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Stra.Tech.Man innovation, HRM and Perception of Educational Needs in Underdeveloped Business Ecosystems: The Case of Retail Sector Firms in Eastern Macedonia and Thrace

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Abstract

Innovation becomes widely perceived as the most significant ingredient of socioeconomic development, for all types of organizations, at all spatial levels. This study aims to examine how a specific category of business people understand the phenomenon of innovation in relation to the dimensions of Human Resource Management (HRM) and intra- and external business education and training. It explores in particular how the firms of a less developed regional business ecosystem perceive this triangle of innovation-education-human resources, what is their current image and how this comprehension evolves over the last years. Through field research in firms located in the Greek region of Eastern Macedonia and Thrace, we highlight these qualitative correlations between innovation, workforce management, training, and education. Our findings suggest that the “image” of these entrepreneurs to these issues

lacks interpretive depth and practical cohesion, which is related to pathogenies caused and causing the overall relative socioeconomic underdevelopment in the region. The originality of this research derives from the presentation and analysis of specific firms' and professionals' perceptions of innovation, which are relatively far from the standards set by the corresponding modern scientific literature and practice.

Keywords: Innovation, Stra.Tech.Man approach, education, Human Resource Management, training, less developed regional ecosystem, Eastern Macedonia and Thrace

1. Introduction

Innovation is a multidimensional phenomenon, whose emergence and dissemination in socioeconomic systems and organizations receives an increasing interest and significance. Several scholars today focus on innovation creation through the most efficient cultivation and training of the firm's human resources (Berraies & Chaher, 2014; Ologbo et al., 2015).

In the context of this thematic orientation, we conducted field research focused on the micro-level dynamics of business innovation within a less developed business ecosystem. In particular, we shared in a sample of firms in the less developed Greek region of Eastern Macedonia and Thrace (REMTh) a questionnaire that concerned how they perceive innovation, combined with the management and training of their human resources.

Therefore, the questions we seek to explore in this study are the following:

a) How are human resource training and enterprise innovation combined and co-evolve, taking as a case study a less developed business ecosystem?

b) How do entrepreneurs in a less developed region perceive the knowledge that derives from formal education as a factor that can improve the potential of innovation?

c) How the people of the retail businesses of a less developed region change precisely their perceptions on the aspects of educational needs and innovative effort in conditions of crisis?

Section 2 will examine the issue of combining the innovational capacity with human resources and training, providing a brief overview of the scientific area.

Section 3 will investigate how innovation is perceived in less developed socioeconomic systems as a process and result, focusing on the case of the Greek region of Eastern Macedonia and Thrace.

Section 4 will address these issues by presenting the findings of relevant field research.

Finally, section 5 will make the main concluding remarks and discuss future research prospects.

2. Firm Innovativeness, Human Resources and Education

In this section, we study the basic outline of the dimensions of innovation and evolutionary adaptation of socioeconomic systems and organizations. We argue that the creation of

innovation is the synthetic result of strategy, technology and management and we analyze further its functional connection with the aspects of human resource management and training.

2.1 Innovation in Terms of Stra.Tech.Man, Socioeconomic Development and Underdevelopment

According to the Schumpeterian definition, innovation can be the following five processes, either individually or combined (Schumpeter, 1934, p. 117): The introduction of a new good; the introduction of a new method of production; the opening of a new market; the conquest of a new source of supply of raw materials or half-manufactured goods; the carrying out of the new organization of any industry, like the creation of a monopoly position.

These five directions can lead to innovation, whose emergence restricts and substitutes progressively older and ineffective forms of capitalist development, in what Schumpeter named as creative destruction. Subsequent neo-Schumpeterian theorizations focused their interpretive potential in the ways the various spatialized socioeconomic formations create innovation. One of their main exegetical contributions is the concept of the national systems of innovation, defined as the distinct set of institutions contributing to the production and diffusion of new knowledge and skills that create new technologies within the nations (Freeman, 1987; Lundvall, 1992; Nelson, 1993).

In a similar conceptual orientation, the notion of institutional innovation (Raffaelli & Glynn, 2015) suggests that institutions are also evolving organisms, incorporating multiform changes and transformations over time. Besides, the context of evolutionary economics concerns the study of the economy as a subject in continuous motion by exploring why some socioeconomic systems are less developed and what we can do to predict and change their future developmental trajectories (Nelson et al., 2018).

Several recent contributions also connect innovation with the relative structural underdevelopment faced by different socioeconomic systems and actors. As suggested, innovation can drive a less competitive socioeconomic system towards the exit from vicious circles of underdevelopment (Popkova et al., 2018). Accordingly, the lack of robust innovation, especially on the part of relatively larger companies and startups, can lead to industrial underdevelopment and expanding loss of competitiveness. In this context, it seems that a new perception and practice of industrial policy could modernize the business environment of a nation if policymakers were able to understand the operation of local and regional education, training and infrastructure systems (Ildiko & Peter, 2020).

Besides the dimensions of socioeconomic space and the contributions of neo-Schumpeterians in the trans-spatial creation and assimilation of innovation (Chatzinikolaou & Vlados, 2019), the organizational and managerial thought has also advanced our understanding of the phenomenon. Drucker (2002), who is the founder of the discipline of innovational management, supported the idea that the innovation capacity of a firm to invest in future opportunities is fundamental for its survival and development. The similar approaches of De Geus (2002), Kelly (1994) and Vlados (2019) also introduced the biological structuration and

adaptiveness of the "living" organization, which has to innovate to outlast its competitors and succeed in the continuously transforming conditions. These approaches of the internal environment face the firm's innovation capability as the most profound motor of development, in all modern socioeconomic systems.

In this context, the origin of innovation, whether market-pulled or technology-pushed, is one of the issues in the contemporary scientific debate (Di Stefano et al., 2012; Peters et al., 2012). Within an evolutionary interpretation, however, it seems that the dynamics of innovation always emerges from a combination of demand and supply (Figure 1).

