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## Agile Enterprise and Opportunity Recognition in SMEs: A Concise Bibliometric Analysis

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Submitted 30/09/21, 1st revision 15/10/21, 2nd revision 07/11/21, accepted 10/12/21

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**Abstract:**

**Purpose:** The purpose of this work is to make interest among SMEs practitioners and to deliver useful data to scientists conducting research on agility and opportunity recognition and the relationship between these topics by conducting a concise bibliometric analysis of the literature addressing these issues.

**Design/Methodology/Approach:** A systematic review of the literature bases for all pairs of keywords agility, opportunity recognition, and SMEs was conducted. Briefly reviewed publications from 2017-2021.

**Findings:** There is an extensive literature on each individual keyword. This was pointed out in the introduction. The literature for the combined words is more modest. Works linking agility and opportunity recognition with SMEs published between 2017 and 2021 have been selected and briefly discussed.

**Practical Implications:** The selected and succinctly discussed publications from 2017-2021 provide SME practitioners with useful information that can initiate or develop their interest in agility and opportunity recognition issues and researchers with bibliometric data useful for their further work.

**Originality/Value:** The originality of this work lies in the fact that it discusses the literature dealing with the issues relatively rarely presented in publications, namely the conjunction of agility and opportunities recognition in SMEs. It is valuable for practitioners who want to learn about these issues and for scientists who conduct research in this field.

**Keywords:** Agile Enterprises, Opportunity Recognition, Agility, SMEs.

**JEL classification:** M2, M29.

**Paper Type:** Research article.

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## 1. Introduction

Since the late 80s and early 90s of the twentieth century, the issue of agility of enterprises arouses interest not only in the scientific community but also in practitioners. This is because the changes occurring in the environment of enterprises are accelerated and intensified. SMEs are particularly exposed to them, as they usually do not have sufficient resources that can "cushion" the adverse impact of changes. Therefore, SMEs should look for opportunities and use them to increase their competitiveness. Numerous studies on agility and opportunities recognition in SMEs have been presented in the literature. To help managers to get acquainted with this issue and to facilitate researchers to discuss the existing research results, in this paper we present a concise bibliographic analysis of the literature that presents this issue.

Agile methodology has rapidly gained research interest in the recent past. At the same time, its use has been quadrupled irrespective of the business model, industry, and cross-functional departments. In a rapidly changing business environment, agile methodology, agile practices, agility as a value have become the buzz words. The organizations experiencing this change are often termed as agile enterprises as they are the one to implement agile methods.

The concept emerged in the 1980s and was popularized in by Goldman and Negal (1991). At the beginning it was mostly addressed to manufacturing industries. The main characteristics identified for an agile enterprise were short development cycles/processes, flexibility in scope, incremental based value chain model, active involvement of the customers, intense cross-functional support, welcoming change management and adaptive planning (Hilt *et al.*, 2016; Serrador and Pinto, 2015; Lopez-Alcarria *et al.*, 2019; Gustavasson, 2016; Dove, 2001; Kidd, 1994; Gunasekaran *et al.*, 2018). The concept gained speed in early 2000s (Bergmann and Karwowski, 2019) following the publication in 2001 on the Manifesto for Agile Software Development. From that time the concept of agility and agile methods has become relevant to the software development industry.

SMEs around the globe are now faced with pressure of uncertain, complex, ambiguous, and volatile business environment (Ansoff, 1979; Nandram and Bindlish, 2017). In such circumstances the traditional approaches to management of enterprises, supply chains, manufacturing, teams and projects is ineffective, and this has given birth to agile methodology (Cric *et al.*, 2018; Conforto *et al.*, 2014, Trzcielinski, 2015; Kastle, 2013). Agile manufacturing is now advocated in all industries. Even in growing economies like China high-tech SMEs rely on using new technologies and best management practices including an agile approach (Ladeira *et al.*, 2019). It is being used owing to the evolving technologies, market uncertainty and niche products along with meeting customer and market demands (Raj *et al.*, 2013). Before the agility concept the role of manufacturers was understood as revolving around cost, time, and delivery but such approach is valid anymore.

Manufacturing firms term themselves the neediest for agile methods for meeting their targets with high demand volatility and highly compressed lifecycles of the product (Yin

*et al.*, 2017). To become agile such enablers like virtual enterprise (VE) and information technology (IT) (Trzcielinski, 2007) are now being used in the manufacturing SMEs. Example can be the Indian automobile sector (Goswami and Kumar, 2018; Khan and Trzcielinski, 2018).

