methods used are document analysis with a total of 24 documents consulted, in-depth interviews with 15 in-depth interviews conducted and survey of 121 SMEs in Albania. In line with this assumption, the entrepreneur or small firm owner-manager is seen to be the most appropriate informant, and the research methods used is believed to provide valid information about the research phenomena. Therefore, the research is conducted from a firm-internal viewpoint, which in the case of SMEs – means the entrepreneur's viewpoint.

The chapter detailed the research design process and methods as well as sample and instruments of research. It provided arguments for the validity and reliability of the measurement of research and also outlined the ethical considerations.

RESEARCH CONTEXT

The third part of the doctoral thesis is the research context, which sets the research questions into concrete contextual settings in Albania. It looks briefly at the overall picture of the Albanian economy, particularly in the recent developments in terms of innovation, digitalization and knowledge-based economy. The second section provides an overview of the SMEs in Albania, their role in economy and current trends. The third section explores the ICTs developments in Albania and then the research and innovation policy. This chapter used secondary resources and insights from informed interviews and part of it have been already published as mentioned in the Publication section of the doctoral thesis.

CHAPTER V

SMEs AND ICTs DEVELOPMENT IN ALBANIA

5.1 Overview of Albanian Economy

The transition from a centrally planned to a market-oriented economy, together with substantive international aid and other strategic assistance (European Union, World Banka, International Monetary Fund, European Bank for Reconstruction and Development, OECD etc.) helped Albania to make progress in the past 25 years. The major indicator of progress is the fact that Albania grew from the poorest nation in Europe in the early 1990s to lower middle-income status in 2008, with poverty declining by half during that period (World Bank, 2015). Nonetheless, the economic landscape in Albania faces still major constraints and thus affecting every aspect of life. For instance, the global financial crisis exposed the weaknesses of its growth model and highlighted the need to shift from consumption-fueled to investment- and export-led growth (World Bank, 2015; European Commission, 2015).

Some groups in society have less access to economic opportunities and disparities remain a concern. In this light it has been argued that in order to accelerate the pace of equitable growth, Albania needs to implement structural reforms that will raise productivity and competitiveness in the economy, create more jobs, and improve governance and public service delivery (World Bank, 2015; European Commission, 2015). Other measures include enhanced regional connectivity and access to regional and European markets, coupled with export and market diversification. In this light, entrepreneurship, enterprise development, innovation and business digitalization are key elements as the flagship initiatives worldwide for smart and equitable growth performance.

The economy of Albania has undergone multifaceted structural changes over the last decade. Emigration and urbanization brought a shift away from agriculture and toward industry and service, allowing SME development in a variety of economic sectors such as construction, transport, information and communication technologies (EC SBA Factsheet

2015; CFB Report 2016). SMEs account for employment in the private sector has more than doubled since 2000 and their added value for the entire economy structure has also increased as will be analyzed below. Despite this trend, agriculture remains one of the largest and most important sectors in Albania. Agriculture contributes around 23% to GVA and is a main source of employment and income, especially in the country's rural areas (EC SBA Factsheet 2015; CFB Report 2016). SMEs account for 99.4% of total registered agricultural enterprises. Albania's agricultural sector, however, continues to face a number of challenges such as small farm size and land fragmentation, poor infrastructure, market limitations, limited access to credit and grants, and inadequate rural institutions, which hinder faster development of agricultural SMEs.

The SME sector is expected to be further dominated by trade and services. A relatively high level of remittances, which account for almost 16% of GDP in the mid–2000s helped increase the disposable income and purchasing power of the population (CFB Report 2016; World Bank, 2015). A consumption-oriented economy has been the main stimulus for the development of SMEs in trade. With the financial crises in the European Union and countries such as Greece and Italy, the remittances lowered and they now represent only 8–9% of GDP (CFB Report 2016; World Bank, 2015). However their role is still high, and trade and services are generally expected to continue dominating the SME sector. Another shift is that in the role of construction, which was once a key driver of the economic growth, but which has decreased significantly. Remittances and income growth before the crisis of 2008–2009 also resulted in the rapid development of construction companies. Since 2008, the sector has shrunk significantly and in 2014 it accounted for 10.6% of GVA, which is due to decreased demand and the current halt in construction permits issuance (CFB Report 2016).

Table 20: Size and Share of SMEs by Economic Sector in Albania

Economic sector	Number of enterprises	Number of employees	Value added
Agriculture, hunting and forestry	1.5%	excluded	excluded
Mining and quarrying	9.1%	1.6%	3.7%
Manufacturing		15.0%	12.1%
Electricity, gas, and water		1.8%	4.7%
Construction	4.3%	10.7%	17.4%
Trade	40.8%	34.0%	33.5%
Accommodation and food services	16.2%	13.2%	5.5%
Transportation and storage	7.3%	7.5%	8.1%
Information and communications	2.2%	16.3%	14.9%
Other services	18.5%		

Note: * The most recent available data.
Source: INSTAT, Business Register (count) and Results on the Structural Survey of Enterprises (employment and value added).

After privatization, there are only a few state-owned enterprises (SOEs) in Albania. SOEs are mostly in the electrical sector (generation, transmission, and distribution), water supply, ports, railway, insurance, postal services, and hydrocarbon sectors. They operate as commercial companies in compliance with the Law on Entrepreneurs and Commercial Companies and are subject to the same tax levels, procedures, domestic accounting, and international financial reporting standards as all other commercial companies (CFB Report 2016; World Bank, 2015). In addition, the information sector is also an important sector in the Albanian economy, which is sometimes seen as an opportunity for economic growth and other times as a threat to SMEs development (European Commission 2015; Business & Investment Strategy - GoA, 2015).

According to the latest Business Environment and Enterprise Performance Survey (BEEPS V), competitor practices in the informal sector were the second biggest problem for Albanian firms. More than 40% of the firms surveyed reported competing against firms in the informal sector (BEEPS V, 2015). In September 2015, the GoA started a campaign consisting of massive controls and the application of penalties against the informal market. In addition, financial institutions are now required to disclose all available information about their clients. There is an agreement with banks to achieve full transparency by 2018.

GoA has joined the Competitiveness and Innovation Programme of the European

Commission, which is an indicator of the intention to enhance the SME sector in Albania. The Competitiveness and Innovation Framework Programme (CIP) supports innovation activities (including eco-innovation), provides better access to finance and delivers business support services in the regions (European Commission, CIP, 2014). It encourages a better take-up and use of information and communication technologies (ICT) and helps to develop the information society. Consequently, Albania will be able to take part in the framework of the European Charter for Small Enterprises, which was adopted in 2003 by the EU members. In addition, annual assessment of where Albania stands in regard to SMEs compared to EU is made by the European Commission and published as European Commission Small Business Act Fact Sheet. The development of SME sector is discussed in the next section, which is then followed by the analysis of ICTs in Albania and the overall innovation framework of the country.

5.2 SMEs Development in Albania

Law regulates the legal identification of SMEs in Albania and it is based on the number of employees and annual turnover or total balance sheet assets. INSTAT, however, defines company size based on the number of people employed, which is different from the number of employees. Employed are people who work at the enterprise regardless of whether they are paid or not. Thus, employed includes employees, owners and unpaid family members. The categorization of enterprises by size as per the Law no. 1042 of 22.12.2008 is presented in Tab. No. 21 below. As per this definition, enterprises with fewer than 9 employees are classified as micro and between 10 and 49 as small. The categorization of more than 50 employees and up to 249 as medium sized enterprise has led to various discussions because considering the size of Albanian market or enterprises overall, they might as well account for large firms or otherwise all enterprises in Albania are SMEs.

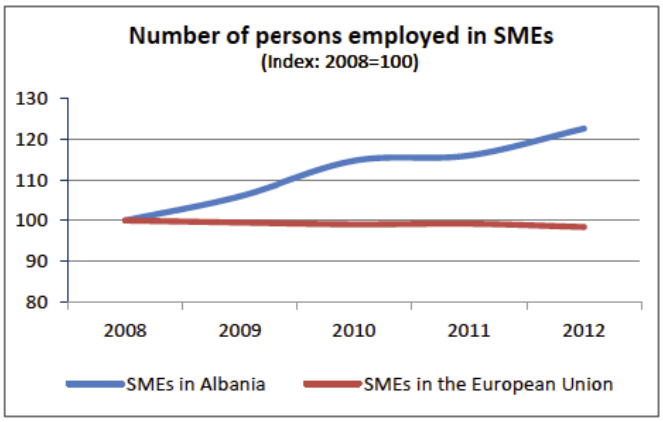
Table 21: Definition of SMEs in Albanian Law

Size	No. of employees	Annual turnover or total assets
Micro	0–9	Up to ALL 10 million (or EUR 72,844)*
Small	10–49	Up to ALL 50 million (or EUR 364,219)*
Medium	50–249	Up to ALL 250 million (or EUR 1,821,096)*

Note: Exchange rate of year-end 2015*
Source: Law No. 1042 of 22.12.2008

Even though exact figures might vary depending on the categories used for analysis, it is widely accepted that in Albania over 80 % of all employment is in SMEs, compared to the EU average of around 67 % (EC SBA Fact Sheet, 2015; CFB, 2016). According to this report, in 2013, value added dropped by 3.6 % compared to 2012. In parallel, employment increased by close to 10 %, and the number of businesses grew by 1.7 %. Real GDP is expected to grow by 3.3 % in 2015 and by 4.2 % in 2016 (EC SBA Fact Sheet, 2015: 2). The growth is almost solely driven by internal demand. Forecasts also point to falling unemployment rates. Due to the fact that the Albanian economy is led by SMEs, it is expected that the projected economic upswing will result in increased SME employment and output growth (EC SBA Fact Sheet, 2015; CFB, 2016). The comparison between Albania and EU in terms of number of persons employed in SMEs can be seen in Fig. ___below. This points to the crucial role of SMEs in the Albanian economy.

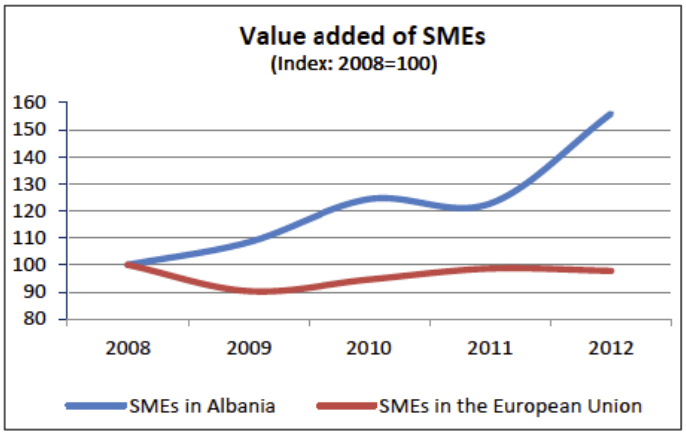
Figure 16: Employment in SMEs: Albania and EU



Source: Adopted by EC SBA Fact Sheet, 2015

Another indicator in this regard is the value added of SMEs in Albania, compared to EU as seen in Fig. 17 below. Albanian SMEs provide about 68 % of the country's total value added, while the average in the EU is about 58 % (EC SBA Fact Sheet, 2015: 2).

Figure 17: Value added of SMEs in Albania and EU



Source: Adopted by EC SBA Fact Sheet, 2015

There are various sources of data regarding SMEs in Albania: first, the National Business Register and Survey conducted by the Institute of Statistics; second, data from Eurostat which are comparative with other countries, but might change from the national authority data; data from the Business Enterprise and Environment Performance Survey or BEEPs; data from other official sources both national and international. The data presented below cover the non-financial business economy, which includes industry, construction, trade and services, but not enterprises in agriculture, forestry and fisheries and the non-market sectors such as health and education.

INSTAT reports statistics on enterprises in two annual reports. The total number of enterprises, their distribution across the economic sectors, and their sizes are reported in the Business Register while performance indicators such as employment, turnover, value added, etc. are reported in the Results on the Structural Survey of Enterprises. The two documents have major methodological discrepancies (EC SBA Fact Sheet, 2015; CFB, 2016). The number of SMEs in Albania and their contribution to employment and value added, as reported by INSTAT, is understated. According to the legal definition above and, even more

so, the EU definition of SMEs (i.e. firms that employ less than 250 people and have an annual turnover of no more than EUR 50 million or a total balance sheet that does not exceed EUR 43 million), virtually all enterprises in Albania can be categorized as SMEs with only a few companies being large. Conclusions and trends as measured over time have to be interpreted with caution. In 2014, size classes were redefined, and the classification of economic activities changed, which made comparison over time less reliable (CFB, 2016).

Table 22: SMEs Data in Albania – 2013 for Non-Financial Business Economy

	Number of enterprises			Number of persons employed			Value added		
	Albania		*EU-28*	Albania		*EU-28*	Albania		*EU-28*
	Number	**Share**	***Share***	**Number**	**Share**	***Share***	**Billion €**	**Share**	***Share***
Micro	73 916	95.1 %	*92.7 %*	139 120	43.4 %	*29.2 %*	1	25.2 %	*21.1 %*
Small	3 026	3.9 %	*6.1 %*	58 067	18.1 %	*20.4 %*	1	22.4 %	*18.2 %*
Medium-sized	678	0.9 %	*1.0 %*	62 362	19.5 %	*17.3 %*	1	20.1 %	*18.5 %*
SMEs	**77 620**	**99.9 %**	***99.8 %***	**259 549**	**81.0 %**	***66.9 %***	**2**	**67.7 %**	***57.8 %***
Large	99	0.1 %	*0.2 %*	60 823	19.0 %	*33.1 %*	1	32.3 %	*42.2 %*
Total	**77 719**	**100.0 %**	***100.0 %***	**320 373**	**100.0 %**	***100.0 %***	**3**	**100.0 %**	***100.0 %***

Source: INSTAT Business Register, 2013 and adopted by EC SBA Factsheet 2015

The data above confirms that SMEs are of the utmost importance for Albania's 'non-financial business economy' with 80 % of all employment is in SMEs and the provision of about 68 % of the total value added in Albania. Almost half of all SMEs are in the wholesale and retail trade sector, accounting for approximately a third of SME employment and value added. The accommodation and food services sector ranks second, at nearly one fifth of the total number of SMEs. One of the sectors contributing to increased employment is transportation and storage, with an employment growth of 7 % within one year, which was accompanied by an increase of investments. This sector accounts for 17 % of all investment, more than any other sector (EC SBA Fact Sheet, 2015: 5). Investments are focused on human resources and modern technologies.

Moreover, the World Bank has provided financial support and expertise to establish a modern infrastructure network and transport system (World Bank, 2015). This support, together with government efforts to improve the country's infrastructure, is driving the development of the SMEs in the transport sector. Also, the setting up economic zones such

as industrial parks and free zones based on public/private partnerships has also led to a growing in the *real estate activities* sector. Also, the number of start-ups was expected to increase in 2014, due to the positive stimulus of new government programs and subsidies to promote start-up activities (EC SBA Fact Sheet, 2015: 11).

According to INSTAT, there were 112,537 active enterprises in 2014, out of which 101,025, or 89.8%, were enterprises with up to 4 people employed, including 76.1%, individual entrepreneurs. Enterprises with 5–9 and 10–49 employed had a share of 4.8% and 4.1%, respectively. Enterprises with 50 and more employed accounted for 1.3% of the total number of enterprises in 2014 as seen in the Tab. No. 23 below.

Table 23: Breakdown of active enterprises per number of employed people 2010 - 2014

No. of employed		2014	2013	2012	2011	2010
1–4	(micro)	101,025	99,782	95,520	97,836	92,798
5–9	(small)	5,387	5,235	5,636	5,194	5,018
10–49	(medium)	4,647	4,660	4,439	4,744	4,078
SMEs		**111,059**	**109,677**	**105,595**	**107,774**	**101,894**
50+	(large)	1,478	1,406	1,242	1,265	1,144
TOTAL		**112,537**	**111,083**	**106,837**	**109,039**	**103,038**

Source: INSTAT Business Register, 2015

Most SMEs are privately owned. In 2014, foreign capital was present in 4.5% of the total number of SMEs. The single largest origin of foreign investment is Italy, citizens of which invested in 2,116 Albanian SMEs or 42.7% of all SMEs with foreign capital (CFB, 2016). Other countries include Greece, Turkey and Kosovo. Traditionally, most SMEs are located in the capital city of Tirana, and the trend has been moving upward from 38.3% in 2010 to 43.8% in 2014. Northern, central, and southern regions account for approximately 20%, almost half of which are in Durrës, the second largest concentration as shown in Fig. No. 15 below.