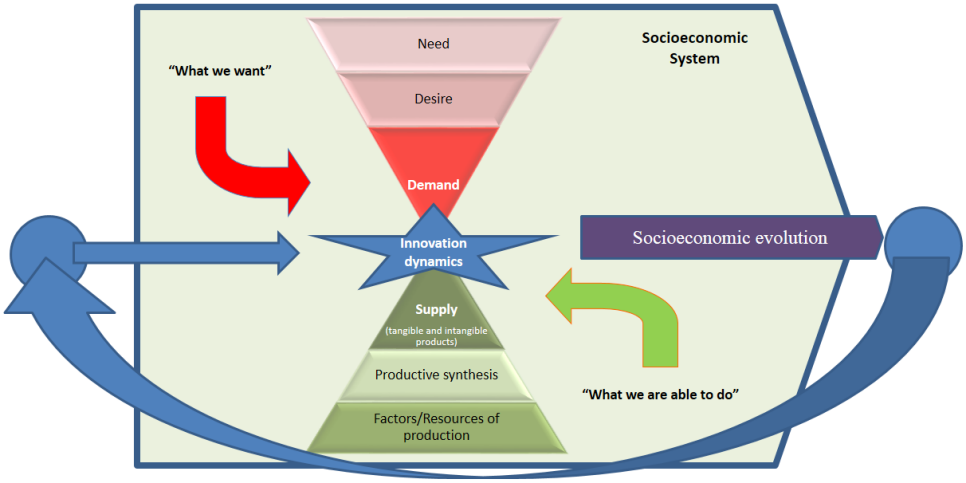

Figure 1. Evolutionary matching between supply and demand, based on Vlados (2017)

Every socioeconomic organization and spatialized formation always strive to match the existing productive capacity to the individually and collectively defined demands (Vlados, 2006). Production procedure concerns the collection of resources and inputs, mechanisms to compose them, and, finally, the creation of tangible and intangible products. The respective demand pyramid initiates from the evolving and mutating human needs, their transformation in desires, towards the final demand for specific products to fulfil them. Where the pyramids of demand and supply meet, innovation dynamics are created, constituting the developmental engine of all spatial and chronically defined socioeconomic systems. In terms of continuous socioeconomic evolution, the redefinition of "what we want" and "what we are able to do" is ceaseless. In other words, the existence of this evolutionary feedback, which comes from the reproduction of innovative dynamics, is repositioning socioeconomic evolution at new levels always.

In the approach of "technology bunching strategy" (Grappes technologiques), which is a concept developed by GEST (1986), technological changes cause the emergence of combinations of generic technologies, and systematic commercialization of technological competencies, and, in this way, the firms extend their competencies to new domains (Delapierre & Mytelka, 2002). Although this was an industry-oriented concept of socioeconomic transformation, Vlados (2017) conceptualizes this technological change of the socioeconomic system as innovation caused mainly from the internal organizational synthesis of strategy, technology and management (Stra.Tech.Man approach). The Stra.Tech.Man of an

organization constitutes the root on which bunches of innovations and "micro-innovations" extend organically to the other parts of the organization (Figure 2).

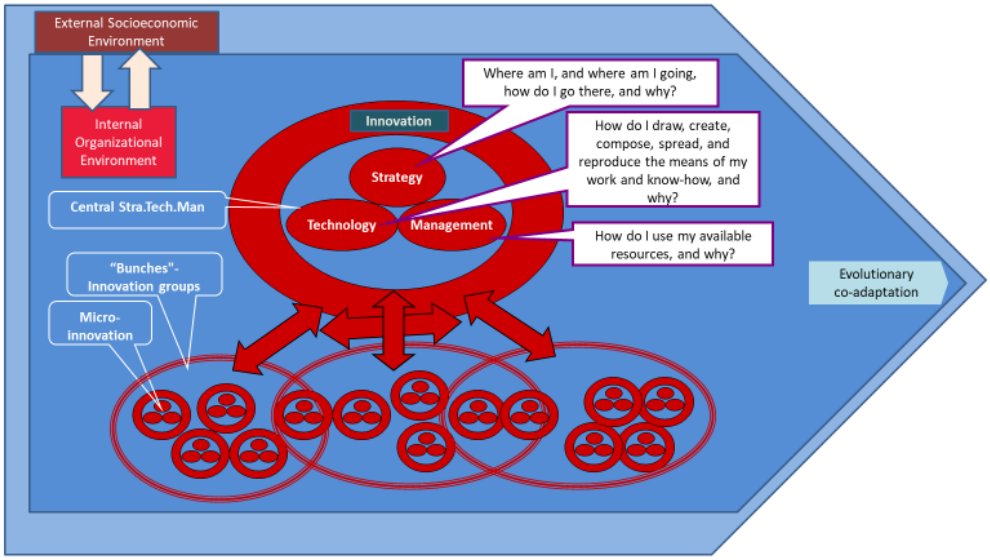

Figure 2. Innovation is produced organically in the different functional levels of the organization, based on Vlados (2017)

Effective innovation does not only depend on one of the Stra.Tech.Man dimensions but always requires the dynamic synthesis of all three. Besides the ways that the firm succeeds in synthesizing these spheres at the core, innovation can derive from respective syntheses within the other organizational departments, either at clusters of departmental innovation or at individual business functions. In this sense, a modern socioeconomic organization must be able to draw, cultivate, recreate and disseminate innovative potential from any spatial or functional context to the others. These innovative dynamics can ultimately lead to the necessary evolutionary adaptation in the changing conditions of the external and internal environment of each organization and the overall socioeconomic system; otherwise, the ineffective adaptation can lead to underdevelopment trajectory. In this process, it seems that any department must be organically tied to the strategy, technology and management of the organization in order to lead to innovation creation and sustainable recreation. In the next subsection, we examine specifically the characteristics and evolution of the conceptualization and practice of Human Resource Management within the firms.