Researchers provides the evidence of showing association between agility and organizational performance (Vazquez-Bustelo *et al.*, 2007). With the implementation of agile approaches, the SMEs can become more flexible, transparent, able to handle pressure and improves communication (Atzberger *et al.*, 2020). Thanks to these features, they become much more effective than traditional companies. Comparing agile companies with staid Weill (2006) found that they obtain almost 3 times greater share of revenues from the sale of new products and more than 5 times greater from the sale of modified products, and their average annual percent change in ROE is 37 when staid enterprises have (-13).

Despite the multi-dimensional benefits of becoming an agile enterprise, there are only a few SMEs which are using agility in its true letter and spirit. This is because SMEs are not clear about agility and often feel difficult to implement it (Fritsch and Juschkat, 2019). As Edwards *et al.* (2019) point out, the agile methodology is still scarce in SMEs across the globe. Therefore, it is important that it is implemented in the sector of these firms.

The changing environment forces enterprises to develop agility features, including the ability to reduce threats and capitalize opportunities that this environment generates (Trzcielinska, 2021b; (Kalpana and Babu, 2011) and leads to a change in the business model (Osterwalder and Pigneur, 2010). Trzcielinska (2021b) found that companies whose business models take opportunities recognition into account achieve better turnover than those who do not recognize opportunities. Better is the ability of the organization in recognizing opportunity more are the chances of increased performance (Gielnik *et al.*, 2012; Tang *et al.*, 2012). Research indicates that activities, such as, networking, knowledge management and organizational design helps the enterprises in exploiting the external and internal opportunities (Vasilchenko and Morrish, 2011; Foss *et al.*, 2013; Dencker and Gruber, 2015).

However, to use the opportunities first they must be recognized. Binnui and Cowling, (2016) found that especially high-tech SMEs need to recognize opportunities more than anyone else. To explain how opportunities are identified Kirzner (1973) introduced a term of “entrepreneur alertness”. He explained this term as a kind of knowledge “where to look for knowledge” rather than knowledge of substantive market information. Shane and Venkatarama (2000) appoint two broad categories that influence probability that particular people will discover opportunities: (1) the possession of prior information necessary to discover an opportunity, and (2) the cognitive properties necessary to value it. In more recent publications alertness is defined as consisting of three distinct elements: scanning and searching for information, connecting previously disparate information, and making evaluations on the existence of profitable business opportunities (Tang *et al.*, 2012).

Lim and Siri (2015) explain that alertness is based on several cognitive capacities and processes such as prior knowledge and experiences, pattern recognition, information processing skills and social interactions. Alertness is likely to be heightened when there is a coincidence of several factors, certain personality traits, relevant prior knowledge and experience, and social networks (Ardichvili *et al.*, 2003; Moreno, 2008; Trzcielinski, 2018).

Trzcielinska (2021a) has found that in small businesses, mostly the two following traits are important – networking abilities and commitment and leadership. Less important are initiatives and learning from personal experience. They all help identify the opportunities connected with introducing new product to the market and cooperation with new suppliers / subcontractors. In the medium-sized enterprises, the most important traits are conducive to the search for opportunities manifested by market share enlargement and analysis of business environment.

Managers who are focused on the use of opportunities related to increasing market share should develop such traits as: courage in decision making (Iv5), self-confidence and dedication and hard work. Those who search for opportunities through analysis of business environment should shape such traits as: perseverance, courage in decision making and risk propensity. However, for those who are oriented on market share enlargement, such traits as persuasiveness and dedication and hard work are important.

One of the traits that plays key role in opportunity recognition is leadership (Park *et al.*, 2017; Chen *et al.*, 2016). Tung and Yu (2016) pointed out that leadership style drives innovation in those enterprises where leaders support, encourage and become a part of their team. Freeman and Segfried (2015) found that entrepreneurial leadership style was more significant to facilitate opportunity recognition than transformational and transactional one.