Figure 18: Regional Distribution of SMEs in Albania as per 2015 Data

Source: INSTAT Business Register, 2015
One dot represents 100 enterprises INSTAT 2014

Women's participation in business is slowly but steadily increasing (CFB, 2016). Women comprise over a quarter of business owners or administrators. Women's participation has been steadily increasing in micro and small enterprises while being stable in medium-sized companies. Almost 30% of micro-businesses are owned or administered by women as shown below.

Table 24: Share of active enterprise with women as owner/manager, 2010-2014

No. of employed		2014	2013	2012	2011	2010
1–4	(micro)	29.8%	29.1%	28.8%	28.4%	27.8%
5–9	(small)	16.9%	16.3%	15.9%	14.3%	13.9%
10–49	(medium)	15.6%	15.8%	15.7%	14.4%	14.3%
50+	(large)	16.1%	14.4%	14.5%	14.7%	15.0%
TOTAL		28.5%	27.8%	27.4%	26.9%	26.5%

Source: INSTAT, Business Register

In addition, as seen above with the structure of the economy, Albania has undertaken important reforms to improve the business environment such as: A one-stop shop was set up for swift and inexpensive registration of new businesses; E-procurement has been introduced; various administrative issues can be resolved online; Tax procedures have been simplified; Recent policy measures have mainly focused on entrepreneurship, 'second chance', 'responsive administration' and skills & innovation. The strengths and opportunities of the SME development in Albania have been summarized in Fig. No. 16 below. However, further steps need to be taken to improve access to finance, such as developing the venture capital market or introducing alternative financing opportunities such as innovation vouchers or business angels.

For businesses to find qualified staff, it is essential to continue setting up the framework for developing skills not only in quality higher education, but also enhancing vocational training. Reports (EC SBA Fact Sheet, 2015; CFB, 2016) suggest that specific measures are required to strengthen the innovation capacity of SMEs. The introduction of incubators, clusters and technological parks deserves more emphasis and further development. Enhanced public support is needed to increase exports of the Albanian SMEs. A full regulatory impact assessment is to be introduced for all legislative proposals affecting businesses. The weaknesses and threats to the SME sector development in Albania are also summarized in Fig. No. 19below.

Figure 19: Strengths and Weaknesses in SMEs Development in Albania

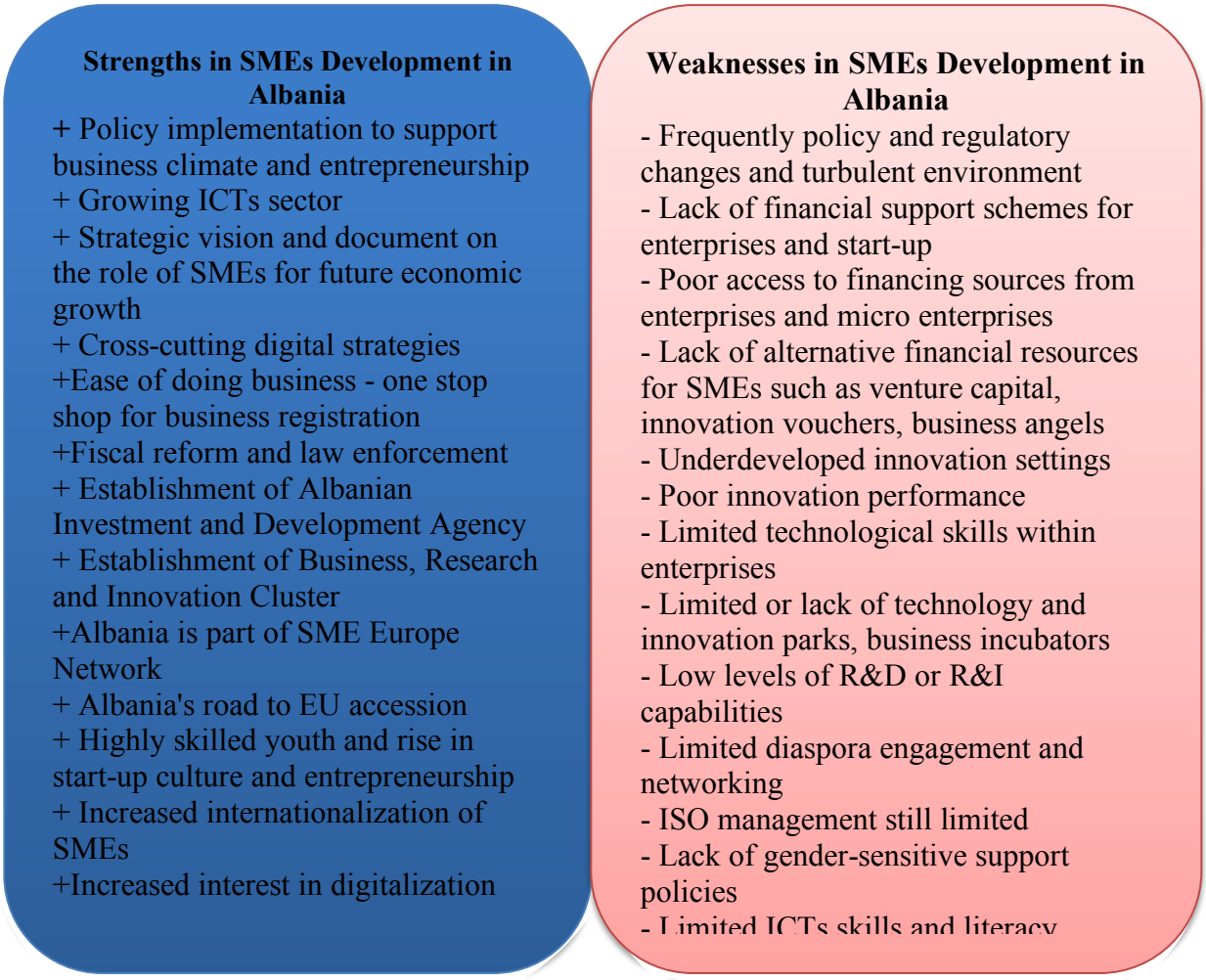
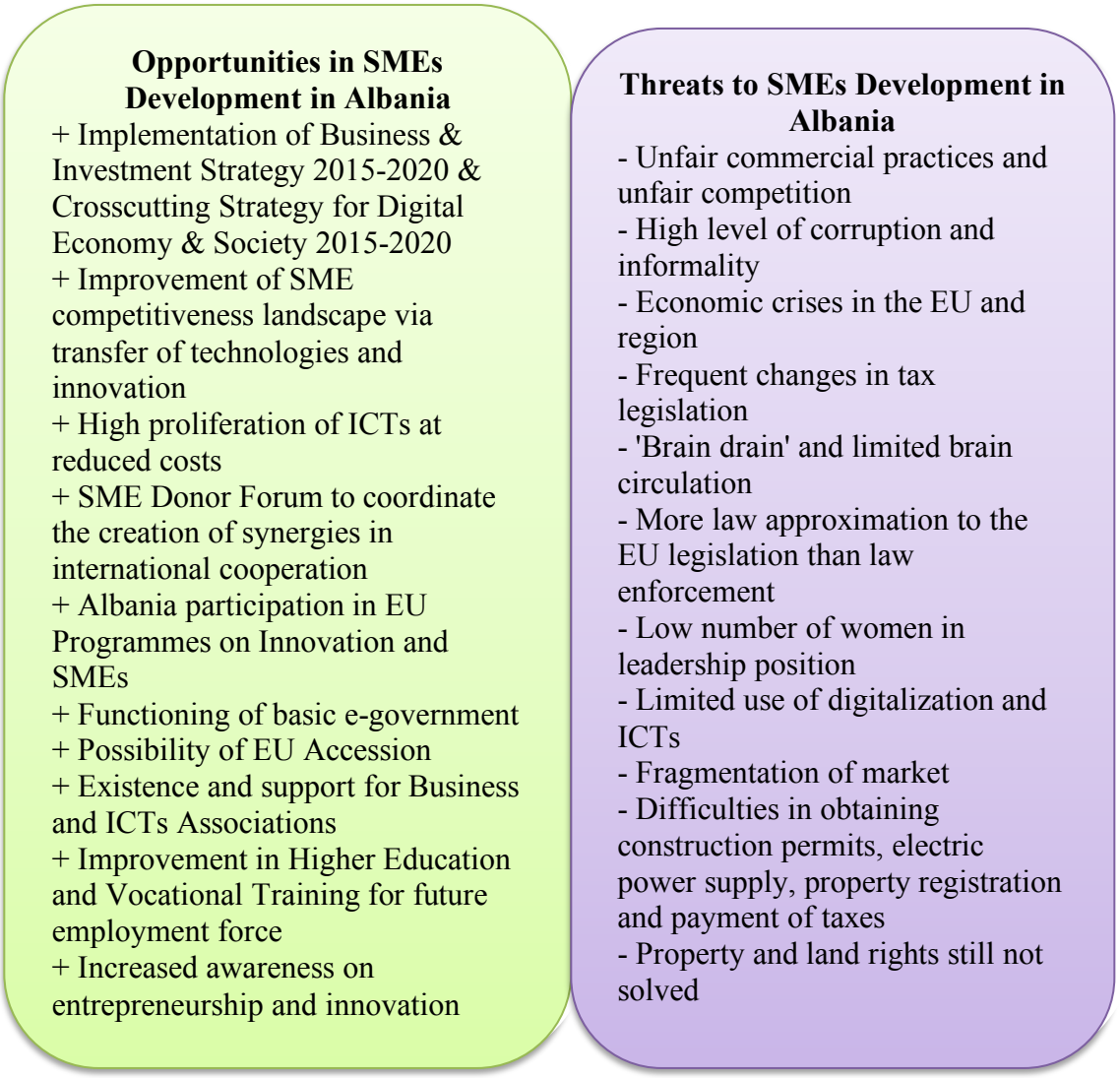


Figure 20: Opportunities and Threats in SMEs Development in Albania



It is recognized that Albanian firms have a weak technological capacity to upgrade by absorbing existing advanced technologies. According to the European Commission 2015 SBA Fact Sheet, there is no data available for Albania for the indicators related to innovation. Based on interviews and desk research, it can be confidently assumed that there are SMEs that introduce product, process, marketing, or organizational innovations in Albania, although their number is believed to be rather low. In addition, in-house innovation remains

weak. Economic competitiveness and exports are low with the economy still heavily skewed towards low technology (EC SBA Fact Sheet, 2015; CFB, 2016). Specific measures are needed to strengthen innovation capacity by establishing stronger links between science, technology, higher education and businesses (BIDS 2014; CSDAA 2014). The introduction of incubators, clusters and technological parks deserves more emphasis. Expenditure for scientific research and development in Albania is among the lowest in Europe. This will be analysed in the last section of this Chapter.

The main challenges that SMEs currently face in regards to digitalization and adoption of ICTs are: inheritance of poor and highly costive communication infrastructure; low level of awareness of ICTs suitable for SMEs and not just complex systems for large firms; high cost in adopting ICTs systems and resistance from internal enterprise working practices; limited ICTs literacy of SME owners hinders their ability to choose the appropriate technology and understand the concrete benefits it can bring to their business (Bazini et.al., 2011); limited ICTs literacy of employees in SMEs hinders ICT adoption (Qarri, et.al., 2012); limited financial opportunities and legal infrastructure; highly competitive market with unfair competition, informality and corruption.

The literature review as well as participation in various national conferences, research seminars and workshops, indicated the limited number of empirical studies with systematic and reliable research on the use of ICTs in SMEs in Albania. Nonetheless, some published articles in regional journals or conference proceedings were identified. Xhepa (2005) provides a thorough analysis of the SME sector in Albania. The study is relevant to the purposes of this research only to a limited extent because it dates prior to the research scope of this doctoral thesis. The articles published by Sevrani and Bahiti (2008), Bahiti and Shahini (2010), Bazini et.al. (2011), Qarri, et.al., (2012) cover the research topic of ICTs and innovation in SMEs, but have limitations in terms of scope, theoretical background, methodology and analysis. This is not a statement on the quality of the research, but rather an emphasis that there is a gap in systematic and thorough empirical research on business digitalization of SMEs. This research attempts to contribute to this gap.

5.3 ICTs Development in Albania

The ICTs sector in Albania has marked some considerable progress with the market liberalization, the expansion of the Internet use, the improvements in e-government services and in the policy framework (EC, Progress Report 2012; NSDI, Draft, 2014-2020). Although there are relatively limited reliable and exhaustive data regarding the IT market share in Albania, a recent study shows that it grew 5.5% in 2011 to reach a total of 190.43 million USD (IDC Report, 2012). Research shows that there are approximately 1800 registered IT companies in Albania as SMEs, i.e. 1.9% of the total number of registered companies, but only 200 of them are active (AITA, 2012: 10). There are currently four major mobile operators and more than 80 other electronic communication enterprises operate offering fixed telephony and internet services (AKEP, 2013). Also, various training and certification centres operate (Microsoft, InfoSoft, DM Consulting, ISSETI, TETRA, etc.). The ICTs companies operate mainly at the domestic level and there is need to gain better recognition at the regional and international level. The ICTs companies operating in Tirana are mainly registered as SMEs and work in the local market.

According to the World Economic Forum, Albania is ranked 83rd out of 144 countries in the Networked Readiness Index, marking a slight improvement from previous years. As far as the availability of the latest ICTs is concerned, Albania is ranked 106/144 (World Economic Forum, 2013: 304). Most notably, Albania has progressed in the absorption of ICTs at the firm-level ranking 80/144 in 2012 (p. 338). However, Albania is ranked 128/144 when it comes to the capacity of innovation, which means that firms rarely use formal research to pioneer their own new ICTs products and processes (p. 339). There are no data available for Albania regarding the business-to-business and business-to-consumers use of the ICTs. A high relevant index is that of the extent of staff training in ICTs in business. Albania is ranked 36/144, which means that companies in Albania are interested in investing in their staff training.

The ICTs sector is considered as a crucial dimension of the economic growth and progress in Albania. Given that ICTs sector is envisaged as a priority area for the

development of the country, it is part of the National Strategy for Development and Integration (2007-2013) and the draft for the new strategy for the period 2014-2020. In addition, other national strategies have been designed to support the development of the ICTs sector such as the Cross-Sector Strategy for Information Society and the Digital Albania Initiative in 2009. A major step in this regard was the adaptation for the first time in 2007 of the National Strategy for Science, Technology and Innovation. Other policy initiatives include the Policy for Electronic Communications in the Republic of Albania, covering the development of telecommunications, data transmission and broadcast media and the National Broadband Plan 2012, outlining actions to enhance availability, affordability and accessibility of Broadband communications services in Albania. What is more, the e-Government Interoperability Framework (e-GIF) aims at the improvement of the communication between government institutions through the creation of a centralized datacentre for public services. The new government, which took office in September 2013, has confirmed the ICTs sector as a priority area of development, but policy and institutional changes are expected.

In line with the national strategies and policies mentioned above, the government has also established institutions to support the development of the ICTs sector such as:

- Minister for Innovation and Public Administration at the Council of Ministers with the main focus on the development of the ICT policy and private sector in Albania, including telecommunication, audio-video media; electronic communication and postal services;
- Albania's National Agency for the Information Society, established by the Council of Ministers and duties include: Policymaking, Coordinating all ICT related projects and Standardization and Technical Assistance;
- Electronic and Postal Communication Authority, the regulatory authority in the area of electronic and postal communication;
- National Authority for Electronic Certification.

Similar with the policy framework, changes are expected from the new government regarding former agencies such as Digital Albania Department at the Prime Minister Office, Agency

for Research, Technology and Innovation; as well possibilities for new agencies to be established.

According to the GoA analysis on the digital agenda, the main challenges remain:

- Legal and regulatory amendments and improvements that would respond to the dynamic development of this field and the establishment of the single digital market ready to become part of the regional and global developments;
- ICT infrastructure developments which should be oriented toward the growth and expansion of the fast and super-fast broadband in the whole territory of the country; Increase of Internet penetration in the family and business in the framework of reducing the digital gap;
- Increase of numbers of online services that facilitate their utilization partially or fully in electronic ways ranging from information to a complete online transaction;
- Development of the proper ways of providing public services through the online contact points and one-stop-shops; Implementation of the interaction framework of systems and services;
- Standardization of ICT as a guarantee for an integrated and sustainable development of information society extended in all sectors;
- Stimulation of the private sector in relation to development of applications in the interest and response to the needs of citizens and businesses;
- Development of supporting infrastructure in the public administration, both at the central and local level, intending to advance both systems and services;
- Increase of knowledge capacities of ICT for the administration and other users, i.e. citizens and businesses;
- Inter-institutional cooperation even at the regional and global level for a safer Internet and information society.