2.2 Innovation, Human Resource Management, Training and Education

The study of human resources as a distinct scientific field began to take form during the early 20th century by the scholarship and practice, which were oriented towards the research of the factors that can turn the employees more productive—factors not necessarily linked with technical rearrangements, financial motives or hierarchical modalities. Mayo (1930), Maslow (1943), and Lewin (1946) are considered to have laid the foundations of organizational theory, having as their primary object of study the behavior of people within the organizations. In this line of thought, the human resource function is related to the understanding, maintenance and development of the potential of the resource called people (Wight, 1958).

Mostly from the end of the 20th century, a time where organizational innovation acquires an increasingly integrated form, the sense that employees are assets concretizes the need for the presence of a specialized Human Resource Management (HRM) department (Chen & Huang, 2009). To this end, the continuous quest for adaptative knowledge has to be achieved mostly by the organization's human workforce, which now seeks not only to satisfy biological needs from the job but also spiritual and other desires (Kumar, 2012).

In modern enterprises, HRM emphasizes the significance of dealing with the employees individually as the human input cannot be treated in the same way as any other "neutral" input. According to the biological versus the mechanical perspective in economy and business, business organizations should be treated as "gardens" instead of "machines" where human resource development is similar to "watering the flowers" instead of repairing a piece of machinery (Battram, 1999). Therefore, every individual in the organization has different capabilities and experience, contributing to the success of the business and creating, at the same time, different problems. In the systematic approach, HRM concerns a system of selection, performance, appraisal, reward, and career development, harmonized with the strategic goals of the organization (Chowhan, 2016).

According to Table 1, which presents central analytical elements and conclusions of recent publications relevant to the interconnection between human resource management and innovativeness, we can extract the following conclusions:

1. The literature refers extensively to HRM practices and their connection to innovation. Providing career opportunities, a suitable compensation package, training and participation are some of these practices, whose provision enhances the performance of employees and the organization.

2. The literature also evaluates the educational level of human resources, which derives from state institutions. It is recognized that the tertiary education system and the relevant acquired skills contribute to innovation creation in many companies, especially within more developed socioeconomic systems.

3. It is noted that the firm must be able to integrate the external educational system with the internal learning processes, in which the presence of a human resource department can play a crucial role in creating and disseminating innovational potential.

Table 1. The connection between HRM, training, education and innovation in recent literature

Publication	**Central analytical points**	**Main conclusions**
Strategic HRM practices and their impact on company performance in Chinese enterprises (Akhtar et al., 2008)	How are strategic HRM practices linked to firm performance?	Strategic HRM practices (such as training and participation) influence product and service performance.
Strengthening Agricultural Education and Training in sub-Saharan Africa from an innovation systems perspective: A	How post-secondary agricultural education and training (AET) in sub-Saharan Africa influence the capacity	It is vital to improving AET systems by strengthening innovation networks, organizational capabilities, and behaviors.

case study of Mozambique (Davis et al., 2008)	to innovate?	
Knowledge as a mediator between HRM practices and innovative activity (Lopez-Cabrales et al., 2009)	Explore how HRM practices and employees' knowledge affect innovation and firm performance.	HRM practices are linked to innovation if they are designed according to the knowledge of the employees.
Human capital development and its impact on firm performance: Evidence from developmental economics (Marimuthu et al., 2009)	Review of human capital literature about firm performance.	Firms need to design plans for investing in human capital to sustain long-term competitiveness.
Building the capacity to innovate: The role of human capital (Smith et al., 2012)	Review of HRM literature with respect to innovation.	Training and learning and development systems are internal to the organization, whereas tertiary and skills systems are external. Both the internal and external systems affect firm innovation.
The review of improving innovation performance through human resource practices in organization performance (Shahnaei & Long, 2015)	Examine the connection between organizational innovation and HRM practices.	There is a need for sophisticated recruitment, training, appraisal, and compensation system within HRM in order to create innovation.
The role of HRM and ICT complementarities in firm innovation: Evidence from transition economies (Bourke & Crowley, 2015)	How HRM practices, and Information and Communication Technologies (ICTs) influence firm performance and innovation?	There is a complementary relationship between HRM practices and ICTs about innovation creation.
Strategic HRM, innovation and HR delivery for human resource management, innovation and performance (Sparrow, 2016)	Do HRM issues have a multi-level horizon in innovation management?	The macro-level corresponds to coordinating HRM across broad organizational networks and institutionalizing innovation, while the micro-level is mostly about innovation leadership at the team level.
Towards a model of learning and development practice (Hodge et al., 2016)	How is learning and development (L&D) linked to innovation?	There is a need to identify the spectrum of knowledge, skills, and techniques to model the appropriate L&D practice by always taking into account societal and national differences that shape and constrain implementation.
Impact of HRM practices on employee's performance (Hassan, 2016)	What is the impact of HRM practices on employee's performance?	There is a positive relationship between formal HRM practices (such as compensation, career planning, performance appraisal, training, and employee involvement) and employee's performance.
HRM and innovation: Looking	Does HRM affect employees'	The entrepreneurial ethos and control are

across levels (Shipton et al., 2017)	innovative behaviors towards the strategic goals of the organization?	two HRM configurations that affect the employees' behavior and contribute to organizational-wide innovation.
Human capital and innovation in Sub-Saharan countries: A firm-level study (van Uden et al., 2017)	Do formal training and employee slack time have a positive impact on the firm's innovation?	There is a positive relationship between human capital and innovation; employee slack time and training are conducive in this regard.
An empirical study of HRM systems, human and social capital development and their influence on innovation capabilities (Akay & Kunday, 2018)	Examine HRM systems, human and social capital development according to their impact on innovation capabilities in the production process.	HRM practices incorporated into personal and collaborative HRM systems are significant for human and social capital development and innovation.

Concerning the training of human resources, this must be a designed action of the HRM department (Machado, 2018). Some of the ways to conduct educational activities are by orientating new employees, training of interns, planning specialized programs for trainees, assistants and subordinates, switching between different operations, mentoring, holding regular meetings, and providing company-funded seminars (Akter, 2016).