Although there are some interesting findings about opportunity recognition researchers are also of the view that more effort is required to find the facilitating mechanisms for recognizing opportunities among SMEs (Mitchell and Shepherd, 2012). Recent literature makes an important advance in this area. Trzcielinski (2021) presents a model that distinguishes opportunities discovery and opportunities creation. Opportunity discovery runs from the market to the enterprise. Transforming it into the organizational structure – from the client, via the marketing department, product development, production, and sales - to the client. In this sequence, an opportunity materializes itself. As for opportunity creation, the flow is from product development to the market, via marketing, production, and sales departments.

Despite of the last advances and the shared view that SMEs performance increases when these recognized opportunities are exploited (Ketchen *et al.*, 2007; Trzcielinski and Trzcielinska, 2017), working about clarifying the relationship between opportunity recognition and their performance remains an important challenge to both researchers and practitioners. The purpose of this paper is to make interest among practitioners about agility issues by providing a bibliometric overview of the literature. The object of our interest is the relatively recent literature in which authors present research findings on

opportunity recognition as a defining characteristic of the agile enterprise. We hope that this overview will also be useful for scientists for whom agility, opportunity recognition and SMEs are keywords identifying their research interest.

## **2. Research Methods**

To achieve this goal, we reviewed the literature available in the Poznan University of Technology bibliographic databases. The selection of literature was carried out based on three pairs of key words, agile enterprises and SMEs, agile enterprises and opportunity recognition, and opportunity recognition and SMEs. Literature has been limited to the period 2017-2021. The selection of these keywords results from the goal we set, which is addressed to SME managers who want their companies to be agile and the business model considers opportunities recognition.

It is also addressed to researchers dealing with this issue. We conducted the research in two streams. The first relates to relatively easily accessible world literature, and the second to limited availability studies published by researchers from the Faculty of Engineering Management of Poznan University of Technology. The basic method we used was bibliometric analysis. Bibliometric is a method of conducting a systematic review through scanning the available literature. Once the relevant works were found out, all related articles were downloaded. After applying the bibliometric analysis, the next step of the research was to analyze the publications. The most recent works were analyzed for drawing main results. In the first stream, we limited the presentation of the results to 10 articles, and in the second, to 5, and due to the limited access to them, we have included their abstracts.

## **3. Results and Discussions**

### **3.1 General Quantitative Research Assessment**

Through the following combination of keywords “Agile Enterprises and SMEs”, “Agile Enterprises and Opportunity Recognition” and “Opportunity Recognition and SMEs” 55 documents on the related theme were found out, 21, 7 and 27 respectively. The works were from period from 2017 until 2021.

The average citations per each document was 125 and average authors per article was 3 but 4 articles had only one author. Documents used in the bibliometric analysis were extracted from various sources and they were of different types. Out of the total documents, 2% were Case Studies and Books, 7% were Review Papers, 8% were Conference Papers and 81% of them were Research Articles.

There were multiple sources in which World Scientific Publishing Company, Silva Fennica, IOP, Sage, GSTF, ATINER, and American Marketing Association had 1 document each. Research Gate and IEEE had 2 documents each. Willey had 3, Academy of Management and Springer had 4 each whereas Elsevier had 9, Emerald had 7, MDPI had 6 and Taylor & Francis had 5 documents on the related theme.

The list of journals where the works were published includes: Applied Sciences (1), Athens Journal of Business & Economics (1), Corporate Social Responsibility and Environmental Management (1), International Entrepreneurship and Management Journal (1), International Journal of Computer Applications (1), International Journal of Entrepreneurial Behaviour & Research (1), International Journal of Innovation and Technology Management (1), International Journal of Innovation Management (1), International Journal of Operations & Production Management (1), International Journal of Production Economics (2), International Journal of Production Research (1), International Journal of Project Management (1), International Marketing Review (1), International Small Business Journal (1), Journal of Business Economics and Management (1), Journal of Business Research (1), Journal of Business Venturing (2), Journal of High Technology Management Research (1), Journal of International Entrepreneurship (1), Journal of International Marketing (1), Journal of Leadership Studies (1), Journal of Management Studies (1), Journal of Operations Management (1), Journal of Small Business Management (1), Journal of Systems and Software (1), Journal on Business Review (1), Leadership & Organization Development Journal (2), Materials Science and Engineering (1), Personnel Psychology (1), Processes (1), Project Management Journal (2), R&D Management (1), Silva Fennica (1), Strategic Entrepreneurship Journal (2), Strategic Management Journal (2), Sustainability (4), Technology Analysis & Strategic Management (1), Total Quality Management & Business Excellence (1), conferences proceedings (8).