The primary methods of innovation used in Albania are: acquisition of new machinery/ equipment's and recruitment of qualified personnel. The main factors that affect the capacity of firms to absorb advanced technology concerns the investment climate, in which they operate, and the existing skills level and *t*echnological capabilities. In terms of

skills level, there is a mismatch between skill needs from businesses and graduates' fields of study. Businesses in agriculture and agro-processing, textile and foot wear, tourism, construction, transport and communication, energy, information communication technology lack specialists and technicians (USAID, 2013; European Commission, 2015). The vocational education and training system is still affected by limited involvement of the social partners; a highly centralized system with low responsiveness to local needs; a dichotomy between vocational education and training due to the slow development of occupational standards and programmes that are aligned to labour market needs; and inadequate monitoring and evaluation approaches able to measure the quality, as well as quantity, of vocational education, training and lifelong learning.

The relations between the vocational education and training system and industry are weak and most curricula offer little scope for practicing the skills learnt. The lack of qualifications that reflects the new competencies required by emerging economic sectors and an innovation-driven economy, coupled with labour market information gaps, complicate matters further (USAID, 2013; European Commission, 2015). The system is still underfinanced, with poor incentives for the participation of employers as well as limited resources invested in upgrading the quality of infrastructure and teachers' and instructors' training. The attractiveness of vocational education is still low and perceived as a second-best path to tertiary education, rather than a route to labour market entry. The SWOT analysis of Albanian ICTs environment generated the following conclusions as summarized in Tab. No.25 below.

Table 25: SWOT of ICTs Sector in Albania

Strengths: ▪ Presence of ICT in government agencies; ▪ In general the Albanian companies are aware of the need to implement the latest standards relevant to IT companies; ▪ The Albanian ICT companies could boast of qualified human resources, flexibility, short time-to market period; ▪ Labor costs are considerably lower than in Western Europe; ▪ Companies have key knowledge of emerging markets in the Balkans and the Eastern markets; ▪ Local IT companies could be small but with relatively good management; ▪ The Government has already realized the need of faster ICT development in all sectors of the country and investments are increasing.	**Weaknesses:** ▪ Country does not have the image of an IT supplier; ▪ Outdated products/services; ▪ State and public monopolies in the area of telecommunications, leading to low-quality service and high prices; ▪ Lack of specialization among firms; ▪ Lack of international marketing skills and expertise; ▪ Lack of focused international marketing strategy; ▪ Company size and resources of many ICT companies are too small for international expansion; ▪ Lack of project management skills and/or industrial production of software; ▪ Lack of capital for implementation of new competitive standards which can ensure the potential clients in the quality of the provided services; ▪ Extent of business Internet use; ▪ Accessibility of digital content; ▪ Insufficient international connectivity.
Opportunities: ▪ Increased understanding of software process improvement methodologies; ▪ Implementation of world recognized models and practices; ▪ Entering regional/international competition; ▪ Gaining advantage from international growth prospects; ▪ Especially European Union growth market potential; ▪ Partnerships with significant foreign companies can subsequently support the professionalization of ICT companies; ▪ New ICT opportunities will increase active participation in economy and society. Albania is among the youngest nations in Europe; ▪ Strategic alliances with foreign companies to increase exports; ▪ Clustering with other competitive sectors in Albania and the region; ▪ Strengthen business-education links.	**Threats:** ▪ The industry's representation may remain fragmented; ▪ Lack of domestic market to enable industry to develop expertise; ▪ Lack of a coherent industry image; ▪ "Brain Drain" of IT specialists in search of higher salaries; ▪ Challenges in gaining an image of new-born IT supplier.

Source: Adopted from USAID, 2013 & CFB, 2016

5.4 Chapter Concluding Remarks

The Chapter outlined the research context, by setting thus the research questions into concrete contextual settings in Albania. It looked at the overall picture of the Albanian economy, particularly in the recent developments in terms of innovation, digitalization and knowledge-based economy. The second section provided an overview of the SMEs in Albania, their role in economy and current trends. The third section explored the ICTs developments in Albania. This chapter used secondary resources and insights from in-dpeth interviews.

RESEARCH FINDINGS, ANALYSIS AND DISCUSSIONS

The fourth and final part of the doctoral thesis is that of presentation and discussions of research findings and analysis. This part is divided in three main chapters, namely Chapter VI, Chapter VII and Chapter VIII.

Chapter VI deals with the mainstreaming of ICTs in SMEs in Albania and corresponds to the first main objective and research question of the thesis. This chapter presents the findings from the data collection of survey in phase I and looks at the importance of ICTs within SMEs, the ICTs systems in place and innovative capabilities of SMEs as well as the challenges and opportunities for SMEs in Albania to adopt and use advanced ICTs systems as reported by the data collection. It also explored the research and innovation policy in Albania as well as the potential of SMEs to collaborate with research sector for innovation.

Then Chapter VII presents the findings in regard to the impact of digitalization on SMEs performance by looking at Business Intelligence and Analytics current use and future trends as well as the factors impacting SMEs performance.

The final chapter is that of conclusions which provides not only the key findings and conclusions, but also theoretical implications of the findings vis a vis the conceptual framework of the doctoral thesis. In addition, it also provides policy implications and recommendations for enterprises. This chapter presents the limitations of the doctoral thesis and provides recommendation for future research.

CHAPTER VI

MAINSTREAMING ICTS ADOPTION FOR SMES IN ALBANIA

6.1 The importance of ICTs within SMEs

SMEs are particularly important for transition economies such as Albania due to the encouragement of entrepreneurship in a landscape where entrepreneurship has not been developed nor encouraged traditionally. Secondly, they generate employment and can utilize labour intensive technologies thus contributing directly to the community they operate. Third, they can be establishment more rapidly than a big firm and operate in a more flexible way. Fourth, they may become a countervailing force against the economic power of larger enterprises and therefore in a wider socio-economic context, the development of SMEs accelerates the achievement of wider economic and socio-economic objectives.

The research on economic transition in post-communist countries, like the case of Albania, indicate that the small and medium enterprises derived from the privatisation process from state-owner to outsider and /or insider owners, who had incentives to restructuring their enterprises. These barriers to the growth of SMEs in transition economies can be classified as: (i) institutional barriers; (ii) internal organisational and resource barriers; (iii) external market barriers, and financial and socio-cultural barriers (Smallbone, 2003; Bartlett & Bukovic, 2001). In this sense the barriers to SMEs development are linked either to the internal settings of the firm or to the external context in which firms operate.

In the case of Albania, over 98% of total active enterprises are micro in scale, which implies that they employ fewer than five people as per the national legislation on enterprises. Most of those firms are derived from the privatisation process of the state-owned enterprises and more recently established as family business particularly with funds from remittances. According to EBRD (2013), the private sector is Albania provides 75 percent of the GDP and 83 percent of the employment is working in private sector. As such according to the survey conducted by INSTAT (2009) 93 percent of the SMEs in Albania are micro-firms

with 1-4 employment an average number of employees 1.5 employees, and 1 percent is medium-size enterprises with an average number of 42 employees. The SME activities in Albania are focused in the local market and very few work in the export sector.

The distinctive characteristic of SME development in Albania is that services and trades sectors are dominated by micro-enterprises, while industry and construction sectors are dominated by medium enterprises. The SMEs that work in the services and construction sectors provide the primary contribution in GDP (Xhepa, 2010: p. 66). Similarly, the SME territorial distribution in Albania is not harmonized provided the human material and natural resources potential of various regions. There is a high concentration of SMEs in Tirana, central Albania and coast. More than half of SMEs operate in the Tirana-Durres corridor. Other regions with a strong presence of SMEs are the cities of Korca, Fier and Vlora.

Results of this research show that about 43% if the firms had 10 to 49 employees and 57% had more than 50 employees. About 38% has annual turnover up to ALL 250 million. A considerable majority of 61% had an annual turnover of up to ALL 50 million, despite the number of employees. The responses are almost equally distributed between trade (24%), services (27%) and ICTs sector (20%), followed by transport and storage, construction, real estate and others. The survey also asked respondents to indicate the location of the firm. The majority of the responses came from firms located in central Albania, i.e. Tirana, Durres and Elbasan, more than 70%. Based on access to entrepreneurs from professional experience, responses were gained from other regions such as Vlora, Gjirokastra and Korca, all in the south of Albania. The majority of the responses were received from owner-manager, executives, ICT management. The SMEs were in their vast majority Albanian (74%) with only 16% of the surveyed SMEs reporting to be over 50% foreign owned. The main activity of surveyed companies is services, followed by trade and ICTs.

Table 26: Firm level background information of the responses

		n	Percentage
No. of Employees	10-49	51	42,9%
	50-249	68	57,1%
Annual turnover	Up to ALL 50 million	73	61,3%
	Up to ALL 250 million	46	38,7%
Sector	Trade	29	24,4%
	Services	33	27,7%
	ICTs	24	20,2%
	Transport & Storage	8	6,7%
	Construction	8	6,7%
	Real Estate	11	8,5%
	Other	6	5,0%
Location	Tirana	52	43,7%
	Durres	28	23,5%
	Elbasan	11	9,2%
	Vlora	8	6,7%
	Gjirokastra	6	5,0%
	Korca	14	11,8%

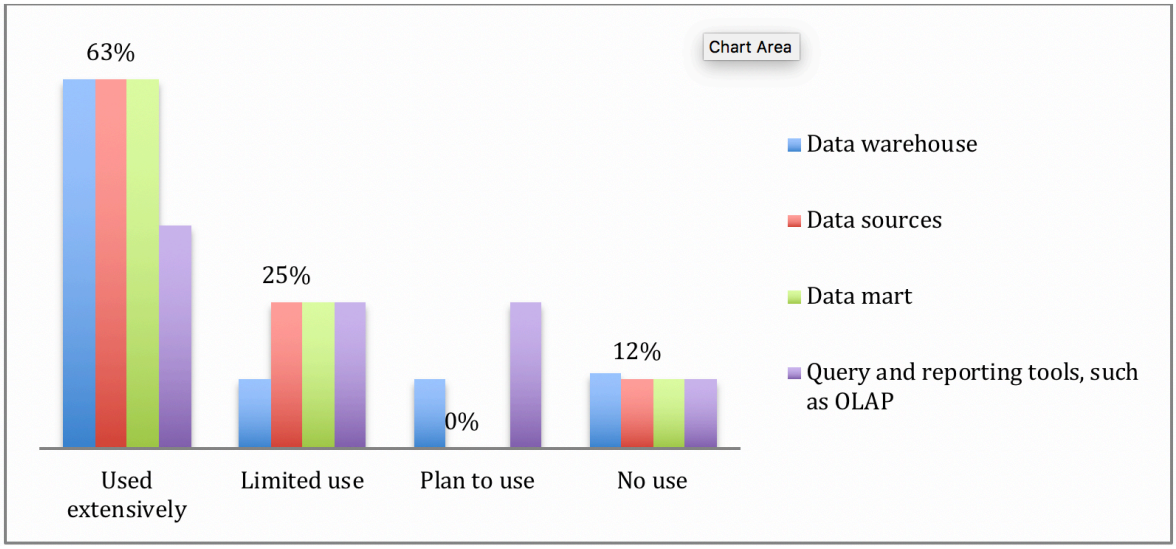
*Author

The level of digitalisation of SMEs in Albania is assessed through: the ICT needs at the company, the structure of the ICT support, ICT knowledge, management reports using ICT and frequency of those reports. 44% of the SMEs report that they have basic technology needs. Only 16% note that they have advanced technology needs. 33% of SMEs declared having a dedicated ICT unit in the company. ICT knowledge at the company differs across SMEs. 35% of SMEs had no expertise for further digitalisation and advanced use of technology. All companies declare to have management reports and data analysis in place for decision-making purposes - the variety and complexity differs. The majority of the SMEs (56%) state that management reports are created manually using basic office applications + a simple accounting system in place. Only 7% of the surveyed SMEs make use of advanced analytics such as Business Intelligence or Decisions Support Systems. Management reports

are produced only when there is a particular issue at stake at the company (52%). Only 12% of SMEs state that management reports are produced automatically and periodically.

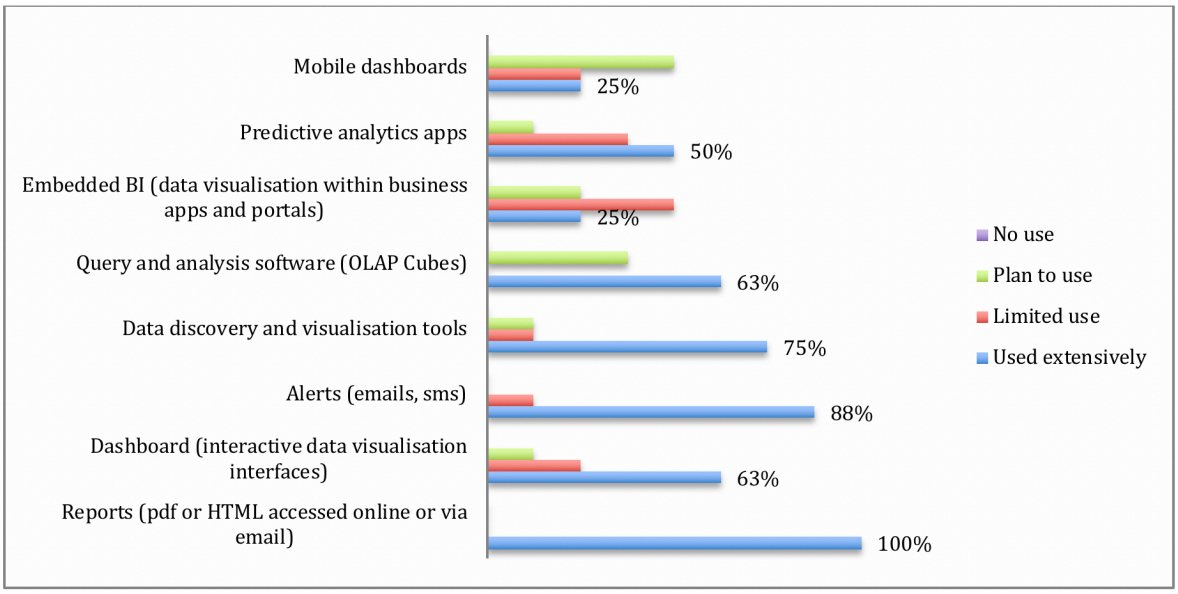
There is a growing tendency of SMEs to develop further the ICT sector . 28% of surveyed SMEs reporting to have expertise and leadership for the digitalisation of their company in line with the overall strategy. The vast majority of SMEs in Albania (81%) are not enabled by Business Intelligence. Instead of BI tools and analytics, simple management reports like spreadsheet are used for reporting. Reasons behind the low level of BI: No clear return on investment; Lack of industry standards and promotion of benefits of BI for SMEs; Ease-of-use challenges with complex software; Less technically savvy employees; Vision of owner-manager; Lack of ICT knowledge/competences.

Figure 21: Components of BI used at SMEs



The majority of SMEs, which reported being enabled by BI, state that they use analytics provided by BI both at the operational and strategic decision making at mid and upper management level. The descriptive statistics shows that the majority of these SMEs use extensively all major components of BI, namely data warehouse, data sources, data mart and query and reporting tools (63%). Thus, even within SMEs enabled by BI the extent of advancement in the systems used is relatively limited.

Figure 22: Technology used to share BI insights & analytics



A growing number of SMEs express an interest in BI and they state that '*they are exploring opportunities for BI implementation in their company*' (53.2%). The main reasons for the interest in BI and plans to deploy BI are: Need to save money by reducing costs and/or improving productivity; Need to improve customer satisfaction to remain competitive; Need to improve decision-making, its speed and accuracy.