In this context, it is worth noting the difference between staff training and development. Training focuses on providing the employees specific skills and cognitive assistance, in terms of their immediate improvement in their specific, current workplace. Modern human resource development has a broader and qualitatively different orientation (Kadiresan, Selamat et al., 2015). It prepares the employee for the future, reinforcing the knowledge in aspects that do not directly concern the present occupation, helping to build a complete palette of skills and abilities.

Figure 3 shows some of the basic principles and steps of in-business training, which are performance monitoring, determining current or future training and development needs, clarifying methods of training and development to cover those needs, assessing the success of this training and development process. If the generic process and training operation of HRM are directed towards the organizational goals of the firm, then the organization as a whole can generate innovation because it improves its innovative performance in practice. Naturally, the process of HRM is a subset of the overarching Stra.Tech.Man organizational synthesis, which leads to the dynamic redefinition of the goals of the organization through the evolutionary innovational adaptation.

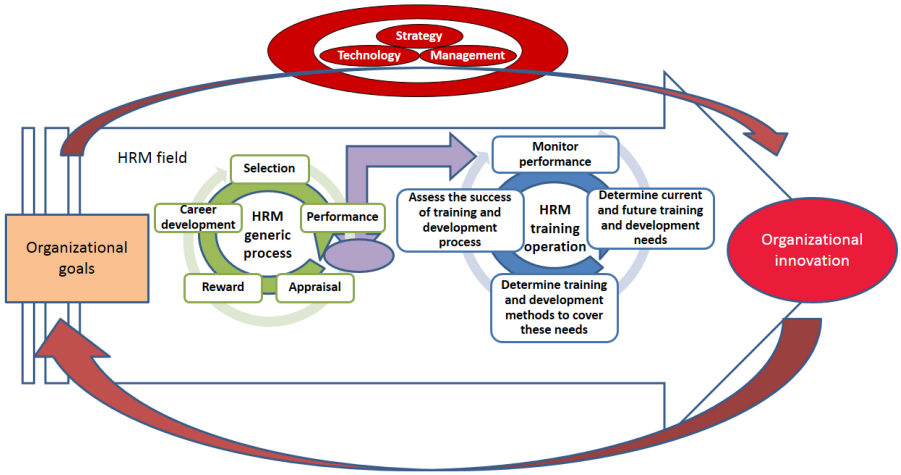

Figure 3. HRM generic process, training operation and organizational innovation

In international practice and theory, the fundamental processes of human resource management are detailed, although a deficiency in the necessary connection to the dynamic process of innovation can be identified. Usually, the managerial approaches of the internal organizational environment do not note the evolutionary adaptation of socioeconomic organizations to their external environment. This is also the reason why in the HRM approach of Chatterjee (2007), which we extend in Figure 4, we add the dimension of evolutionary adaptation in terms of Stra.Tech.Man synthesis, which directs the firm to innovation, through the evolution of the internal (firm dynamics) and external environment (global dynamics).

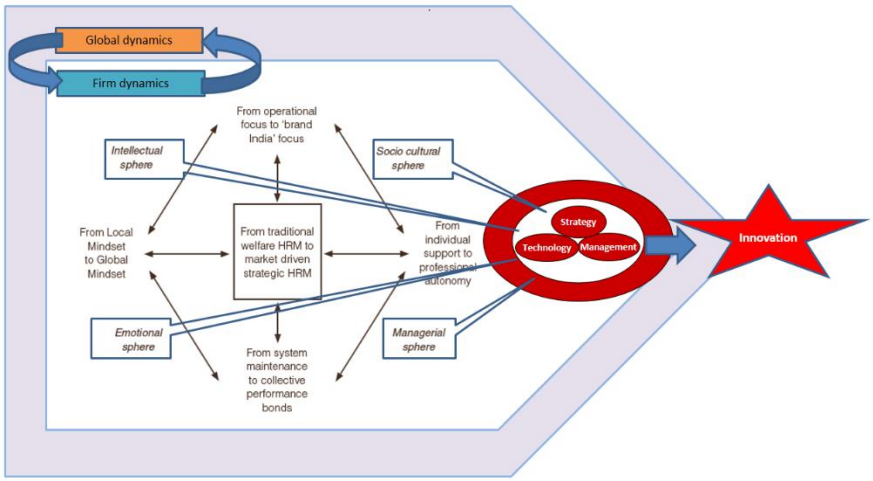

Figure 4. HRM needs to incorporate innovation; expansion on Chatterjee (2007)

While it is evident that a context of HRM practices, at either individual, group, or overall organizational level can foster organizational effectiveness and performance amelioration, there is some obscurity in understanding how innovation is generated. HRM practices co-transform the internal and external dynamics because of the creation and diffusion of innovation caused by the functional department of HRM. That is why in Figure 5, which was first introduced by Mariappanadar (2005), we add the dimensions of innovation, co-transformed external and internal dynamics, and the Stra.Tech.Man synthesis.