The documents used for analysis were published in various countries including Brazil (2), Canada (2), China (8), Denmark (2), Finland (4), Germany (4), India (4), Iran (2), Italy (6), UK (3), USA (7), Japan (1), Netherlands (1), New Zealand (2), Norway (1), Portugal (1), Romania (1), Russia (1), Slovenia (1), Switzerland (1), Sweden (1) and Spain (1).

### **3.2 Analysis of the Recent Articles**

Below we present a synthetic characterization of the contents of 10 articles presenting the first stream and 5 presenting the second, published in various journals. Additionally, to the data identifying the publication the characteristic of the contents includes objectives and main results. In case of the works published by researchers from Faculty of Engineering Management (second stream) the characteristic of the contents is presented in form of the publication's abstract. The characterization enables recognition about the research problem, findings and need for future research.

### **3.3 First Stream - Relatively Easily Accessible World Literature**

Kuckertz, Kollmann, Krell, and Stockmann (2017). Understanding, differentiating, and measuring opportunity recognition and opportunity exploitation. *International Journal of Entrepreneurial Behavior & Research*, Vol. 23 (1), pp. 78-97.

*Objectives:* Opportunity recognition and opportunity exploitation are often taken as one concept, but the study aims to bring a clear specification in both of the terms.

*Results:* The findings reveal that opportunity recognition and opportunity exploitation are two different terms. Moreover, two different scales were developed to measure them with six possible outcomes of each.

Goswami and Kumar (2018). An investigation of agile manufacturing enablers in Indian automotive SMEs using structural equation model. *International Marketing Review*, Vol. 22, No. 3, pp. 276-291.

*Objectives:* The study aims to analyze the agile manufacturing practices in the SMEs of automobile sector using the statistical method.

*Results:* A number of enablers for agile manufacturing were identified including responsiveness, strategic agility, workforce agility, technology agility and manufacturing agility.

Balashova and Gromova (2018). Agile manufacturing as a promising concept for Russian industry. *IOP Conf. Series: Materials Science and Engineering*, 393, 012095, pp. 1-6.

*Objectives:* The study aims to identify an effective agile model for the Russian manufacturing industry.

*Results:* Agile manufacturing is the need of Russian manufacturing industry because it helps in complying with modern requirements of the business world.

Lappi, Karvonen, Lwakatare, Aaltonen, and Kuvaja (2018). Toward an Improved Understanding of Agile Project Governance: A Systematic Literature Review. *Project Management Journal*, Vol. 49(6), pp. 39-63.

*Objectives:* The study aims to examine the project governance practices in agile projects.

*Results:* The traditional agile project governance practices are studied along with new emerging practices in agile projects.

Ju, Ferreira, and Wang (2019). Innovation, agile project management and firm performance in a public sector dominated economy: Empirical evidence from high-tech small and medium-sized enterprises in China. *Socio-Economic Planning Sciences*, Vol. 72, 100779

*Objectives:* A comparative analysis between two SMEs for examining their performance if they adopt agile project management techniques as the ability of each firm varies.

*Results:* SMEs implementing agile project management techniques have increased performance, innovation capability, and expands the scope of business. However, agility has been studied as a sole concept rather it should be studied with other associated factors at an organization wide level.

Haaja (2020). Why do some SMEs engage in joint internationalization and others do not? Exploring the role of mental images in collective international opportunity recognition. *Journal of International Entrepreneurship*, Vol. 18(1), pp. 15-43.

*Objectives:* The research aims to explore the ability of SMEs in identifying international opportunities for their business along with reasons of why one firm does so and other remains deprived of such opportunities.

*Results:* The findings show that the ability of entrepreneur, founder or CEO is the main factor in an SME's ability to recognize opportunities of international nature. Mental

images of the entrepreneur play the main role in collective international opportunity recognition which is developed with the help of information and exposure.

Hietala, Hanninen, Kniivila, and Toppinen (2019). Networks in international opportunity recognition among Finnish wood product industry SMEs. *The Finnish Society of Forest Science*, Vol. 53 (4), pp. 28-47.

*Objectives:* Study aimed to provide a grand overview of how SMEs recognize opportunities and exploit them in international business environment.