The backgrounds of respondents in successful SMEs were studied in terms of the factors related to their gender, position, age, education, business style, and innovativeness. Most of the respondents were men (83%) and firm owners (70%). There were no gender differences between owners and paid professional managers. Most owner-managers (71%) were founders of the firm, and they had worked for the firm for 7 years on average, half of them 5-15 years. Paid professional managers had worked for the firm for 4 years on average. The respondents' ages ranged from 26 to 63 years, and half of them were 35-55 years old, an average respondent being 41 years old. The educational background varied much between the entrepreneurs. Compared with owner-managers, paid professional managers had had more basic education ($c2=7.972$; $df=1$; $p=.005$) and more further education ($c2=14.348$; $df=3$; $p=.002$). In practice, almost all paid professional managers had at least a mid-level

qualification. Also, the younger the entrepreneur, the more basic education (rs=.36; p<.0005) and further education (rs=.22; p=.013) they had.

Table 27: Owner-manager education level

Further education	Owner-managers	Paid professional managers	All
None	6%	0%	4%
Lower level	23%	3%	17%
Mid-level	56%	64%	59%
University	15%	33%	20%
Total	100%	100%	100%

Most respondents had had varied work experience. More than one third (37%) had had prior work experience both as an employee and as a manager. Another third (32%) had prior work experience as a manager only, and one quarter (23%) had prior work experience as an employee only. Hence, more than two thirds of the entrepreneurs had prior managerial work experience. One out of fifteen respondents (7%) had no prior work experience as an employee.

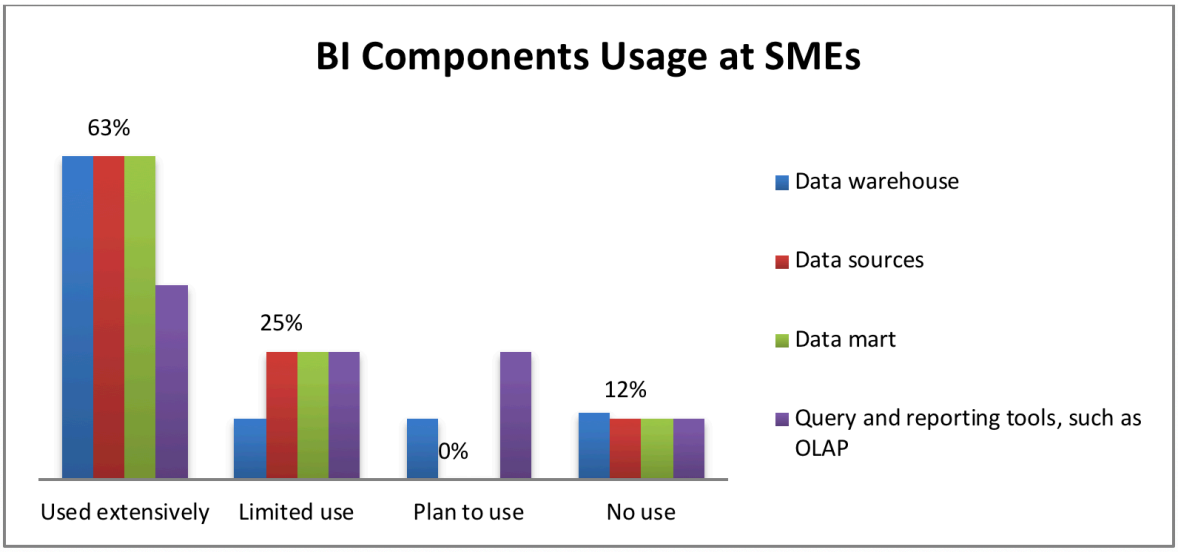
6.2 Business Intelligence and Analytics Systems in SMEs

The results show that ICT knowledge at the company differs across SMEs. 35% of surveyed firms confirm that they have no expertise for further digitalisation and advanced use of technology and that they use only basic systems such as email and website. While all companies declare to have management reports and data analysis in place for decision-making purposes, their variety and complexity differs. The majority of the SMEs (56%) state that management reports are created manually using basic office applications and a simple accounting system in place. Only 7% of the surveyed SMEs make use of advanced analytics such as Business Intelligence or Decisions Support Systems. Management reports are produced only when there is a particular issue at stake at the company (52%). Only 12% of SMEs state that management reports are produced automatically and periodically.

However, there is a growing tendency of SMEs to develop further the ICT sector. As such 28% of surveyed SMEs reporting to have expertise and leadership for the digitalisation of their company in line with the overall strategy. The vast majority of SMEs surveyed (81%)

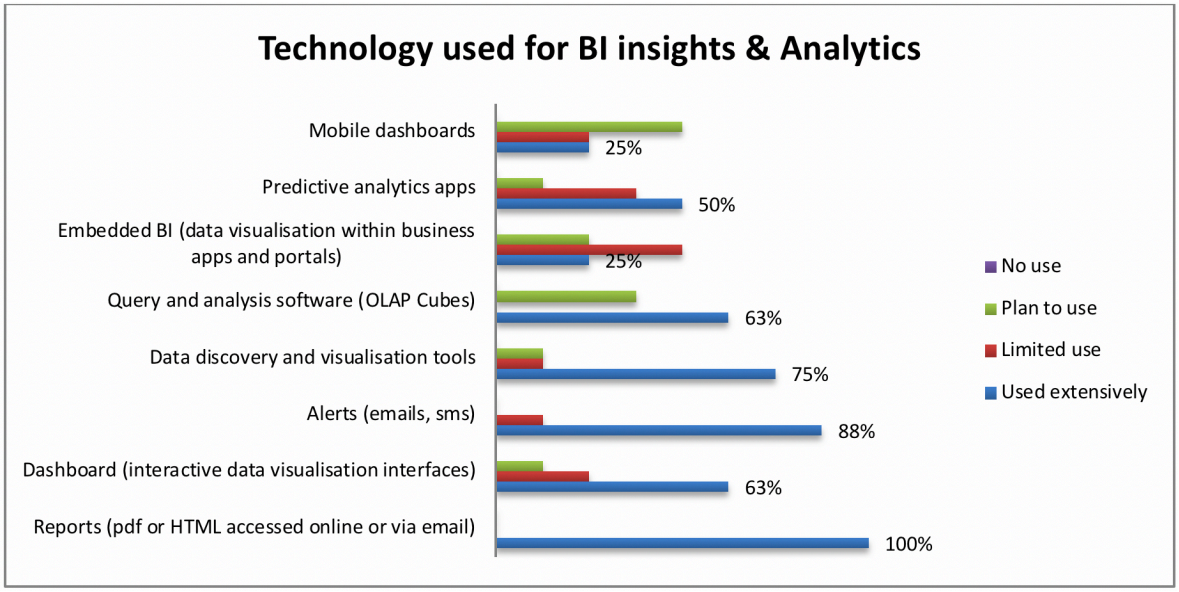
are not enabled by Business Intelligence. Business digitalization level is low in SMEs in Albania. Few SMEs report having BI in place. Low level of SMEs use BI and analytics for decision making, including ICTs companies and mainly simple management reports like spreadsheet are used for reporting.

Figure 23: Components of BI used at SMEs



The majority of SMEs, which reported being enabled by BI, state that they use analytics provided by BI both at the operational and strategic decision making at mid and upper management level. The descriptive statistics shows that the majority of these SMEs use extensively all major components of BI, namely data warehouse, data sources, data mart and query and reporting tools (63%). Thus, even within SMEs enabled by BI the extent of advancement in the systems used is relatively limited.

Figure 24: Technology used to share BI insights & analytics



Reasons behind the low level of BI are explained in the next chapter but mainly relate to no clear return on investment, lack of industry standards and promotion of benefits of BI for SMEs, ease-of-use challenges with complex software, less technically savvy employees, vision of owner-manager and lack of ICT knowledge/competences.

Table 28: Interest in BI

Statement on BI	Level of Agreement
"Higher BI usage in my company offers or will offer greater information quantity, quality and availability"	Strongly agree – 75%
"Helps a company achieve its strategic objectives"	Strongly agree – 62,5%
"Contributes to the overall effectiveness of a company's decision-making processes"	Strongly agree – 62,5%
"Contributes to the overall effectiveness of the whole company"	Strongly Agree – 50%

A growing number of SMEs express an interest in BI and they state that '*they are exploring opportunities for BI implementation in their company*' (53.2%). The main reasons for the interest in BI and plans to deploy BI seem to be: Need to save money by reducing costs and/or improving productivity; Need to improve customer satisfaction to remain competitive; Need to improve decision-making, its speed and accuracy.

6.3 Research and Innovation Policy – Implications for SMEs Digitalisation

The emergence, development and the rapid proliferation of information and communication technologies (ICTs) have significantly transformed almost all dimensions of our contemporary world leading to a conceptualisation of a knowledge-based economy. Its prominent interpretation is that of a network society and economy that are based on command and control centres of knowledge generation and information flows (Castells, 2001). Though scholars do not agree on a common, all-encompassing definition of the knowledge-economy concept, in the sphere of politics, policy-making and private sector various international and national programmes are being established so as to develop it further. As such the European Union Strategy 2020 focuses primarily on the ways in which smart growth could be boosted by concentrating efforts on the knowledge sector, which entails research, development and innovation. Particular attention is paid to the extent and the ways in which research and innovation could contribute to development and economic growth.

The aim of section is to investigate to what extent and in what ways, if at all, strategies, and policy interventions and programmes for the development of a knowledge-based economy in Albania could contribute to digitalisation of SMEs. First, the paper will identify the main approaches (strategies, policy interventions and programmes) towards the development of a knowledge-based economy in Albania. Secondly, it will assess the key components of the Research and Development (R&D) and innovation systems. Finally, it

will analyse the potential for moving from R&D to Research and Innovation (R&I) in emerging economies such as the case of Albania.[11]

6.3.1 The case of Albania: Approaches towards a knowledge-driven economy

The Albanian Government is addressing issues related to research, science and technology at the level of strategy and policy-making only recently, in line with the ambition to join the European Union and be part of the European Research Area. Between 2006-2013 the research system in Albania experienced some essential transformation with the introduction of policy, national strategies, programmes and action plans addressing higher education, research, science and technology and innovation. In this regard, research institutes, previously separated from higher education institutions and linked to line ministries, were reorganized and 12 Technology Transfer Centres and Agencies were created, having as their main mission the transfer of technologies and knowledge with technical support (ERA Watch Observatory, 2014). The development of a knowledge-based economy in Albania can be traced in various policy, national strategies, programmes and action plans, which focus on research, innovation, science and ICTs as key instruments for the economic growth and social progress of the country.

First, the establishment of new faculties of science and technology such as: (i) the Information Technology Faculty of the Polytechnic University of Tirana; (ii) the Faculty of Biotechnology and Food of the Agricultural University of Tirana; (iii) the Applied and Nuclear Physics Centre and Biotechnology Department of the University of Tirana. In addition, other specific programmes and curricula in higher education were introduced both in the public and private sector with a particular focus on ICT, innovation and entrepreneurship. In addition, a new Law on Higher Education was introduced in 2007 in

[11] This section has been published as part of a larger article: Curraj, E., (2016) "Mainstreaming ICTs for smart growth: Dynamics of research, development and innovation in Albania", *ECONOMICUS*, (forthcoming November 2016). (ISSN 2223-6295).

line with the Bologna Process, which is currently under revision with the new Government as will be analysed in the following section. Moreover, another element is the participation in the EC Framework Programmes, FP6 and FP7 and recently Horizon2020 and Erasmus+, particularly in areas such as infrastructure, transport, health and ICT.

Secondly, the Brain Gain Programme was launched in 2006 by the Albanian Government and supported by the UNDP aiming at attracting highly qualified scholars in the diaspora to return to Albania, but also to prevent brain drain in the future by providing incentives to remain in the country (Zeneli, 2012). In order to support human capital, the GoA established in 2008 the Excellence Fund to provide scholarships for young researchers and scientist to study at top universities abroad mainly for masters and doctoral programmes.

Third, the launch of the Cross-cutting Strategy on Information Society (2008 - 2013), aiming at coordinating the efforts towards information-based economy. To implement the goals of the strategy, the National Agency for Information Society (NAIS) was established in 2007 to coordinate government activities in information technology and communication. In addition, for the first time in 2009 the National Strategy for Science, Technology and Innovation was launched (2009-2015), which establishes the instruments for designing the foundations of a functioning scientific research system in Albania. The strategy was based on the model of the national innovation system, which is also currently moving towards the Triple Helix model. The establishment of the Albanian Agency of Research, Technology and Innovation (ARTI) in August 2009 aimed at improving policy implementation followed this. The role and functions of ARTI are now under revision with the introduction of the reform on higher education and research in Albania.

A dedicated government unit at the level of ministry was created for Innovation and ICT in 2010, namely the Minister for Innovation, Information Technology and Communication. In September 2013 with the new government this became the State Minister for Innovation and Public Administration at the Council of Ministers. In terms of the private business sector, the Business Innovation and Technology Strategy (2011 – 2016), including Strategic Programme for the Development of Innovation and Technology of SMEs for the period 2011 – 2016, was introduced in 2011 seeking to provide concrete support to SMEs by

promoting the innovation process, improving technological capacity, and establishing an innovation system that will enhance interaction with institutions that support enterprises.

The new GoA, which came into power after the parliamentary election in 2013, marks a shift from the 8-year right wing government to a left-wing coalition, which is currently introducing substantive reforms in various sectors such as education, health, justice etc. The Government has initiated in 2014 a reformation process of the higher education and research system in Albania with a particular focus on science and research development. The Government in line with the EU integration has reconfirmed the previous government stance on the importance of the R&D and scientific progress as the indication of the country social, economic, and cultural development, as well as a factor of democratic consolidation and EU accession perspective. The new government introduced some institutional re-compositions of the line ministries and institutions supporting R&D and innovation in Albania, for instance, the previous Ministry of Education and Science is now composed as the Ministry of Education and Sport, the previous Minister of Innovation, Technology and Information Communication is now composed as the Minister of Innovation and Public Administration, the previous Ministry of Economy, Trade and Energy is now divided in two ministries: Ministry of Economic Development, Trade and Entrepreneurship and Ministry of Energy and Industry. Though MES remains the key governing authority in the area of science and technology, other ministries such as Ministry of Economic Development, Trade and Entrepreneurship, Minister for Innovation and Public Administration and the Ministry of Social Welfare and Youth are engaging more in the area of R&D.

The NSDI (2007-2013) did not manage to grant funds for some of the key issues included in the programme such as Fund for transfer of technology and knowledge, Cluster programme; Incubation Programme; Research Infrastructure Programmes; Albanian Centres of Excellence Programme; Research Eagle Grants. In this light, the innovation policies towards addressing societal challenges, supporting research infrastructure in academia, supporting young researchers and innovative project from business and public sector still face major challenges. The new GoA has completed the evaluation and revision of the NSDI 2007-2013 and a new strategic document has been developed. The NSDI 2014-2020

proposes to increase funds for research through National Programmes and International Programmes for Research and Development, (bilateral and multilateral), so that funding for this sector accounts for 1% of GDP in 2020 (NSDI, 2014-2020).

6.3.2 Dynamics of the Research, Development and Innovation in Albania

As part of its efforts to integrate into the larger European economy and research area, and in line with EU integration processes and the candidate status, Albania has undertaken a number of strategic reforms and has adopted policies aimed at developing its research, development, and innovation system. As noted by the World Bank assessment of the R&D in Albania, profound challenges remain in terms of research capabilities and innovation. Even though, various programmes have been implemented such as the Brain Gain Programme, Albania does not have a critical mass of specialized researchers, nor does it have sufficient infrastructure and funding for research excellence (Correa, 2013: 7). Another concern is that it is not adequately capitalizing on knowledge from skilled nationals abroad through enhanced innovation linkages, much less reversing migration trends by providing professionals new and better employment opportunities (Correa, 2013: 7). Other issues relate to research infrastructure, low levels of research and industry collaboration and funding.

In order to assess R&D capabilities in Albania, it is necessary to consider the following indicators: Expenditure for research; internationally recognized papers/publication; resident patents; technology transfers; research – industry collaboration. Even though the number of patents and international recognized publication in WBC is relatively low compared to the EU, production capability has improved in Albania, Macedonia and Croatia with technology upgrading and product differentiation in sectors such as food, furniture, clothing and footwear (Radosevic, 2014: 62). However, number of internationally recognized papers/publication and resident patents as well as technology transfer is low (Kutlaca, 2013). According to ERA Watch Observatory, most private companies in Albania are still in early phases of development, and the technologies and

knowledge that are needed to grow their business already exist on the market. Thus, the approach has been mainly to import innovations. Albanian companies generally are not willing to spend much on R&D or in becoming partners in possible research projects with public institutions.