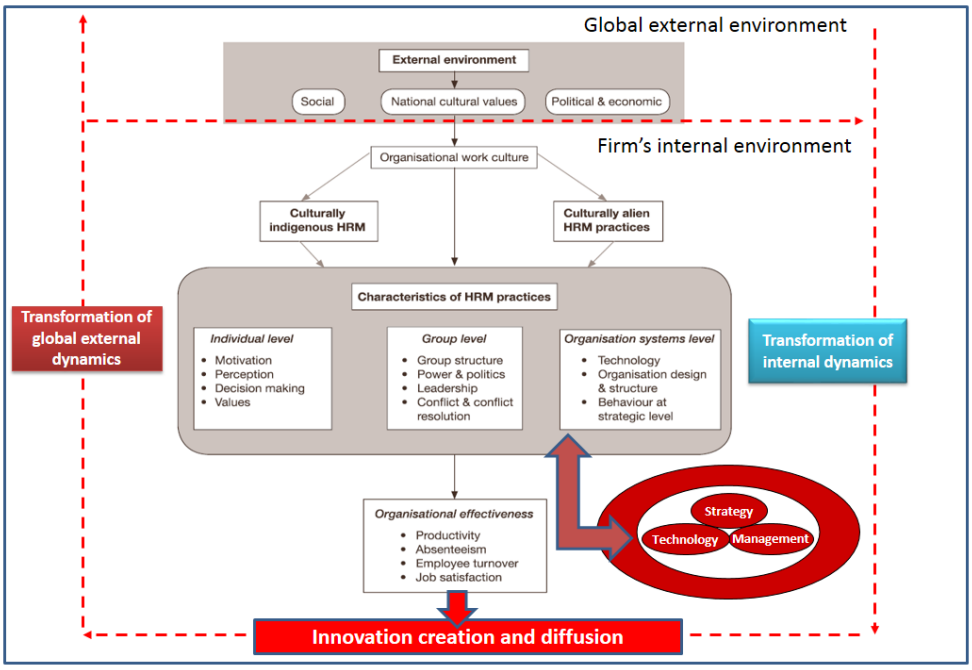

Figure 5. The organizational sphere of HRM co-transforms the internal and external environment; expansion on Mariappanadar (2005)

Overall, the global external socioeconomic environment includes all those institutions that affect, both indirectly and directly, the operation, survival and competitiveness of firms. Organizational culture, which is a central concept in the building of systemic functions and practices of human resource management, has to compose the different philosophies, always based be on the individualized behavior of the people in the company. The mechanism within the firm that synthesizes as a system the different organizational practices, either at individual or group level, starts from the organic co-evolution of the spheres of strategy, technology and management, which finally have to be spreading in the various departments of the firm. As a result, besides organizational effectiveness, the increase in productivity of human resources results in overall organizational innovation, which is being diffused in the internal and external socioeconomic environment, and therefore continuously readjusting our socioeconomic symbiosis at all levels (individual, local, national, global).

According to what we have studied so far, innovation can be perceived as a multidimensional phenomenon associated with how socioeconomic organizations can synthesize their strategy, technology and management effectively. In addition, a fundamental characteristic of the HRM international theory and practice is that companies must be able to match their structured internal modules of selection and development of their human resources with external educational processes. The HRM department must be organically linked to the strategy, technology and management of the organization to lead to the emergence of innovations. These innovations are ultimately the ones that can guide the firms and, consequently, the spatial entities and business ecosystems that host them, to the evolutionary adaptation. If these conditions are not met, then everything shows that the business ecosystem is being led to underdevelopment spirals.

3. Innovation, Less Developed Regional Business Ecosystems and the Greek Region of Eastern Macedonia and Thrace

According to the literature, the lack of innovation can lead to underdevelopment, both for the spatial socioeconomic formation as a whole and the participant actors (Cuervo-Cazurra & Ramamurti, 2017; Oyelaran-Oyeyinka, 2006; Santos-Arteaga et al., 2017). Spatial development through the concentration of innovative activity is an issue that has occupied the scientific debate for several decades (Lazzeretti et al., 2014; Porter, 2000).

Overall, the inner dimensions of less developed regional business ecosystems are the leading causes of regional socioeconomic backwardness. These deficits can be some of the following:

- Lack of systematic methods of attracting highly qualified human resources (Gaffikin & Morrissey, 2001; Pylak, 2015).
- Shortage of investment in research and development (Spigel & Harrison, 2018), science, and engineering input (Moore, 2015).
- Relatively absent innovative entrepreneurship, which may also be due to the cultural elements of the business ecosystem (Liguori et al., 2019; Walsh & Winsor, 2019).

It has been suggested that innovation enhancement in these weak business ecosystems must have some of the following characteristics:

- ❖ Policymakers need to design regional policies for long-term nurturing of the innovation ecosystem instead of focusing on short term outputs (Huggins & Williams, 2011).
- ❖ In lagging regions, weaker adaptation can occur because of low levels of existing entrepreneurship. Entrepreneurs and small businesses must be innovative to absorb external shocks and improve the resilience of their locality (Williams & Vorley, 2014).
- ❖ The fostering of leadership can lead to sustainable regional development (Horlings & Padt, 2013).

In our case, we selected to analyze the less developed Region of Eastern Macedonia and Thrace (REMTh). REMTh is one of the 13 NUTS2 Greek regions and is located at the northeast borders of the country, combining problems of socioeconomic and demographic underdevelopment (Boden, 2017), which are also enhanced by the chronic and structural Greek crisis (Andrikopoulos & Nastopoulos, Vlados, Deniozos et al., 2018). For the years 2012-2018, the purchasing power per capita registered an increase of 6.57%, while Greece and EU28 recorded a respective positive value of 10.47% and 16.1%, respectively (Eurostat, 2020c). This statistic shows that the firms of the region create comparatively less income. In addition, during the years 2009-2015, the region recorded a negative real growth rate while showing positive values for 2016 and 2017, 0.4% and 0.6%, respectively (Eurostat, 2020a).

The firms in the retail sector of REMTh, which employ about 10% of region's population and for which we conducted field research that we present in the next section, recorded between 2014 and 2017 much more significant decline in the growth rate of employment compared to

the whole country. Table 2 presents indicative comparative quantitative data about the retail firms of the region.

Table 2. Retail trade, except motor vehicles and motorcycles (Eurostat, 2020b). The retail firms in Greece employ about 10% of the total workforce.

	2013	2014	2015	2016	2017
Local units - number					
Greece	181,719	199,855	194,051	180,122	166,971
REMTh	11,545	11,177	10,705	9,912	9,407
Wages and Salaries - million euro					
Greece	2,488.7	2,494.8	2,537.8	2,970.2	2,716.0
REMTh	92.6	87.7	75.5	90.3	83.2
Persons employed - number					
Greece	415,154	429,169	377,549	426,411	411,672
REMTh	24,433	20,978	17,111	19,262	18,181
Growth rate of employment - percentage					
Greece	-4.2	3.4	-12.4	12.9	-3.5
REMTh	:	-14.1	-35.0	12.6	-5.6

Concerning the morphology of the entrepreneurial ecosystem of REMTh, one feature is that although most businesses are in the service sector, they present specialization and multiplier effects only in the primary sector, something indicative of their relative insufficiency in terms of competitiveness (Vlados et al., 2018). The statistical display of the region's expenditure on Research & Development, compared to the European and Greek averages for the year 2010, is also in line with this finding (Table 3).