*Results:* The firms who are proactive have higher propensity of recognizing opportunities. International opportunity recognition can be positively identified if social networks are well established.

Zuzek, Gosar, Kusar, and Berlec (2020). Adopting Agile Project Management Practices in Non-Software SMEs: A Case Study of a Slovenian Medium-Sized Manufacturing Company. *Sustainability*, Vol. 12(21), pp. 45-92.

*Objectives:* How to adopt agile project management practices in a non-software SME within Slovenian culture.

*Results:* Agile practices may seem to have a financial impact but can give benefits like improved communication, faster detection of discrepancies, effective problem – solving and greater flexibility.

Memon, Yong An, and Memon (2020). Does financial availability sustain financial, innovative, and environmental performance? Relation via opportunity recognition. *Corporate Social Responsibility, Environmental and Marketing Journal*, Vol. 27(2), pp. 562-575.

*Objectives:* The research aimed at examining financial, innovative and environmental performance with mediating role of opportunity recognition.

*Results:* Researchers recommended CEOs and Top Management of the SMEs to utilize their financial resources for opportunity recognition as it can play a huge impact in enhancing performance at all levels.

Niever, Trinh, Kerres, and Hahn (2021). Integration of Agile Approaches in SME's Product Development: Demand Analysis and Concept Development. *Athens Journal of Business & Economics*, Vol. 7(4), pp. 349-364.

*Objectives:* To identify the actual needs as well as the concept for integrating agile approaches in the product development stage for SMEs as per their needs.

*Results:* The actual challenges of the companies are lack of knowledge about agile approaches and its effective integration. Therefore, there is a need for support within the management as well as the development team for enabling a situation and demand based agile method.

### **3.4 Second Stream - Limited Availability Studies Published by Researchers from the Faculty of Engineering Management**

Trzcielinski and Trzcielinska (2017). How enterprises identify market opportunities: research results and finding. Ed.: S. Trzcielinski, *Advances in ergonomics of manufacturing: managing the enterprise of the future. Proceedings of the AHFE 2017*

International Conference on Human Aspects of Advanced Manufacturing, Springer, Cham, pp. 116-128.

*Abstract:* The paradigm of agile enterprise, which is aimed at the use of market opportunities, is increasingly used in practice. Therefore, it becomes important to provide businesses with the tools to help them identify opportunities appearing in the business environment. At least two general approaches to the identification of market opportunities can be distinguished. The first assumes that the market opportunities arise in the business environment and therefore need to be identified in it. For this purpose, methods of strategic analysis can be used which enable to recognize the changes appearing in the environment as well as methods of marketing research aimed at identification of needs and expectations of the customers. Assessment of ongoing changes in the environment from the viewpoint of the objectives/goals and business resources that are available (own and external resources) leads to the identification of opportunities which are the favourable situations for achieving the enterprise's expectations. The second general approach assumes that the opportunities are created by the company, and therefore it depends on the entrepreneurial activities including the marketing of the product and probing whether the product is accepted. In this paper we focus only on methods of strategic analysis and marketing research as ways of identifying opportunities. We hypothesized that there are differences between the approaches to identifying opportunities and supporting them methods used by businesses small, medium and large sized. To verify this hypothesis, studies were carried out on a group of 150 firms. The results provide recommendations for enterprises, especially small and medium sized, how they can increase their ability to identify market opportunities and thereby improve their agility.

*Objectives:* From a practical point of view, it is difficult to expect that all methods of strategic analysis and marketing research will be applied with the required regularity to identify market opportunities. This expectation is unrealistic, especially in relation to the SMEs in which organizational culture is relatively low, and which lack the knowledge of these methods. Therefore, it may be useful to identify those methods that have the wider influence, that is, they affect most of the symptoms of identification of market opportunities.

*Results:* In small enterprises, the widest influence on opportunities identification has investigation of confidence to the brand. It influences the identification of opportunities associated with: (1) analysis of events and changes in the environment, (2) utilized resources, (3) conducting promotion through blogs, (4) establishing cooperation with new suppliers and subcontractors. The second independent variable is the percentage of business ideas from clients. It is associated with: (1) adjustment of the product to the customer's expectations, and (2) product specialization of the firm. In medium-sized enterprises the wider influence has customer satisfaction survey. It is associated with: keeping promotions via e-mail, (2) keeping the promotion by the use of experts who know the product well, (3) conducting promotion via the website, (4) conducting promotion using low-cost projects, (5) Introduction of new products to the market, (6) the implementation of new technologies. The obtained results indicate that SMEs relatively rarely use methods of strategic analysis and conduct market research to identify market opportunities. At the same time, they suggest that their use, especially marketing research, can be an important tool for identifying opportunities.