The lack of public-private partnerships for research remains a critical weakness in the Albanian research system and one of the main policy challenges for the future of R&D in Albania. Most policies are aimed at developing research and scientific capacities of the higher education sector. However, the GoA has also introduced policies targeting the business sector R&D such as the launch of the Albanian Business Innovation and Technology Strategy (BITS) 2011 – 2016, to provide concrete support to SMEs by promoting the innovation process, improving technological capacity, and establishing an innovation system that will enhance interaction with institutions that support enterprises. In 2012 some of the Business Innovation and Technology Strategy (BITS) programmes were launched.

For instance the public-private partnership ProTIK Innovation Centre, began operations fully in 2013 as well as Albanian Investment Development Agency. The Ministry of Economic Development, Trade and Entrepreneurship has revised the previous national strategy on business and investment development and is currently finalizing the draft 'Business and Investment Development Strategy 2014-2020'. The strategy is in line with the program of the new Government, EU 2020 and SEE 2020 and focuses on a competitive Albania. The strategy is an important policy document, which engages to revitalize the Albanian economy through a dynamic entrepreneurship and productive industry, where 'an important part of the strategy is given to innovation and entrepreneurship culture for SMEs' (Draft BIDS, 2014).

Figure 25: Key Actors in R&D in Albania

Similar to other post-communist countries, the funding of research system in Albania, has undergone significant transformations in the past 25 years, which were impacted by the structural changes in the economic system; the opening up of the research and innovation system and the introduction of the quality as a funding criterion (Radosevic & Lepori, 2009: 661). The R&D funding flows in Albania are principally from the state budget and small amount from the private sector. An increasing support is received from international organizations. The flows of R&D funding in Albania are as follows:

- State budget through Ministry of Education and Science through:
    - This is institutional financing allocated by the state budget to research institutions such as Albanian Science Academy, Albanian Institute of Statistics, other research centres of line ministries and public universities. The funding flows goes via the Ministry of Education.
    - Programme financing within the framework of the information society under the Minister for Innovation and Public Administration.
    - Bilateral programmes between the Albanian Government and other countries (e. Austria – Albania Science and Technology Fund; Turkey and Albania Research Fund) financed through ARTI and/or MES;

- National Programme for Research and Development financing scheme through ARTI.

- International collaborations. International donors have been one of the most relevant sources of funding and support to the research and development in Albania such as: Austrian Development Agency; Swiss Agency for Development and Cooperation; The Research Council of Norway, the European Commission and World Bank.
- Private financing from the business sector, private universities and other organizations. The funding of R&D from international organization has, apart from the benefits, created new gaps between the local business and enterprise sector and the R&D.

Table 29: Albanian Government Expenditure on Education and Science

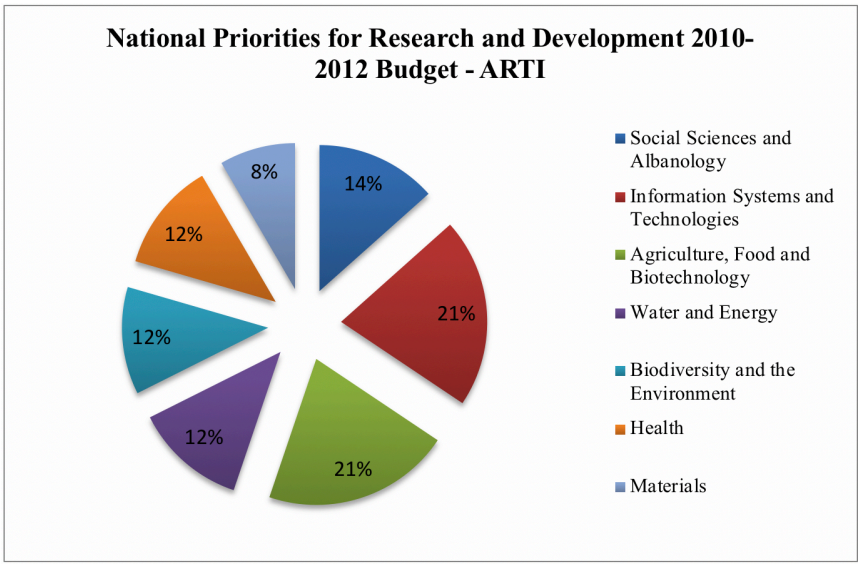
Albanian Government: Expenditure on Education and Science	2008	2009	2010	2011	2012	2013
% of expenditure on the education system from the total state budget	15,2%	16,4%	16,3%	15,6%	15,8%	15,4%
% of expenditure for research activities from the state budget in the field of education	1,3%	0,62%	0,5%	1,6%	1,6%	0,7%
Share of GDP for scientific research	0,4%	0,2%	0,2%	0,3%	0,3%	0,1%

Source: Era Watch and Open Society Foundation for Albania, Monitoring Draft Budget 2014

According to the Era Watch Research Policy Observatory, it is estimated that in 2012 the Albanian Gross Expenditure on R&D was close to 15m Euro, which represents only 0.04% of the GDP, i.e. the lowest in Europe and far below the Lisbon target of 3%. R&D is concentrated primarily in the public sector, higher education and line ministries of the government. According to UNESCO statistics, 52,1% of the R&D was performed by the

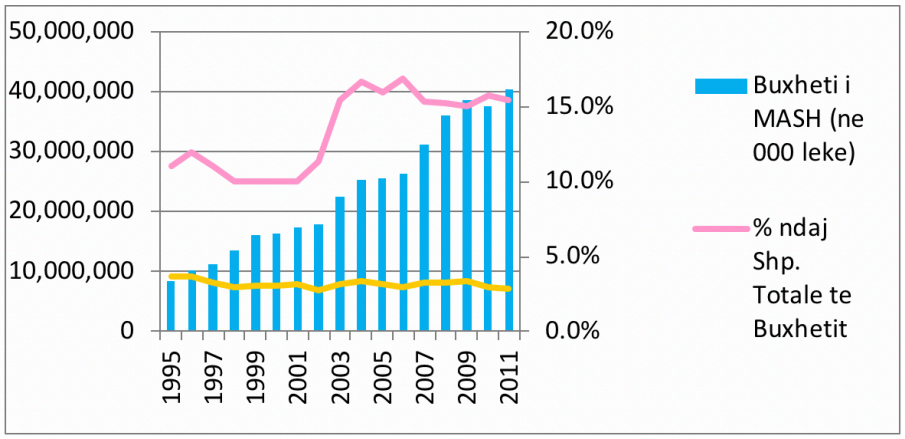
public sector and 47,9% by the higher education and research centres under the auspices of the MES. In terms of funding, UNESCO data indicate that 80.8% of R&D is funded by the government sector, with 8.6% supported by higher education, 7.4% from abroad and 3.3% by business enterprises. It is estimated that the gross business enterprise expenditure on R&D to GDP in Albania is approximately 0,00025% (Era Watch Observatory, 2014). There is a growing pattern of R&D performance in the private sector, particularly in private universities, non-governmental organization as well as companies focusing on innovation.

Figure 26: National Priorities for R&D Budget



For the period 2010 – 2012, there are seven National Programmes of Research and Development. In terms of expected funding for the period 2010-2012, the programmes for ITC and Agriculture, Food & Biotechnology received more than a fifth of the R&D funding, whereas the next four priorities received around 12-13% of the funding.

Figure 27: Albanian Budget for Education System 1995-2011



Source: Open Data Albania 2014 based on World Bank; Ministry of Finances and Bank of Albania

The R&D policy in Albania is based on the National Strategy for Science, Technology and Innovation and the soon to be introduced Law on Higher Education and Research. Even though the aim of the strategy is to introduce competitive funding criteria for policy instruments in R&D and innovation, this has not been achieved so far. The new Law on Higher Education and Research seeks to remedy this and provide a new funding scheme for higher education institutions and research in Albania. The budget for higher education represents 14,8% of the overall budget for the Ministry of Education and Sports, whereas the science fund represents only 0,45%. The total budget for education sector, including the vocational and professional education, for 2015 represents 2.75% of the GDP and 8,9% of the total budget expenditure for 2015. Despite the slight increase in the state budget for MES, the share for higher education and science/research is still low.

Table 30: **Ministry of Education and Sports Budget 2015**

Ministry of Education and Sports	Total Budget Expenditure for 2015 in 000 ALL
Total	**39,049,980**
Planning, management and administration	805,730
Basic education	24,887,628
Secondary general education	6,879,263
Higher education	5,797,590
Science Fund	177,000
Development of Sports	502,769

Source: Ministry of Finances, State Budget 2015

The Prime Minister created a Commission for the Reformation of Higher Education and Scientific Research in early 2014. The commission introduced a First Draft Report on the Reform of Higher Education and Scientific Research in Albania in spring 2014, and upon consultation with stakeholders, a final version was launched in July 2014. The Commission then developed a draft law on Higher Education and Scientific Research in Albania, which is currently still under discussion in the Parliament. Some important changes regarding science and research proposed in the new reform and which most likely will go through are:

- The establishment of the National Agency for Financing Higher Education, which will allocate funds to the higher education institutions in terms of: institutional support fund for the public HEIs; Scholarships and Support fund for students; funds for scientific activities, research and development.
- ARTI will be transformed into the National Agency for Scientific Research, composed of academics and managers elected by MES. The main function of the Agency will be the allocation of funds for scientific activities, research and development based on a competitive application process for all HEIs in the country

and scientific performance indicators. The Excellence Fund for doctoral programmes will be managed by the agency.

Progress has been made in terms of regional and international cooperation in research and development. Two main policy papers have been drafted, in which the Albanian Government engages to cooperate with UN organizations and address a regional approach to R&D and innovation policies. These main documents are expected to potentially affect the R&D policies towards a better integration with the regional priorities and access more international support as regards support measures. The two papers are: (i) Albania – United Nations Programme of Cooperation 2012-2016 represents a common action plan for 20 UN agencies with the Government of Albania for the coming five years. The programme substantiates the UN's contribution to national priorities and outlines a series of expected results in four priority areas: Governance and rule of law, Economy and environment, Regional and local development, and Inclusive social policy. (ii) Regional Strategy for Research and Development for Innovation for Western Balkans represents the regional strategy, as analyzed above.

This topic is relevant to the Albanian policy framework development given that since 2014 the government and stakeholders are in the process of evaluation of existing strategies and drafting the strategies till 2020 in line with the European Union accession process. In this sense, the interplay between research, innovation and growth needs to be fully explored in order to inform sound policy. Of particular interest to policy-making and accession process in Albania is the extent and the ways in which R&D/R&I could contribute to smart growth at all in the context of an emerging economy like Albania. Across the academic world, intensive research is being conducted in order to investigate the ways in which knowledge-based economy impact growth. The transition of emerging economies towards knowledge-based and innovation-driven growth is of particular research interest. The paper aligns with the knowledge-based models of endogenous growth, which imply that through fostering and supporting clusters, innovation systems and networks so as to establish an innovative milieu, whereby by knowledge production and flow is of central importance, it is possible to achieve innovative outputs and economic growth. Future research should elaborate an econometric

model to measure concrete impact of the R&D and innovation on growth in Albania and in the region. In addition, further data shall be collected in order to statistically measure the impact of Triple Helix on economic and social disparities at a regional level.

Albania is not part of the EU study concerning the spending of enterprises on R&D, but the following data shares a view of the innovation situation in the country. Based on Global Competitiveness Ranking, concerning innovation, Albania has improved by 22 places from 109th in 2015. Albania scored 4.18 points out of 7 on the 2017-2018 Global Competitiveness Report published by the World Economic Forum. Competitiveness Index in Albania averaged 3.84 Points from 2007 until 2018, reaching an all-time high of 4.18 Points in 2018 and a record low of 3.48 Points in 2008 (Global Competitiveness Index, 2017-2018).[12]

Based on the two components related to R&D, Albania has improved: "Company spending on R&D" component which has moved up 47 places from 104th in 2015. Also "University-industry collaboration in R&D" moved up 35 places from 104th in 2015. According to World Bank Report on Innovation in Albania in 2015, growth drivers require increased R&D and innovation to enhance competitiveness and national value added, but Albania is still lagging in many measures of R&D and innovation and faces the critical challenge of enhancing human capital and reversing brain drain of highly-skilled workers (World Bank Report, 2015). In addition, the Global Competitiveness Index highlights as factors hindering doing business in Albania insufficient capacity to innovate and inadequacy of education.

According to the Global Innovation Index Report for 2018[13], Albania is ranked 83rd out of 126 countries analysed, which shows a slight increase from 2017 when it was ranked

[12] The most recent 2017-2018 edition of Global Competitiveness Report assesses 137 economies. The report is made up of over 110 variables, of which two thirds come from the Executive Opinion Survey representing the sample of business leaders, and one third comes from publicly available sources such as the United Nations. The variables are organized into twelve pillars with the most important including: institutions, infrastructure, macroeconomic framework, health and primary education and higher education and training. The GCI score varies between 1 and 7 scale, higher average score means higher degree of competitiveness.

[13] The Global Innovation Index capture elements of the national economy that enable innovative activities: (1) Institutions, (2) Human capital and research, (3) Infrastructure, (4) Market sophistication, and (5) Business sophistication. Two output pillars capture actual evidence of innovation outputs: (6) Knowledge and technology outputs and (7) Creative outputs. For more: https://www.globalinnovationindex.org/analysis-indicator

on the 93rd place out of 127 countries analysed. Concerning the indicators of innovation input and output used for the calculation of the innovation index, no improvement has been made. Compared last year, no changes are shown for the two sub-indices of the innovation process, while the indicator of innovation output still shows a weakness. This leads to lack of improvement in the efficiency of the innovation activity for 2016 (a ratio of 0.4). According to the Global Innovation Index, the comparative strengths of Albania are associated with the business environment on the ease of starting a business, implemented international standards and the export of ICTs services. The comparative weaknesses are associated with the ranking of the universities by QS rankings, local competition, the development of clusters and interaction between universities and the use of information and communication technologies to improve and change the business model.

SMEs are the backbone of economic development in Albania. The development of SME innovation would strongly support Albania in its way towards a long-term sustainable development and provide a good prospect for an increase in its competitiveness in international markets. Nonetheless, existing data regarding the level of SME development in Albania is very limited. Beside the lack of data regarding innovation management in Albania, existing data provide some good hints as per regarding to country's approach to innovation. In principle, it can be concluded that Albanian economy and specifically private sector with specific focus on SMEs are not innovation driven. In a nutshell, the most problematic results are the lack of evidence regarding R & D investment, number of employees in R & D and the level of cooperation among ICT & innovation ecosystem.

The Government in Albania has put a special attention to innovation development through developing the Digital Agenda 2015-2020. This Agenda takes into consideration the Regional development objectives stated in SEE 2020 Strategy and the EU Digital Agenda Objectives. Nevertheless, the low level of innovation development, mostly concentrated in public sector (public services), underline the necessity to undertake some crucial steps toward innovation development in business sector (SMEs), in national level (external environment) and firms level (internal environment).

First, the external and macroeconomic environment should play a crucial role in the development of innovation in SMEs in Albania. Each actor of the ecosystem (every stakeholder) needs to recognize their role in the development of the ICT and Innovation Ecosystem. They should increase the level of collaboration, especially, to produce and provide innovative outputs and outcomes. Government support need to be not only strategically, but also financial.

Secondly, the internal environment plays also a critical role to the level of innovation in SMEs in Albania. It can be improved through changing the culture of organization, from traditional one, to more innovative oriented one. Also, the organizational structure of SMEs should change from hierarchy to more flexible and open one.

6.4 Potential of SMEs for innovation: Linkages to research sector[14]

Data from document analysis show that the Government in Albania has put a special attention to innovation development through developing the Digital Agenda 2015-2020. This Agenda takes into consideration the Regional development objectives stated in SEE 2020 Strategy and the EU Digital Agenda Objectives. Nevertheless, the low level of innovation development, mostly concentrated in public sector (public services), underline the necessity to undertake some crucial steps toward innovation development in business sector (SMEs), in national level (external environment) and firms level (internal environment).