Table 3. R&D expenditure in REMTh, based on Boden et al. (2015)

	Eastern Macedonia and Thrace	Greece	EU28
Total (million Euro)	46.25	1,391.16	246,915.39
Total (% of GDP)	0.56	0.6	2.00
Business enterprise sector (% of GDP)	0.17	0.23	1.24
Government sector (% of GDP)	0.05	0.16	0.26
Higher education sector (% of GDP)	0.35	0.27	0.47
Private non-profit sector (% of GDP)	0	0.01	0.02

According to the available data, only the higher education sector has relatively higher R&D investments than the country as a whole; it falls short in all other indicators and, especially, in the government sector (only 0.05%). In addition, the expenditure of all the Greek companies is comparatively small, as the European average in R&D for the business enterprise sector was 1.24% of GDP, for Greece was 0.23%, and for REMTh was 0.17%.

These structural issues of the region have been noticed during the past year by the "Stra.Tech.Man Lab," our research team located in the local university, via several publications that derived from respective field researches. Table 4 present the main analytical points and conclusions of indicative publications.

Table 4. Conclusions of researches conducted by the Stra.Tech.Man Lab research team in the region

Publication	Central analytical points	Main conclusions
Crisis, innovation and change management in less developed local business ecosystems: The case of Eastern Macedonia and Thrace (Vlados, Katimertzopoulos, et al., 2019)	Do small and micro enterprises in the region understand the importance of the evolutionary link between crisis, innovation and change management?	These firms do not comprehend the endogenous crisis factors in terms of production and competitiveness. Their relative underdevelopment is enhanced further by their inability to grasp the significance of innovation and change management as a structural combination to overcome their crisis.
Business ecosystems policy in Stra.Tech.Man terms: The case of the Eastern Macedonia and Thrace region (Vlados & Chatzinikolaou, 2019a)	How do the small firms of the region understand their strategy, technology and management?	These firms demonstrate a relatively small ability to systematize the dimensions of strategy, technology and management planning, implementation and control, both individually and in their evolutionary synthesis.
The multiple perception of innovation: The case of micro and small enterprises in the region of Eastern Macedonia and Thrace (Vlados & Chatzinikolaou, 2019b)	Small and micro firms in the region have a narrow approach to innovation conception, contrary to what the contemporary scientific theory and practice suggest.	These firms perceive innovation as a technical improvement based on the introduction of new machinery mostly, ignoring the necessary restructuring and synthesis of their technology with strategy and management in order to innovate effectively.
Strategy perception and implementation on less developed business ecosystems micro and small enterprises: The service sector of Eastern Macedonia and Thrace (Vlados & Chatzinikolaou, 2019c)	How do small and micro firms perceive and implement their strategy?	Although these firms desire to systematize their strategy, they do not comprehend basic strategic concepts, such as vision and mission. Their relative inability to incorporate fundamental principles of strategic management also reflects the relative underdevelopment of the regional business ecosystem.

4. Field Research: Innovativeness, Human Resources and Education in the Retail Firms of REMTh

4.1 Research Identity and Methodology

The field research that we are going to present was conducted at the end of 2019. We used the method of purposive sampling, in which the researcher collects data without probabilistic weight, judging and selecting the information to be exploited (Gopaldas, 2016). Our

estimation was that if we would select the firms of the retail sector of the region, then we could extract a relatively homogenous sample that faces possible deficiencies in developing HRM functions (Black, 2010).

The total sample was 84 filled questionnaires, of which 14 came to us insufficiently completed because some of the responsible interviewers to whom we commissioned the process did not record all the requested information or answers of the respondents. Figure 5 presents the demographics of the sample of 72 retail firms.

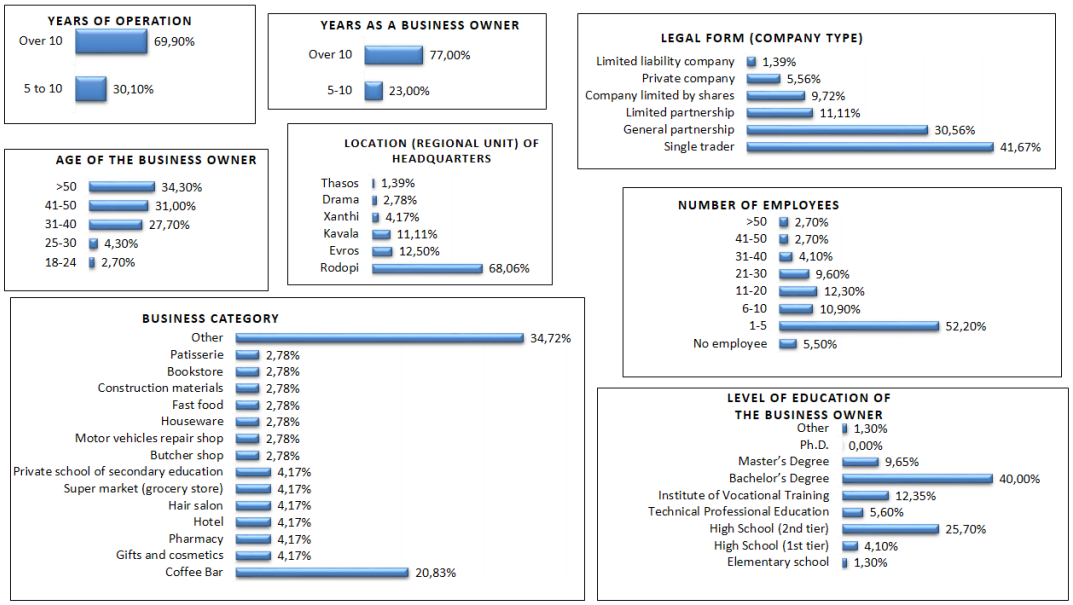

Figure 5. Research demographics

It is noteworthy that these firms operate, for the most part, for over ten years, with the age of the owner being more than 50 on average. In addition, bachelor's degree is the level of education of the majority of the entrepreneurs, one to five employees is the usual size of the personnel, while most of the businesses are coffee bars.