Trzcielinski (2018). Prior knowledge and opportunity recognition. Eds: W. Karwowski, S. Trzcielinski, B. Mrugalska, M. Di Nicolantonio, E. Rossi, *Advances in Manufacturing, Production Management and Process Control. Joint proceedings of the AHFE 2018 International Conference on Advanced Production Management and Process Control*, Springer, Cham, pp. 191-200.

*Abstract:* Opportunities appear in the company's environment. They are situations favorable to achieving company's goals with available resources. To be exploited first the opportunity must be recognized. Entrepreneurial theories, using the achievements of Kerzner, assume that the recognition of opportunities is favored by the entrepreneurs' prior knowledge. Knowledge can be obtained through professional experience and education especially higher education. It can be also gained by conducting analysis of business environment and marketing research. In this way, entrepreneur can obtain information and knowledge about market needs and the same about market opportunities. The paper presents the results of research conducted in Polish enterprises on the method of acquiring knowledge that leads to the identification of opportunities. Identification of opportunities has been described by the symptoms of their recognition. By using the Kruskal-Walis test and the multiple comparison test, it was found which methods of strategic analysis and marketing research and with what intensity should be used to support recognition of opportunities. It was also examined whether professional experience and level of education favors the use of strategic analysis methods and conducting marketing research to identify opportunities. The obtained results have both a theoretical and utilitarian value.

*Objectives:* One of the research objectives was to check whether the professional experience and formal education of managers affect the identification of opportunities. To this end, it was analyzed whether factors describing professional experience and formal education correlate with the symptoms of recognition and using opportunities.

*Results:* There is a relationship between the factor of prior knowledge, like work experience in the firm and the use of a number of methods of strategic analysis and conducting some marketing research. The relationship is statistically significant but weak and negative. This means that along with longer work experience, managers lose interest in using these methods to understand changes in the business environment that may be recognized as opportunities. Therefore, their prior knowledge is not enriched by the methodical application of tools used to analyse the business environment.

Khan (Mohammed) and Trzcieliński (2018). Information technology adaptation in Indian small and medium sized enterprises: opportunities and challenges ahead. *Management and Production Engineering Review*, Vol. 9, No. 3, pp. 41-48.

*Abstract:* The purpose of the study is to analyze the opportunities and the challenges associated with the adoption of Information technology in the Indian SMEs. The significant usage of Information Technology in the SME sector and the factors that influence the business are discussed. SME industry in India has shown substantial growth over the past few years. The implementation of new technologies tends to offer better opportunities to the companies particularly for SME sector in India. However, there are a few challenges associated with technology adaptation that needs attention. This research is focused on improved business quality and responsiveness towards market opportunities while using the latest technologies available. This study is based on a review of research journals and articles including news magazines concerning current

SME market situation in India. The current market scenario of Indian SMEs, as well as several policy interventions and new trends in the market were discussed.

*Objectives:* The purpose of the study is to analyze the opportunities and the challenges associated with the adoption of information technology in the Indian SMEs.

*Results:* The SMEs have always been recognized as an important segment of the economy and will remain as the backbone of economic development in many economies throughout the world. Despite facing challenges in the areas of technology, finance, and infrastructure Indian SME sector is still a strong player of Indian economy and revenue. And holds a reputation of one of biggest employment creator in the country. Due to the dynamic adaptability of web-based technologies and Information Communication Technology (ICT) helps Indian SMEs to compete in the global market and to connect easily to a lot of potential customers. The service models under Cloud provides SMEs a better solution for adopting a suitable infrastructure, platform, or a software service. A lot of SMEs are now shifting towards Cloud service models due to the customized productivity tools and easy to shift infrastructure. At the same time trends of digitalization are getting more popular now in the Indian SMEs. The impact of adapting new technologies in Indian SMEs can be easily felt. Entrepreneurs are now aware of government schemes and development policies which encourage them to invest in SMEs. But there are still a lot of opportunities yet to be unfold. Indian SME sector is one of the largest ecosystems and is now discovering slowly but steadily its true potential.