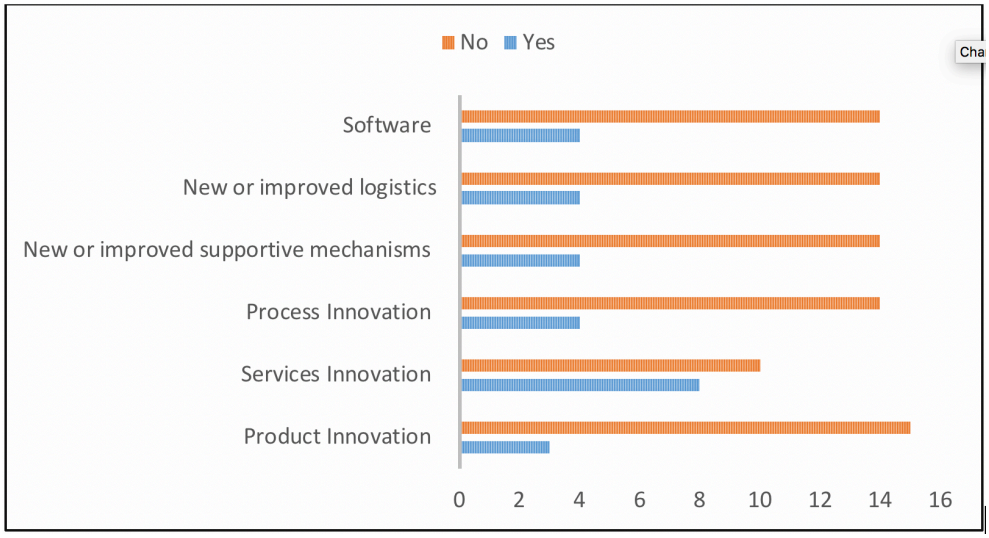
First, the external and macroeconomic environment should play a crucial role in the development of innovation in SMEs in Albania. Each actor of the ecosystem (every stakeholder) needs to recognize their role in the development of the ICT and Innovation Ecosystem. They should increase the level of collaboration, especially, to produce and provide innovative outputs and outcomes. Government support need to be not only strategically, but also financial. Secondly, the internal environment plays also a critical role to the level of innovation in SMEs in Albania. It can be improved through changing the

[14] Based on research report conducted by author for the level of cooperation between private sector and research sector in Albania, November 2017 – August 2018, funded by PERFORM and findings presented to RISI Albania.

culture of organization, from traditional one, to more innovative oriented one. Also, the organizational structure of SMEs should change from hierarchy to more flexible and open one.

Many companies, especially companies from the SME sector do not see the value of collaboration with the SSRS because they do not have the resources and capacities to introduce innovations to their business. there is a small interest and capability of Albanian companies to invest in innovation. The findings show that small interest in innovation of products, services or processes in the private sector in Albania results from: first, factors of economic, market-related character such as lack of resources, limited financial sustainability, market insecurity, frequent changes in tax legislation, high mobility of staff, limited level of professional and qualified workforce; second, the factors associated with general awareness of innovativeness and the benefits of engaging in collaboration with science and research; third, factors related to the positioning of PS and SSRS within the collaborative framework such as existence of mutual trust and commitment, having a shared goal, understanding of common interest by different stakeholders, prior relation and perceiving collaboration as effective means to address societal challenges and issues.

Figure 28: Business innovation types and frequency in SMEs



Data from in-depth interviews show that when asked if the companies cooperated with research sector in the past 12 months regarding innovation of products, services and processes, only a small part confirmed such cooperation as illustrated below. In some cases, companies cooperate with R&D companies and experts as well as researchers in Albania, but they also cooperate with foreign researchers and experts. However, in the vast majority of cases there is little cooperation.

Data from in-depth interviews shows that when it comes to collaboration between SMEs and the research sector, majority of SMEs representatives responded that they have already built some forms of cooperation. The most common types of collaborations mentioned are: student internships and work placement; joint forums and seminars; consultancy services; training; open lectures and projects financed by third parties.

In terms of the frequency of cooperation, respondents highlight that this cooperation happens once per year and only few stated that it happens more than twice per year. As such these types of cooperation are mostly ad-hoc and for a short period of time based on specific activity, rather than build upon long term agreements and well scheduled plan of activities. When asked to describe the quality of the outcome, the respondents from the private sector generally argued that they were satisfied with the outcome. However, concerns were raised regarding the quality of work, the pace and speed of the outcome and the understanding of business priorities.

There is a feeling among many entrepreneurs that SSRS is inaccessible in terms of prices, that the research they conduct takes a lot of time and doesn't always find use in practice. As entrepreneurs point out:

> "*Business moves fast, and innovation is cumulative*"
> "*Researchers and entrepreneurs need to understand this when they make decisions on where to invest for their collaboration*."

Perception and scepticism do not bode well for the business and science interface. The interaction between business and science is not always smooth. The difference in culture

between the two fields often means that there is a lot of misunderstanding or a difference in expectations on either side. One of the participants notes:

> *"However, the mutual scepticism does not help in building up this dialogue and collaboration".*

Increasingly, businesses rely on research to develop new solutions. However, there is a disconnection between the pace of industry and that of research and innovation (Curtis, 2016). Nonetheless, there is a growing interest in SSRS and PS collaboration also in Albania as highlighted by participants in the research:

> "*Collaboration between research and business is becoming a two-way source of innovation. Although it can be challenging for business people and researchers at first to appreciate each other's priorities, soon they realise the benefits of closer collaboration which can bring both parties closer and contribute to knowledge exchange and innovation for both parties*".

What is more, the transformation of the science and innovation system in the country as well as the pressure to compete and perform at the national and international level research funding have contributed to raising awareness on the benefits of SSRS and PS collaboration. One of the participants from the private sector argues:

> *"Considering current developments in Albania, it is important for businesses to hear more from research. This is also true for the public at large".*

In the same line, researchers value as well the public responsibility to produce results with impact to development of the community and they believe this has to be done in collaboration with the private sector. One of the researchers in the focus group argues:

"Researchers and entrepreneurs have a responsibility to work together to understand and inform the public…take for example the current issues of food safety in Albania. The decisions seem to be based on perceptions about the quality of fruits, vegetables, dairy and even bread, but only research can say the difference between perceived risks and real risks. Of course, businesses need to partner up with universities in order to achieve this. Also, the government can facilitate such a dialogue".

This points to the role of the government in supporting institutions towards such cooperation. The new Strategy on Science, Technology and Innovation makes provisions for such incentives. However, these collaborations are not yet consolidated as one of the researchers points out:

"We as researchers, but also our institutions are becoming more aware of the commercial potential of our research and how to exploit it, but there is still tension there and dilemmas regarding basic vs applied research".

Participants in in-depth interviews also argue that this cooperation is beneficial also to university and business company. University may benefit from such cooperation for better students' internship, improved curricula and study programmes, more funding and better quality of research as well as expansion of network and role in society. On the other hand, researchers argue that business benefit from up to date knowledge and data and thus can innovate. Researchers can help them solve concrete problems from market research to innovation of processes. The benefits for researchers, universities and companies are shown in table below.

Table 31: Benefits of SMEs and Research Collaboration - Most cited by participants in the research

Researchers	Universities/Research Centres	Business
Opportunity to address challenging research questions with real-world applications	Expanding the university mission from teaching to research and then impact in society	Improve business performance through developing new techniques/technology/processes
Engaging in applied research with tangible results and impact	Access to equipment, laboratories, infrastructure	Innovation opportunities in: product and service development
More diverse career opportunities to consider for the future	Access to research funds & diversifying funding schemes for research	Innovation opportunities in processes within business
Insights/Data from collaborative research project or other co-ventures with PS feed in and improve teaching methods/resources	Ensures ongoing and sustainable links to current developments in business sector and society in the country	Opportunities to select best graduates / doctoral students / staff as potential working force at the company
Diverse sources of funding for research	Gain more visibility thus higher chances to recruit students	Extend the capabilities and expertise available
Gain access to news skills	Offering mobility opportunities for students and staff	Gain access to state of the art research and highly qualified expertise on particular pressing issues
Gain access to relevant data	Helps with internationalisation and acquisition of EU funds	Possibility to gain funding from donors / other parties to carry out collaboration / co-ventures
Expansion of network of partners and collaborators	Institutional networks and collaborators	Exchange of good practices for setting up R&D units
Professional growth	Better employment opportunities for graduates	Gaining research expertise without the need to invest in setting up R&D units
Mobility opportunities	Improved overall performance of university research, teaching and role in society	Gaining more visibility

The study also shows that people and relationships are paramount to successful and productive collaboration both from the research and private sector. Effective brokerage facilitates the identification of potential partners, complemented by clear projects and access

to support and funding. It is difficult to engage companies or researchers that have never participated in collaborations before. Raising awareness of the benefits and ways to cooperate is a useful instrument.

The research[15] highlights some concrete areas on how researchers can contribute to private sector and internal business processes and performance:

Figure 29: Research contribution to internal business processes: Area of cooperation

Product innovation: Introduction of new products or improvement of existing ones
Services innovation: Introduction of new services or improvement of existing ones
Process innovation: Introduction of new processes or improvement of existing ones - better business performance
Market research & Consumer Behaviour
Marketing and Public Relations: Digital and Content Marketing
Human Resources Development: Training, Assessment, Welfare, Qualifications
Exploring new markets and partnership building
Implementation of new technology/software: Resilience and Change
Exploring external funding opportunities: European Commission Funds & Networks
Project and Funding Application & Consultancy: IPARD in Agribusiness
Business Expansion and Development Models
Support in establishing Research and Development or Research and Innovation Units
Work safety, contracts and labour agreements
Corporate social responsibility and community engagement

*Author

There are different models of cooperation between research and SMEs, which are highlighted below:

[15] Based on the results of the research conducted by the author on research and business collaborations in Albania, 2018, commissioned by PERFORM.

Table 32: Proposed structures of research and SME collaboration

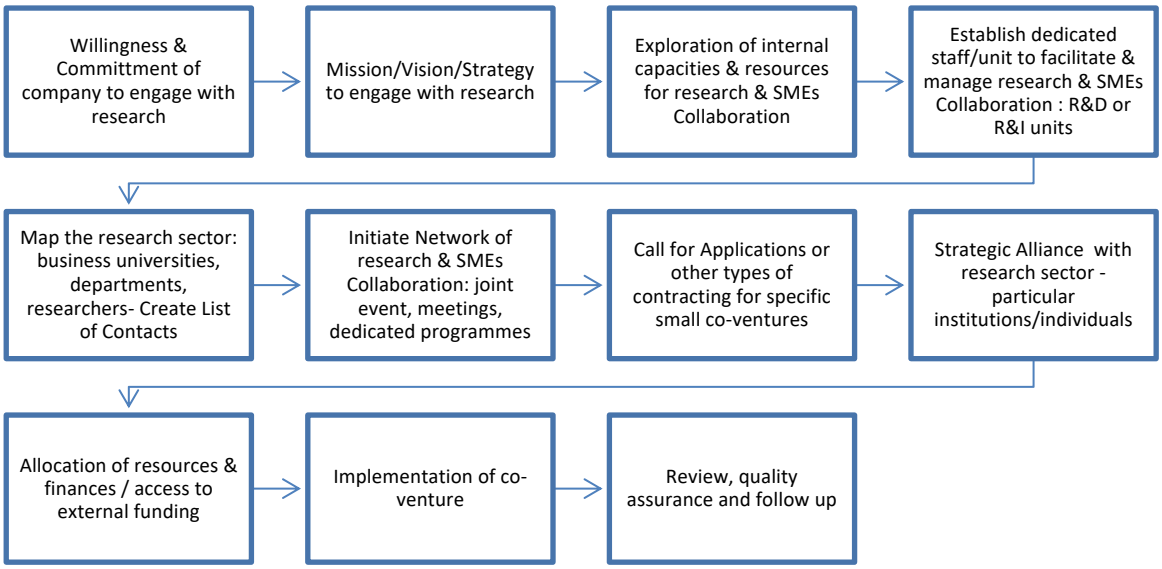
Type of Contracting	Brief Description
Episodic contracting / consultancy services	A firm encounters a problem where research could be helpful, does a quick search and 'spot' contracts with a university department for help urgently to solve that issue. The department undertakes a piece of ad hoc applied research or consultancy to meet the commission.
Open call episodic contracting / consulting services	A firm opens a call for application to select a university department or group of researchers to conduct ad hoc applied research or consultancy to meet concrete business needs.
Strategic commissioning of consultancy services	A firm plans its research or consultancy needs in advance, undertaking a more considered search, and committing more resources over a longer term. Pursuing a mix of in-house research and outsourcing helps firms to balance their R&D portfolios, spread the associated risks of doing research in-house, and access innovation and new knowledge from outside. this can be done via open calls for application or based on strategic alliance already established between SSR and PS - ex collaborative research projects; second a researcher etc.
Continuous partnership - Regular commissioning of consultancy services	In this case a firm has a close and long-term relationship with researchers, providing a regular stream of funding that can translate into discrete projects, studentships and new equipment, and getting to know the department's or lab's staff and research capabilities in detail. The researchers also come to understand the firm's procedures, priorities and capabilities in detail, and perhaps establish trust relations with particular executives - ex Knowledge Exchange Partnerships or Joint Research Centres.
Use of university licenses / patented / intellectual property	A firm pays to use a university licensed research or a valuable resource such as a patented or otherwise protected piece of intellectual property.
Technology Transfer and Innovation Contracting	In this case government agencies provide funding to universities / research centres for technology transfer and innovation so as to collaborate with private sector; in and advanced phase, government supports university innovations that feed into industrial development of firms located in the same region in the expectation that employment and tax revenues will increase, with positive multiplier effects.

External funding for SSR and PS collaboration	In this case, external stakeholders such as local or international donors commission calls / consultancies/ projects to enhance the SSR and PS collaboration.
Individual researcher contracting	In this case a firm contracts individual researcher rather than a university department or research centre.
Framework agreements / Sponsorship	In this case a firm contracts a university department or centre and provides sponsorship for long term research projects: joint research centres, doctoral programmes, co-production etc.

*Author

An illustration of the steps that SMEs in Albania need to follow to start or consolidate their collaboration with research sector can be found in the figure below:

Figure 30: Steps for SMEs to develop research collaboration



Key components of SMEs and private sector internal structures and competences for collaboration with research sector are shown below:

Figure 31: SMEs internal structures & competences for collaboration with research

It is difficult to engage companies or researchers that have never participated in collaborations before. Raising awareness of the benefits and ways to cooperate is a useful instrument. It is even more difficult to re-engage those companies or researchers who have had previous collaboration which were not productive. In this case peer to peer mechanisms for advice on successful cooperation can be effective. In both cases, funders and universities should do more to communicate and promote examples of researchers who have derived particular benefit from collaborating with private sector. These researchers who spent time and engage in co-ventures with private sector should be promoted as they represent a mark of esteem that enriches their career in a similar way that international research teaching or fellowship do. Effective brokerage facilitates the identification of potential partners, complemented by clear projects and access to support and funding. The effective brokerage can be in various forms: knowledge brokers, innovation brokers, knowledge transfer experts, project managers, R&D units, innovation and tech transfer offices, but also digital tools such as platforms and marketplace for academics and businesspeople to meet and match.

6.5 Chapter Concluding Remarks

The results can provide effective and useful insights for investors and business owners to utilize more appropriate BI tools and functions to reach more idealistic organizational advantages. Also, it enables managers to better understand the application of BI functions in the process of achieving the specified managerial support benefits. SMEs can achieve the integration of BI and KM, which is proven to be a necessity for them in the knowledge economy.

This research shows that some of the determinants of the business digitalisation and thus business performance are related to macro and micro economic settings such as institutional barriers (procedural requirements for registration and licensing, number of institutions for entrepreneurs to report to, rules and regulations governing entrepreneurial activities, laws to protect property rights, etc.); entrepreneurial and business skills (including entrepreneurial training and business education, availability of information); social and economic condition for entrepreneurship (including public attitude toward entrepreneurship, presence of experienced entrepreneurs, existence of persons with entrepreneurial characteristics); financial assistance to small and medium enterprises (including venture capital, alternative sources of financing, low cost loans, etc.); non-financial assistance to small and medium enterprises (including counselling and supportive services, entrepreneurial networks, support for research and development).