This field research was mixed, both qualitative and quantitative, collecting data through purposive sampling by distributing both Likert-type and open-ended questions to the potential respondents (Dudwick, 2006). Through the mixed approach, the researcher can draw mostly qualitative conclusions, since he or she can gather information from experience in the field via the wordings, expressions and perceptions of the participants (Creswell, 2014).

The questionnaire contained a series of Likert questions from 1 to 5, for the respective 1-2, 4-5, and 7-8 queries (Figure 7). This scale is psychometric as it reveals how the respondent express his or her agreement or disagreement towards the subject under analysis (Batterton & Hale, 2017). The escalation of the answers, which concerned the current and past five years perception of the respondent, was the following:

1 - *Not important*

2 - *Slightly important*

3 - *Moderately important*

4 - *Important*

5 - *Very important*

In questions 3, 6, and 9, we used open-ended questions in which we set 100 words as a limit. We used this method of diagnosis in order to extract the majority or minority trends in the question under consideration, which could lead to the construction of a new theory (Worley, 2015).

The limitations of this approach can include the potentially biased answer from the respondent due to the presence of the interviewer, and the possible incorrect filtering of information by the respondent if he or she is unable to understand the question. Figure 6 shows the structure of the questionnaire while, at this point, we also note that all answered questionnaires are available upon request.

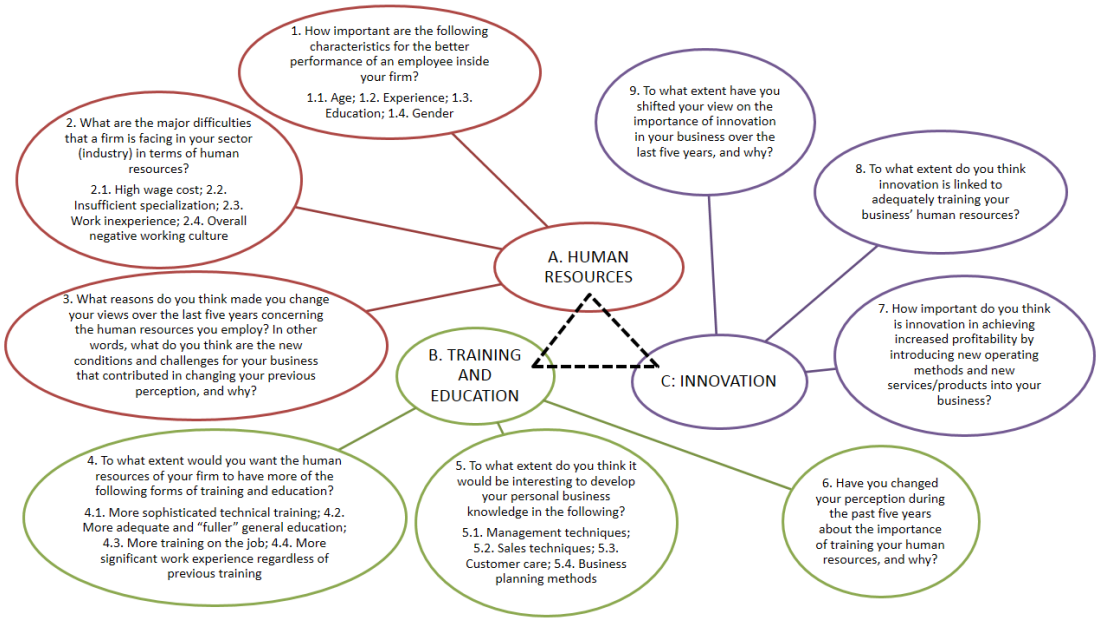

Figure 6. The structure of the interview

4.2 Research Findings

Figure 7 shows the averages for each answer to the Likert questions (1-2, 4-5, and 7-8), for the sample of 72 firms. We observe that all the scores increase in the current perception compared to the past five years range, except for the gender dimension that records the same value. All ratings, apart from the gender, range between 3 and 5, that is, between *Moderately Important* and *Very Important*. The most significant change, 18.84%, is observed in the dimension of insufficient specialization, while the highest current and past value is recorded in the negative working culture.

	How I appreciated 5 years ago	My today's appreciation	Change %
A. HUMAN RESOURCES			
1. Performance characteristics			
Age	3.57	3.64	+1.96%
Experience	4.06	4.19	+3.20%
Education	3.81	4.03	+5.77%
Gender	2.76	2.76	0.00%
2. Difficulties in HRM			
High wage cost	3.22	3.76	+16.77%
Insufficient specialization	3.29	3.91	+18.84%
Work inexperience	3.71	3.85	+3.77%
Overall negative working culture	4.38	4.49	+2.51%
B. TRAINING AND EDUCATION			
4. Desired employee attributes			
More sophisticated technical training	3.59	3.70	+3.06%
More adequate and "fuller" general education	3.61	3.77	+4.43%
More training on the job	3.68	4.11	+11.68%
More significant work experience regardless of previous training	3.39	3.73	+10.03%
5. Directions for personal development			
Management techniques	3.79	4.00	+5.54%
Sales techniques	3.67	4.08	+11.17%
Customer care	3.75	4.08	+8.80%
Business planning methods	3.79	4.29	+13.19%
C: INNOVATION			
7. Importance of innovation	4.04	4.46	+10.40%
8. Link of innovation to training and education	3.79	4.04	+6.60%

Figure 7. Average scores in Likert questions 1-2, 4-5, and 7-8

After thoroughly studying all the answers to the open-ended questions 3, 6, and 9, we quote some of them in Table 5. We consider that these constitute the majority and minority trends, respectively, for the three parts of the interview.