Stachowiak and Pawłyszyn (2021). From fragility through agility to resilience: The role of sustainable improvement in increasing organizational maturity. *Sustainability*, Vol. 13, issue 9, pp. 4991-1-4991-17.

*Abstract:* Nowadays, due to a large number of changes in the external environment, as well as increased competition, organizations must actively support business processes. Internal management processes must be constantly improved. To understand whether a company is developing in the right direction, it is necessary to conduct a maturity assessment. The directions of changes in enterprises should be well designed and based on analysis of the gap between the present and expected state definition. The diagnosis for the present state definition should be holistic, reliable and for the expected state-based strategy and goal recognition. Hence, the goal of the paper is to present the methodology of a company's self-assessment and definition of an individualized improvement strategy to strengthen the company's ability to thrive and prosper. The paper includes a presentation of the diagnosis methodology based on maturity models and the resilience concept and its validation based on experts' opinions and a case study. Companies need a diagnosis to know where they are, and guidance to move in the right direction, which makes the results of the research utilitarian. The methodology can be used for self-assessment, benchmarking and designing an improvement strategy.

*Objectives:* The goal of the paper is to present the methodology of a company's self-assessment and definition of an individualized improvement strategy to strengthen the company's ability to thrive and prosper.

*Results:* the investigated company shows a high level in three maturity aspects of four aspects. This is a high score, indicating the company's ability to perceive opportunities and threats, learn, flexibly adapt to changing conditions and seize opportunities.

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Trzcielinski (2021). Model of the Opportunity Recognition Process. (Ed.) S. Khalid, Innovation Management, and information Technology Impact on Global Economy in the Era of Pandemic. Proceedings of the 37th International Business Information Management Association Conference, IBIMA Publishing, pp. 8733-8743.

*Abstract:* Numerous studies show that enterprises which are able to recognize and take advantage of opportunities benefit financially and are more competitive. Researchers dealing with recognition of opportunities focus mainly on the notion of entrepreneurial alertness and factors on which it is dependent, leaving behind how this process works, and the fact that its course in discovering opportunities is significantly different than in creating them. Based on case studies in this article, we attempt to fill this gap by presenting a model of the process of recognizing and taking advantage of opportunities.

*Objectives:* As the authors doing research in this area rarely centre on opportunity recognition understood as a process, i.e. what activities are carried out in the enterprise to either create or discover an opportunity and with what methods and tools, including ICT systems, this process can be supported, the goal of this article is to develop a model of the opportunity recognition process.

*Results:* The value of the developed model is that it clearly distinguishes between two processes - opportunity discovery and opportunity creation. It seems that thanks to it, the dilemma whether opportunities are discovered or created is less apparent. In both cases the processes are different. Although they start with the passive scanning of the environment, they differ however in the subject of active scanning/searching. In the first case, it is about signals from the market related to specific needs that may become an opportunity, and in the second - about trends in changes in the environment that may become an inspiration to create an opportunity. Considering the difference between these processes in a synthetic way, it can be said that opportunity discovery runs from the market to the enterprise. Transforming it into the organizational structure - from the client, via the marketing department, product development, production and sales - to the client. In this sequence, an opportunity materializes itself. As for opportunity creation, the flow is from product development to the market, via marketing, production and sales departments.

#### **4. Final Considerations**

A commonly shared view is that in a turbulent and unpredictable environment, enterprises, especially SMEs, must be agile to be competitive and achieve success. The essence of agility is to counteract threats that the environment generates, but most of all it is the ability to recognize and use opportunities. This raises the practical question of how agile companies can recognize opportunities and what benefits they can derive from it. The literature that we subjected to bibliometric analysis contains a broad overview of agility and opportunity recognition in SMEs.

These issues are addressed within a variety of scientific theories including strategic management, marketing, entrepreneurship, and psychology. Sometimes both these issues, i.e., agility and opportunity recognition, are treated separately. For example, works presenting the results of research from the perspective of entrepreneurship primarily emphasize opportunity recognition, and works on team management, especially software manufacturing, primarily emphasize agility. Our position is that

agility and opportunity recognition are intertwined and constitute "two sides of the same coin". Research in this field is conducted, among others, at the Faculty of Engineering Management at Poznan University of Technology.

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