Also, a major component is that of access to market. On other hand, the level of barrier to entry and to exit in a certain market is indicator of the state of the competition. Sound competition policy can help markets work better and is a key part of the investment climate that can help investor confidence, and provide a level playing field for domestic SMEs. The research shows that entrepreneurs in Albania, particularly SMEs engaged in ICTs, have now embraced the challenge of innovation to support their business and address customers' demands. However, SMEs have not yet managed to create a critical mass needed for digital transformation of the Albanian economy. Secondly, even though the role of ICTs

and digitalisation has now been recognised by policy sector and private sector as well, there are still opportunities that remain unexploited.

CHAPTER VII

DIGITALIZATION OF SMES IN ALBANIA: THE SECRET TO THEIR PERFORMANCE

7.1 The Impact of Digitalization on SMEs Performance

The positive relationship between digitalization of SMEs and performance was established by this research. This confirms the important role played by the digitalization and technological innovation in the performance and growth of the firm. This result confirms previous studies, which have established a strong relationship between technological factors and the success of innovation, leading to higher performance and business growth. Business digitalization correlated positively with SME Performance and appeared to be the best factor with highest contribution to the firm growth as illustrated below.

The research also confirms the positive impact of owner-manager characteristics on digitalization. Entrepreneurial orientation in business style and relatively high-level innovativeness positively impact digitalization of SMs. As shown in other studies, entrepreneurial orientation in this research work is described as strategy-making processes, structures and behaviors of firms characterized by innovativeness, pro-reactiveness, risk-taking behavior, competitive aggressiveness and autonomy, and facilitating the pursuit of opportunities. This research argues that firms with proactive entrepreneurs performed well in a dynamic environment.

Table 33: Results of factor analysis

Hypothesis	Independent Variable	Dependent Variable	Path coefficient	Hypothesis supported ?
H1: Business digitalization impacts positively the overall performance of SMEs in Albania.	Digitalization	Performance	0,60**	Yes
H3. SME characteristics have a direct effect on the adoption, implementation and usage of business digitalization.	SMEs characteristics	Digitalization	0,11*	Yes
H4. Owner-manager characteristics have a direct effect on the adoption, implementation and usage of business digitalization.	Owner-manager characteristics	Digitalization	0,31**	Yes

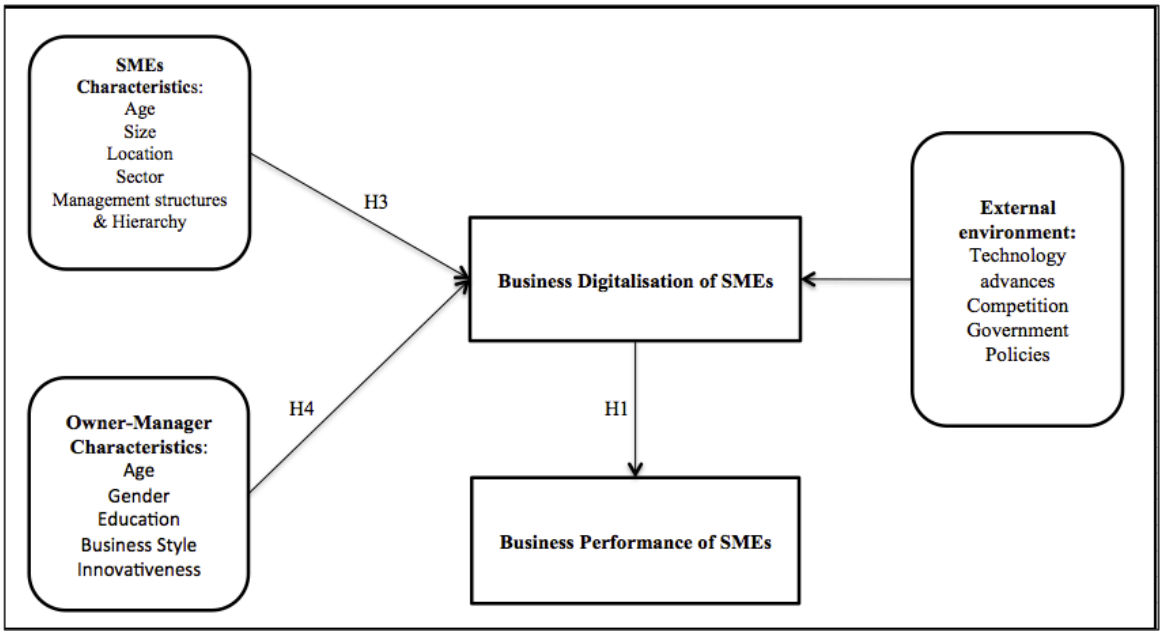
**significant at p<0,05*

***significant at p<0,01*

The research also suggests that owner/ managers in high-tech firms mostly possess a professional qualification and come with past experience. This enables them to involve themselves in the process of innovation at every stage and this will have a positive impact on the success of the firm. This research generally supports the existing literature that the pro activeness of an entrepreneur positively contributes to the firm growth. As discussed in the literature review chapter, external environment factors influence a firm's capacity to innovate and also the innovation itself (Neely et al., 2001). Decision makers respond to the lack of information through responses that attempt to adapt their organization. The optimum alignment between strategy and environmental conditions helps a firm to have positive growth. Government policies, as well as the changes in the market environment, are the

biggest risk factors that a firm needs to be aware of and have a plan to address. The firm also needs to respond quickly to any changes that it faces in order to keep the firm in the path of growth.

Figure 32: Final research model after hypothesis tests



*Author

The research shows that despite progress in recognising the relevance and importance of innovation and digitalisation of private sector in Albania, there are still areas of insufficient development and collaboration between stakeholders. One of the challenges of digitalisation that SMEs highlight is the relatively limited access to hard and soft ICT infrastructure as one of the SMEs representative puts it:

> "*There is fairly good hard infrastructure in central cities in Albania such as Tirana, Durres and others, but there are gaps in terms of access and connectivity in rural and remote areas, but also in small towns. The thing is that in these small towns there are SMEs that could not benefit from opportunities of ICTs*".

Another challenge mentioned by SMEs is the issue of funding and investment for entrepreneurship, which is insufficient across the board as one of the representatives of the sector mentioned:

> "*There are few opportunities for seed funding, angel investment, and venture capital. Also, SMEs do not always have access to information for these funding opportunities and they might not have the competences to acquire them*".

Digitalisation is also hindered by the small size of the market in Albania and the constraints related to its size. Economic progress and more technical and digital literacy can help with digitalisation, but one of the representatives of private sector argues:

> "*Our future is the European market, but we are still far way and we do not pose added value and competitive advantage in this regard*".

Another representative points to the importance of networks that could help in this regard in order to foster SMEs potential in Albania at the regional and European level. Digitalisation and innovation is also an issue of working culture within SMEs. One SME representative highlights:

> "*there is ambition among young people with an interest in entrepreneurship and innovation, but there are not sufficient funding and opportunities*".

Although there is an increasing interest in digitalisation of SMEs, there are factors that hinder this process such as risk aversion, vision, and lack of skills that are holding back entrepreneurs to fully benefit from digitalisation. The respondents argue that digitalization is inevitable for business and in order to become digitally mature and have competitive advantage. However, even though they are aware of this potential, there are various difficulties that imped this process. Going digital and implementing advanced ICTs systems and applications is not sufficient, because a change in working culture and in the way business is done is necessary. The research highlights that digitalisation is about innovation and technology, but also about changing structure and design of internal business processes.

In this sense, the in-depth interviews data confirm what precious studies have argued that digitalisation is a disruptor, but at the same time opens up rigid barriers which leads to new opportunities (Manyika et al. 2015). In this line digitalization allows SMEs to increase operation efficiency, to broaden their innovation efforts, and to better allocate their resources. One of the representatives argued:

> "*digitalization does not stop at the implementation of new technologies that automate processes. It also has to do with data and analytics, which help firms to understand their customers better*."

But at the same time, SMEs have to re-conceptualise the way they do business constantly and in line with changes in technology otherwise they risk falling behind and this disrupts the course of doing business. One of the SMEs representatives stated:

> "*My company has benefited from digitalisation, we have saved costs, we have e-commerce now and better operations thanks to more quality data. But it is an on-going and challenging process that created some tensions in my company and were not easy to overcome*".

As in literature, this research confirms that organizational inertia is a barrier for digitalization. Inertia consists of the will to keep doing things in the way they have always been done and the resistance to new technology and new processes is recognised in theory and in practice. The vision and support of owner-manager of SMEs has been identified by respondents as one of the key drivers of digitalization. Some of the main themes identified for digitalisation are: customer understanding; collaboration with partners and stakeholders; business model design; capabilities and competences; performance measurement; internal working culture; innovation of processes, products, services; management systems, reporting. Some of the respondents also highlighted the financial risks and doubts regarding the benefits and return on investment of digitalisation. The digitalisation of SMEs is likely to contribute to economic

change, but the extent of that contribution depends on the way in which businesses and their employees adapt their processes and internal working culture to make use of digitalisation and to innovate.

7.2 Discussions

A number of external and internal barriers are listed and are discussed for decision-maker of SMEs. The research found that SMEs in Albania are usually rational in their decision process; they look for outcome benefits from each investment they have to make. Because SMEs have limited resources available to evaluate benefits and justify the value of implementing ICT and e-business solutions, information should be made available for them to gain an understanding of how ICT and e-business can be beneficial. Understanding the importance of ICT adoption, manager's ICT knowledge and skills could be the most important factor that organization must consider before implementing ICT. Overall, ICT integration amongst SMEs in service sector in Albania can be improved and enhanced by cooperation among various parties.

Besides government, SMEs should diversify their current business activities through use of broadband Internet. With a better understanding of the potential benefits that ICT can bring, managers should develop a more favorable attitude and become more receptive to the idea of adopting the Web. ICTs provide all businesses with opportunities for development, innovation and improved productivity. More specifically, where SMEs are concerned, it is information exchange tools that increase the efficiency of traditional exchange procedures, both within the company and with suppliers and customers. ICTs offer companies considerable potential to extend and give structure to the scope of their influence at very little cost.

Use of and investment in ICT requires complementary investments in skills, organization and innovation and investment and change entails risks and costs as well as bringing potential benefits. While many studies point to the possibility of market expansion as a major benefit for SMEs, larger businesses can also expand into areas in which SMEs

dominated. Moreover, it is not easy for SMEs to implement and operate an on-line business, as this involves complementary costs for training and organizational changes as well as direct costs of investing in hardware and software solutions. In Albania, better part of SMEs still use basic communication technology such as fixed phone line and fax, and only a small part use CRM software. This study showed that the impacts of business digitalization and ICTs on firm performance are positive overall. One cause of limited adoption is the lack of dynamism between ICT firms and SMEs outside of the ICT sector. ICT firms have not provided goods and services tailored to SMEs in the past because demand from SMEs has been low. However, their demand is low in part because ICT products available in the market are too complex and expensive. The result is a vicious cycle of limited supply and limited demand that ultimately excludes SMEs from the benefits of ICT.

CHAPTER VIII

CONCLUSIONS AND FUTURE RESEARCH

8.1 Main Conclusions

The research for this doctoral thesis was set precisely in this configuration whereby: on one hand the current level of adoption and use of advanced ICTs and technological innovation within SMEs, or business digitalization as will be coined later, is relatively limited due to a variety of factors; and on the other hand ICTs themselves as technological systems or tools as well as part of business landscape, i.e. ICT as a sector, are a major driver of innovation, modernization and growth for the Albanian economy. This doctoral thesis addressed the gap in the current state of research regarding the development, adoption and use of advanced ICTs systems, i.e. business digitalization, within SMEs. In addition, the research for the doctoral thesis expanded the challenge to the impact of business digitalization on performance of SMEs in Albania. Clearly, SMEs have been selected as the central ground of research not only to contribute towards filling a research gap in management and ICTs studies in Albania, but also because of the central role that SMEs play in Albanian economy and their future potential in the digital world.

The results showed that business digitalization impacts positively the overall performance of SMEs in Albania. Size, age and location of the SME dominate performance and are related to the business digitalisation more than strategy. Also, the entrepreneurial characteristics of the owner – manager also impact the digitalization. Having a clear business plan was also found to be important when it comes to using BI. SMEs in Albania are a vital part of the national economy and the research shows that there is growing interest in ICTs, digitalisation, BI and KM, but innovation is still at relatively low levels due to financial and human resources, which are limited.

However, the research highlights that SMEs are very flexible and easy to adopt to change and when this is combined with a visionary owner-manager they tend to move

towards business digitalisation. Another finding of this study is that digitalisation have lead SMEs to reconsider and re-conceptualise their business models attempting to move towards innovations that impact performance. Also, the concept of business model innovations is also gaining ground in SMEs in Albania.

Findings show that the use of BI and other digitalisation processes is mainly driven by strategic and innovation related motives that are internal to the company and the owner-manager. The use of BI as a result of external technological factors also plays a role. Analysis of the findings show that the use of BI and digitalisation have a positive impact on business performance. A number of external and internal barriers are listed and are discussed for decision-maker of SMEs. The research found that SMEs in Albania are usually rational in their decision process; they look for outcome benefits from each investment they have to make. Because SMEs have limited resources available to evaluate benefits and justify the value of implementing ICT and e-business solutions, information should be made available for them to gain an understanding of how ICT and e-business can be beneficial. Understanding the importance of ICT adoption, manager's ICT knowledge and skills could be the most important factor that organization must consider before implementing ICT.

Overall, ICT integration amongst SMEs in service sector in Albania can be improved and enhanced by cooperation among various parties. Besides government, SMEs should diversify their current business activities through use of broadband Internet. With a better understanding of the potential benefits that ICT can bring, managers should develop a more favourable attitude and become more receptive to the idea of adopting the Web. ICTs provide all businesses with opportunities for development, innovation and improved productivity. More specifically, where SMEs are concerned, it is information exchange tools that increase the efficiency of traditional exchange procedures, both within the company and with suppliers and customers. ICTs offer companies considerable potential to extend and give structure to the scope of their influence at very little cost.

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In Albania, better part of SMEs still uses basic communication technology such as fixed phone line and fax, and only a small part use CRM software. This study showed that the impacts of business digitalization and ICTs on firm performance are positive overall. One cause of limited adoption is the lack of dynamism between ICTs firms and SMEs outside of the ICTs sector. ICTs firms have not provided goods and services tailored to SMEs in the past because demand from SMEs has been low. However, their demand is low in part because ICTs products available in the market are too complex and expensive. The result is a vicious cycle of limited supply and limited demand that ultimately excludes SMEs from the benefits of ICTs.

For the digital transformation of SMEs this research pointed out two main concepts: first, firms acknowledge the potential and benefits of new technologies which have the power to redefine operational processes and business models and thus enhance performance. However, as shown by qualitative data, this does not mean simply adopting and using new ICTs systems that will immediately derive progress and better performance. In fact, it is the careful, well-thought and planned, strategic and smart selection of advanced ICTs systems such as BI that help to redefine business processes and push the boundaries of the firm towards better performance. Second, this research also highlights the role of competition in digital transformation, which is related to the need to reach more customers and expand to new markets. SMEs need to satisfy the need of customers for high quality services online through e-commerce and/social media, and therefore are forced to a certain extent to embrace digitalisation. In addition, firms are starting to understand the power of data analytics and BI is, although not all SMEs can afford to engage with big data and analytics.

This research showed that digitalisation and transformation that follows at the internal environment of SMEs manifests itself as an increase in advanced ICTs systems and applications and in data analytics using Business Intelligence and Knowledge Management

to gain in-depth insights into human capital reasoning and judgment, being staff, customers, competitors. Firm want and need to know more about customers and customer behaviour in general and thus digitalisation typically revolve around the integration of these two streams: advanced ICTs systems and analytics. The findings show that their combination leads to a new business model and transformed business processes. This is in line with previous studies (Schwab, 2017) arguing that digitalization allows companies to understand internal processes and customers better. Although there is a necessity to engage in digitalization or digital transformation, this research demonstrated that not all companies have embraced becoming digital as part of their vision, strategy and daily operations mainly linked to limited financial and human resources capital, lack of vision on the side of leadership and perceptions on low return on investment.

8.2 Theoretical Implications

The findings of this research are in line with the Actor-Network Theory and the case study of Albanian SMEs and their digitalisation confirms the main pillar of this theory. The findings of this research challenges technology determinism and argues that external environment also has an impact on digitalisation and business performance. In addition, the findings confirm the ANT approach that does not consider ICTs adoption as one-off decision, but as a multidimensional process. Another theoretical implication of this research in line with ANT is that SMEs are flexible, unique, and associated with complex tasks and that operate in a much more dynamic and unpredictable business environment. The research findings also confirm that while SMEs have financial and human resource disadvantages, they have behavioural advantages which are crucial for digitalisation and innovation.