Table 5. The majority and minority trends based on the answers to the open-ended questions 3, 6 and 9

A) HUMAN RESOURCES	
Majority trend	*"Nothing has changed during the past five years to alter my views on the human resources of my business."* *"During the past five years, the criteria I use to select my human resources remain the same, since I always select employees that are calm, willing to work, and serve my customers in the best possible way."* *"Since we are a coffee bar, there are no specific criteria to hire people, except work availability and, optionally, previous working experience."*
Minority trend	*"Human workforce constitutes a critical success factor for the venture. Within our firm, we try to align our personal and team goals by encouraging individuality and collective decision making."*
B) TRAINING AND EDUCATION	
Majority trend	*"My views on training the people of the business have not changed since I work many years in this job and my business remains the same"* *"Workers need not have specific academic education in our business as only manual labor is required."*

	"It is not necessary for the employee to have a diploma because we only need kind and hard-working people."
Minority trend	*"I am very interested in the training of my staff. Everybody must be following the pace of the rapidly evolving modern technology."*
C) INNOVATION	
Majority trend	*"There is no innovation in firms like small retail stores. There are only improvements in the services and products provided."* *"I cannot argue that I innovated during the past five years since I did not consider that as important. In fact, nothing has changed all these years."* *"In this company, innovation is insignificant because we already have a broad base of customers. Our identity is very specific; therefore, we do not need any changes."*
Minority trend	*"It has not changed at all! Innovation is always the starting point for a business willing to increase its profitability. Innovation is the only way to improve the firm as a whole and enhance performance."*

The citation of the answers to some open-ended questions in the table above shows that the majority trend in the issues of the triangle innovation-education-human resources is relatively insufficient in terms of the respondents' perception. Even minority responses to the subjects appear to be somewhat distanced from the standards set by the theory and practice observed in the contemporary scientific literature.

From our field research in the less developed region of REMTh and, in particular, in small retail businesses mostly, we see that the conditions for innovation as an evolutionary adaptation of strategy, technology and management and extended to systematic methods for training and education of the firm's human resources are absent. The highly scored answers we received to Likert questions show us a biased direction of responses mostly, a condition that we included in the limitations of our selected methodology. This was also the reason why we conducted a mixed survey, that is, we extracted safer qualitative characteristics of the respondents' level of perceptive development on the issues with open-ended questions. In conclusion, the findings of our research point to the following directions:

i As a rule, these firms of this less developed business ecosystem have a weak perception of innovation. They are unable to comprehend their internal combined forces of strategy, technology and management as an evolutionary "compass" to achieve innovation and, therefore, they do not realize the co-evolving relationship between HRM education, training and innovation.

ii If we exclude the fact that the majority trend of the responses reveals a quasi-static perception of reality, since many entrepreneurs argue that no changes have taken place in recent years, even the minority responses do not distinguish any systematic use of HRM methods. What seems to be the case is that these firms do not know any HRM practices, and, therefore, they only use their practical experience.

iii In terms of education and the consequent educational needs within the firms, the literature focuses, among other things, on cultural issues that can lead the business

ecosystem to comparative underdevelopment. This is apparent in our case, given that the majority of these entrepreneurs are at the tertiary level by themselves, but still, they do not recognize its importance, focusing on the obvious such as kindness and hard work as necessary characteristics for an employee. In other words, it seems that the higher education level of knowledge of many of the entrepreneurs is not being used systematically.

iv About the issue of innovation as a concept and practice, the majority of entrepreneurs do not perceive the three-sided condition of "human resource management-education-innovation." Even worse, many of them argue that their internal and external environment is not being transformed and that they will continue to operate as usual.

We believe that all these findings create an ambivalent outline for the region as a whole. However, some of the things the international practice suggests can be useful for the immediate future to create and disseminate innovation in this less competitive regional business ecosystem. Based on the above, a path of investigation must open for policymakers in exploring how to design policies with long-term development in mind, utilizing R&D resources in local government by trying to combine them effectively with the businesses and the university based in the region[1].

5. Final remarks and Discussion

In this study, we tried to highlight how innovation comprehension is linked to the educational needs and training of organizations, focusing on the case of the Greek Region of Eastern Macedonia and Thrace. After carrying out mixed field research (qualitative and quantitative) in a sample of 72 firms, we found that the perception of these people about the need to connect innovativeness with education and human resource management is relatively shallow. This fact gives an insight into the overall underdevelopment and competitiveness weaknesses of this local business ecosystem.

Although the sample is relatively small, non-weighed and non-representative, and focused on the retail sector exclusively, we think that the findings—predominantly of the qualitative part of the questionnaire—are original as they take into account the perceptions of entrepreneurs in the field. We incorporated qualitative methodology in our research to avoid the direct limitation based on the size of the sample. Overall, our findings seem to confirm the hypothesis that innovation is not perceived nor is exercised systematically and cohesively in several firms of a less competitive business ecosystem.

What is urgent for this region and other similar cases in relatively underdeveloped areas is the focus on innovative entrepreneurship through optimal combinations of local governments, businesses and universities. This fact becomes even more pressing if we take into account the current fourth industrial revolution (Schwab, 2016), combined with the consequences of the current pandemic crisis of the coronavirus, where it seems that many current types of

[1] As we have suggested in the past, a business ecosystems policy for the region could link these bodies effectively. See the following: Katimertzopoulos and Vlados (2017); Vlados, Chatzinikolaou, et al. (2019); Vlados et al. (2018); Vlados and Chatzinikolaou (2019a, 2019d); Vlados and Katimertzopoulos (2018).

professions and businesses will cease to exist in the near future. The risk of rising unemployment around the world is visible and coordinated innovations at all levels of our socioeconomic coexistence (local, regional, national and global) can be the only way out.

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