Moreover, the research also confirms that despite the potential of these intangible resources offered to SMEs and the deployment of digitalization for their management, the liability of newness is still a major impediment of growth for SMEs. Even though size represents a weakness, for example in terms of available resources and long-term planning, on the other hand it favours a flat organizational structure with a lack of bureaucracy, which

results in flexibility, adaptability, and rapidity in responding to the changing environment and thus more potential for digitalisation. The research findings also confirm the relevance of extern environment impact. Firm performance is the result of a proper alignment of firm design with the context it operates in.

8.3 Policy Implications

Public policy can also influence the development of innovation and digitalisation of SMEs in Albania. Public policy may influence the propensity of SMEs to collaborate with research sector with the aim of fostering innovation and digitalisation.

This research highlights the following ways public policy can facilitate digitalisation and innovation in SMEs through better collaboration with research sector: (i) through a direct role in providing substantial funds to R&D projects; (ii) through a regulatory role, which influences the research performance practices of universities, career path progress and shapes the intellectual property rights regime; (iii) through provision and support of intermediate mechanisms or brokerage platforms such as technology transfer offices, science parks, and business incubators that strengthen the linkages between firms and research for innovation; (iv) through soft measures or instruments such as providing specific support services for networking, partner search, grant applications and outreach activities to raise awareness of the relevance of collaboration. Currently these soft instruments are provided through the National Agency for Scientific Research and Innovation.

The findings of this research also show that SMEs are affected by the external environment. Factors such as regulatory uncertainty, inconsistency and frequent changes in legislation and policies and complexities of tax system disrupt the development of SMEs. Therefore, the complexity of regulatory procedures and compliance are important for SMEs. The reduction of administrative burdens and complexities would open up opportunities for more innovation and growth in SMEs. In this light, public sector transparency, fair competitive rules in the market and overall integrity of public policies and administration are essential for an enabling environment for SMEs in Albania.

Finally, the outcome of this research can contribute to visualise an innovation system which is open and focused on linkages and collaboration between private sector and research. this open innovation system founded in robust public policies that support SMEs development, create an enabling environment that encourages SMEs to innovate and embrace digitalisation.

8.4 Implications for Enterprises

The findings of this research paper have practical implications for the SMEs sector in Albania not only in providing an assessment of the current use of BI, but also in exploring the benefits and potential usage of BI as a necessary activity for deriving improved performance. Findings of this research can be used by owners-managers to better understand how firms can engage with digitalisation and BI and how their adoption and implementation affect business performance. Another implication for business sector is that digitally mature companies have better performance and thus derive more revenue and become more competitive. Finally, the research shows that digitization has a variety of dimensions and can be understood differently by different SMEs, owner-managers and staff, but it is a major contributor to business performance. The research has also implications regarding the collaboration between businesses and research sector.

It is necessary for research sector and businesses to come together to explore the practical, personal and symbolic reasons for collaboration. This includes a reflection on expectations of what both parties can bring to the collaboration and how realistic these expectations are. These reasons may be practical - access to resources, necessity of partnership to actually conduct the research; they may be personal - an intrinsic motivation, friendship or shared interest; they may be to do with wider agendas - changing the nature of research, rethinking university-community relationships. The important thing is to understand these different motivations and their implications for how research and SMEs approach the joint initiative or co-venture.

Once the collaboration approach and model has been discussed and agreed, the structure of the contracting is very crucial, and it needs to be preceded by negotiating funds

available for this collaboration, time and resources that each partner can allocate to the collaboration. These negotiations may impact on interpersonal relationships, the nature of the partnership and the kind of outcomes that will be pursued. Questions of money, time and resource, and how these are organised and administered are critical factors in shaping how and whether projects are able to achieve their goals. This is why both parties should invest the necessary time and commitment to clarifying these three pillars. The foundation of all type of collaboration from an ad-hoc event to a long term institutional agreement lies on trusting and healthy relationships between people in research and business.

8.5 Limitations

One of the main limits of the research is the relative small number of survey interviews. However, this research has mitigated this by using two other methods: in-depth interviews and document analysis. therefore, the testing would positively benefit from a higher number of surveyed SMEs. In addition to subjective reporting of SMEs regarding the indicators of analysis, it would be beneficial to completed it with objective data on digital maturity, SMEs growth and performance from other resources. Also, the high level of complexity of innovation and digitalisation processes may not be captured only with a statistical model. That is why in this research, this has been used as a data analysis tool to test the robustness of the model in the case of Albania, rather than a construction model. Moreover, it has been complemented by in-depth interviews and document analysis.

8.6 Future Research

Future research is needed to explore further the role of digitalisation processes in SMEs in Albania particularly related to enabling and hindering factors. In addition, further research is needed regarding the business model innovations, particularly in terms of human and organizational factors. This study is one of the first research contributions in the case of Albania to analyse the impact of digitalization, specifically the impact of BI on SMEs in Albania. However, future research should explore the interrelation between digitalisation and

performance in regard to internal and external firm conditions. In order to evaluate SMEs development and role in digital economy in Albania it is necessary to research the impact on SMEs performance of variations in business sector, location of firm and innovativeness of human capital. Also, further research is needed to build SME performance models focused on the external environment of the firm.

Bibliography

Bahiti, R., & Shahini, B., (2010) "Strengthening Innovation and Technology Policies for SME Development in Albania", *Wspolcze Ekonomia*, 13 (1): 191 – 205.

Bazini, E., Ilia, D., & Qarri, A., (2011) "Barriers of ICT implementation within SMEs in service sector in Albania", *Eureconomia*, 29 (3): 114-122.

BFC. (2016) *Assessment of financing needs of SMEs in Western Balkans countries. Country report: Albania*. European Investment Bank.

Bititci, U., Garengo, P., Dörfler, V. and Nudurupati, S. (2012) "Performance Measurement: Challenges for Tomorrow", *International Journal of Management Reviews*, 14 (3): 305-327.

Bititci, U.S., Carrie, A.S. and McDewitt, L. (1997) "Integrated performance measurement systems: a development guide". *International Journal of Operations & Production Management*, 17 (5): 522-534.

Bititci, U.S., Mendibil, K, Nudurupati, S., Turner, T. and Garengo, P. (2004) "The interplay between performance measurement, organizational culture and management styles", *Measuring Business Excellence*, 8 (3): 28-41.

Bititci, U.S., Mendibil, K., Nudurupati, S., Garengo, P. and Turner, T. (2006) "Dynamics of performance measurement and organisational culture", *International Journal of Operations & Production Management*, 26 (12): 1325-1350.

Boonsiritomachai, Waranpong, McGrath, Michael and Burgess, Stephen, (2014). "A research framework for the adoption of Business Intelligence by Small and Medium-sized enterprises", 27th Annual SEAANZ Conference Proceedings, Small Enterprise Association of Australia and New Zealand.

Choudrie, Jyoti and Culkin, Nigel. (2013),"A qualitative study of innovation diffusion: the novel case of a small firm and KTP", *Journal of Small Business and Enterprise Development*, Vol. 20, No. 4, pp. 889 – 912.

Creswell, J. W., Miller, D. L. (2000). "Determining validity in qualitative inquiry". *Theory into Practice*, 39(3). pp. 124-131.

Desmet, D., Duncan, E., Scanlan, J., and Singer, M. (2015). *Six Building Blocks for creating a high-performing digital enterprise*. McKinsey & Company, September.

Downes, L. and Nunes, P. (2014). “Big Bang Disruption: Strategy in the Age of Devastating Innovation”. pages 16–18. Penguin Group.

Downes, L. and Nunes, P. F. (2013). “Big Bang Disruption”. *Harvard Business Review*, 91(3):44–56.

Dutta, A., Lee, H., and Yasai-Arkedani, M. (2014). “Digital systems and competitive responsiveness: The dynamics of it business value”. *Information and Management*, 51:762–773.

European Commission, (2015) Small and Business Act for Europe Fact Sheet: Report on Albania.

Fitzgerald, M., Kruschwitz, N., Bonnet, D., and Welche, M. (2013). “Embracing Digital Technology: A New Strategic Imperative”. *MIT Sloan Management Review*, 55:1–12.

García-Morales, V.J., Lloréns-Montes, F.J. and Verdú-Jover, A.J. (2007) “Influence of personal mastery on organizational performance through organizational learning and innovation in large firms and SMEs”, *Technovation*, 27 (9): 547-568.

Garengo, P. and Bernardi, G. (2007) “Organizational capability in SMEs – Performance measurement as a key system in supporting company development”, *International Journal of Productivity and Performance Management*, 56 (5/6): 518-532.

Garengo, P., Biazzo, S. and Bititci, U.S. (2005) “Performance measurement systems in SMEs: a review for a research agenda”, *International Journal of Management Reviews*, 7 (1): 25-47.

Geroski, P-A., Machin, S.J. and Van Reenen, J. (1993) “The profitability of innovating firms”, *The RAND Journal of Economics*, 24 (2), 198-211.

Ghauri, P. and Grønhaug, K. (2010) *Research methods in business studies*, 4th edition, Pearson Education Limited.

Gimpel, H. and Röglinger, M. (2015). *Digital Transformation: Changes and Chances - Insights based on an Empirical Study*. Fraunhofer Institute for Applied Information Technology FIT, pages 5–19.

Government of Albania, Council of Ministers, (2014) Cross-cutting Strategy “Digital Agenda of Albania 2015-2020”, Minister of Innovation and Public Administration, Tirana.

Government of Albania, Council of Ministers, (2014) The Business and Investment Development Strategy 2014-2020, Ministry of Economic Development, Trade and Entrepreneurship, Tirana.

Harry Bouwman, Shahrokh Nikou, Francisco J. Molina-Castillo, Mark de Reuver, (2018) "The impact of digitalizationon business models", *Digital Policy, Regulation and Governance*, Vol. 20 Issue: 2, pp.105-124.

Haverkort, B. R. and Zimmermann, A. (2017). *Smart Industry: How ICT Will Change the Game.* IEEE Internet Computing, 21(1):8–10.

Hawking, Paul and Sellitto, Carmine, (2010). "Business Intelligence (BI) Critical Success Factors", ACIS 2010 Proceedings. Paper 4. Available at http://aisel.aisnet.org/acis2010/4, (accessed in December, 2015).

Ivers, Anne Marie, Byrne, PJ. and Byrne, James, (2016),"Analysis of SME data readiness: a simulation perspective", *Journal of Small Business and Enterprise Development*, Vol. 23, No. 1, pp. – 1-33.

Jayanthi Ranjan, (2008),"Business justification with business intelligence", VINE, Vol. 38 Iss 4 pp. 461 – 475

Li, J., Merenda, M., & Venkatachalam, A. R., (2009) "Business Process Digitalization and New Product Development: An Empirical Study of Small and Medium-Sized Manufactures", *International Journal of E-Business Research*, Volume 5, Issue 1, pp. 125-138.

Manyika, J., Ramaswamy, S., Khanna, S., Sarrazin, H., Pinkus, G., Sethupathy, G., and Yaffe, A. (2015). *Digital America: A tale of the haves and have-mores*. McKinsey, Global Institute, December:4–80.

Matlay, H., & Martin, L. (2009) "Collaborative and competitive strategies in virtual teams of E-entrepreneurs: APan-European Perspective", Australasian Journal of Information Systems, Vol. 16 (1): 99-116.

McDermott, C.M. and Prajogo, D.I. (2012), "Service innovation and performance in SMEs", *International Journal of Operations & Production Management*, Vol. 32 No. 2, pp. 216-237.

OECD (2010a), SMEs, Entrepreneurship and Innovation, OECD Publishing, Paris.

OECD (2010b), High-Growth Enterprises: What Governments Can Do to Make a Difference, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris.

OECD (2013a), Green entrepreneurship, eco-innovation and SMEs, OECD Working Party on SMEs and Entrepreneurship, CFE/SME(2011)9/FINAL.

OECD (2013b), Skills Development and Training in SMEs, OECD Publishing, Paris

OECD (2013c), SME and Entrepreneurship Financing: The Role of Credit Guarantee Schemes and Mutual Guarantee Societies in supporting finance for small and medium-sized enterprises, OECD Working Party on SMEs and Entrepreneurship, CFE/SME(2012)1/FINAL

OECD (2015a), Policy Framework for Investment 2015 Edition, OECD Publishing, Paris.

OECD (2015b), Skills and learning strategies for innovation in SMEs, Working Party on SME and Entrepreneurship, CFE/SME(2014)3/REV1.

OECD (2015c), Taxation of SMEs in OECD and G20 countries, OECD Publishing, Paris

OECD (2015d), New Approaches to SME and Entrepreneurship Financing. Broadening the range of instruments, OECD Publishing, Paris.

OECD (2016b), Entrepreneurship at a Glance 2016, OECD Publishing, Paris.

OECD (2016c), "No Country for Young Firms?", Policy Note, Directorate for Science, Technology and Innovation Policy Note, June 2016.

Olszak, M. Celina, (2013), "Assessment of Business Intelligence Maturity in the Selected Organisations", Proceedings of the 2013 Federated Conference on Computer Science and Information Systems, pp. 951–958.

Pflaum, A. A. and Gölzer, P. (2018). The IoT and Digital Transformation: Toward the Data-Driven Enterprise. IEEE Pervasive Computing, 17(1):87–91.

Ramdani, Boumedien, Chevers, Delroy, and Williams, Densil A. (2013), "SMEs' adoption of enterprise applications", *Journal of Small Business and Enterprise Development*, Vol. 20, No. 4, pp. 735 – 753.

Schwab, K. (2017). *The Fourth Industrial Revolution*. Crown Business.

Sevrani, K., & Bahiti, R., (2008) "ICT in Small and Medium Enterprises: Case of Albania", ICBS. pp. 185 – 210.

Sharma, Ravi S., and Djiaw, Vironica, (2011). "Realising the strategic impact of business intelligence tools", *The Journal of Information and Knowledge Management Systems*, Vol. 41, No. 2, pp. 113-131.

Tapscott, D., (1997) The Digital Economy: Promise and Peril in The Age of Networked Intelligence. London and New York: McGraw-Hill.

Taylor, M & Murphy, A. (2004) 'SMEs and e-business', *Journal of Small Business and Enterprise Development*, vol. 11 no. 3, pp. 280-289

Theodoridis, Constantinos and Priporas, Constantinos V., (2013). "Strategic Decision-Making during Uncertainty: Implications for SMEs", in Vrontis, Demetris and Thrassou, Alkis, (Eds.), Innovative Business Practices: Prevailing a Turbulent Era, UK: Cambridge Scholars Publishing, pp. 87-112.

USAID, (2013) "ICT Country Profile: Albania", Regional Competitiveness Initiative Verhees, F. J. H. M. and Meulenberg, M. T. G. (2004). "Market orientation, innovativeness, product innovation, and performance in small firms". *Journal of Small Business, Management* 42(2), 134–154.

Vermeulen, P. A. M., DeJong, J. P. J. and O'Shaughnessy, K. C. (2005). "Identifying key determinants for new product introductions and firm performance in small service firms". *The Service Industries Journal*, 25(5), 625–640.

Vogelsang, M. (2010). Digitalization in Open Economies: Theory and Policy Implications. London, Springer.

Vossen, R. W. (1998). "Relative strengths and weaknesses of small firms in innovation". *International Small Business Journal*, 16(3), 88–94.

Vuong, Q. H. (2017). Open data, open review and open dialogue in making social sciences plausible. *Scientific Data Updates* (December 12). Retrieved <http://blogs.nature.com/scientificdata/2017/12/12/authors-corner-open-data-open-review-and-open-dialogue-in-making-social-sciences-plausible/>.

Westerberg, M. and Wincent, J. (2008). "CEO succession, honing, and enterprising: A promising way to achieve small business performance?" *Journal of International Entrepreneurship*, 13(2), 117–112.

Westerman, G. and McAfee, A. (2012). The Digital Advantage: How Digital Leaders Outperform Their Peers in Every Industry. MIT Center for Digital Business. Available at http://digitalcommunity.mit.edu/docs/DOC-1105.

Westerman, G., Calméjane, C., Bonnet, D., Ferraris, P., and McAfee, A. (2011). Digital transformation: A roadmap for billion-dollar organisations. MIT Center for Digital Business and Capgemini Consulting, pages 5–62.