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Sustainability in the Wine Industry: key questions and research trends

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Purpose: The purpose of this paper is to provide a detailed overview of the main contributions in research to the issue of sustainability in the wine industry. In particular this paper aims to: highlighting where research is going and what it has been done; defining the contribution of background research in explaining the determinants of sustainable orientation in the wine industry; understanding the role of research (and academics' social responsibility) for the diffusion of sustainable orientation in the wine industry.

Design/methodology/approach: systematic literature review

Key words: Research trends, sustainability, systematic literature review

1. INTRODUCTION

The wine industry is definitely engaged in sustainability. The emerging interest on sustainability is confirmed by a growing body of the academic literature on this research issue or by the rise of new academic journals and scientific communities. Nevertheless the industry has shown an involvement in sustainability in general, and people in the wine industry wonder about the effectiveness of sustainable practices and if it pays to be sustainable oriented. Talking about sustainability opens to a multitude of research issues, especially in wine, where being sustainable is often misunderstood with being organic or biodynamic. This paper investigates the body of academic literature about sustainability in wine starting from prior researches (Casini et al. 2010) and highlights what are the main challenges that scholars must face when they get into this research issue. After having provided a description of where the research is going, the paper will try to explain the determinants of a sustainable orientation among firms and it will highlight the role of research in promoting sustainability.

2. SO MANY GREEN NUANCES

The word “sustainability” has so many definitions that it holds a shadow of ambiguity (Warner, 2007). Nevertheless, there is not an univocal behaviour to be defined as sustainable and some companies appear to be much more sustainable than others. Isaak (2002) distinguishes between green and green-green businesses; green – green businesses are those businesses that have been designed to be green oriented since their start up, whilst green businesses have become green after that managers- who are not inspired by ethical issues - have discovered the advantages of such an orientation in terms of marketing benefits, corporate image positive feedbacks or cost savings.

There is also an heterogeneity in the geographical diffusion of a sustainable orientation among countries: the world Atlas shows that some areas are “greener” than others.

In the global scenario, the California holds a leading position among the most sustainable agricultural producing countries: Warner (2007) describes the efforts spent by Californian winegrape industry for reaching and educating growers about quality issues and sustainability; the availability of place-based networks of production has facilitated social learning among grapegrowers. Warner (2007) says “More than any other group of California growers, winegrape growers are operationally defining sustainability as agricultural enterprise viability, environmental quality and product quality”. In Northern California there are about 40 industry organizations active in promoting sustainability that should apart from the associations that operate nationally in organic viticulture (Washington State Association of Winegrape Growers; Oregon Wine Advisory Board; New York Wine & Grape Foundation; Penn State Cooperation Extension; Wine Council of Ontario, etc..). Another case worth to be mentioned is the case of Lodi region in California (Ohmart, 2008) that is an effective description of the responsiveness of a local economic system to sustainable issues: after having released a workbook programme that encompasses all the sustainable practices in winemaking, results have been monitored in order to assess how principles have been receipted and what action plans for improvement have been implemented by companies and associations. The great success of the Lodi programme relies in the active involvement of growers that has happened due to workshop, a proactive behaviour of associations and effective communication flows.

Starting from the differences among wineries, some scholars (Casini et al. 2010) have proposed a model that would help to classify wineries’ orientation in terms of sustainability; the model proposed by Casini et al.(2010) provides four different possible profiles of wineries. The so called “*devoted*” wineries are those that show a strong orientation towards sustainability that is emphasised by wineries when they communicate with customers so that company’s image can be associated to a green orientation; those companies must invest on customers and employees training and education programmes in sustainability and need to ensure an alignment between corporate vision and managerial vision. Another category of wineries, the so called “*unexploiters*”, stands half the way between devoted and another category called “*laggards*” that are those

wineries who would never adopt sustainable practices: *unexploiters* usually decide to adopt sustainable practices, but do not communicate and share with other people (clients, first of all) their decision. Such a behaviour limits the benefits that might be gained through a sustainable orientation. At the opposite of *unexploiters* stand *opportunists*: those are wineries that don't have a particular interest in sustainability, but tend to heavily communicate the few sustainable practices introduced.

As it emerges, sustainability is a complex issue: there are many ways of being sustainable, and researchers must consider that things cannot be seen all black or white because is it possible to find too many (green) nuances.

We conceive sustainability as a behaviour adopted for responding to stimuli, weather they are external or internal to the firm. This perspective introduces in the discussion three elements: firstly the presence and the type of stimuli or drivers; secondly the responsiveness of organization; thirdly the motivations behind a behaviour.

In other words, we can say that sustainable orientation depends on how it can be answered to the following questions: who cares about sustainability issues? How much do I and my organization care about sustainability? Why should we care about sustainability?

This paper aims to systemically analyse the main academic contribution to the issue of sustainability in the wine industry in order to outline insights that can depict strategic, managerial, consumer and organizational implications and to highlight what are the main challenges that scholars must face when they get into this research issue. After having provided a description of where the research is going, the paper will explain the determinants of a sustainable orientation among firms and it will outline the role of research in promoting sustainability.

3. KEY DRIVERS OF SUSTAINABILITY

Analysing the drivers of sustainability is, in our opinion, the first step for understanding the relationship between firms and sustainability: exploring the incidence of perceived stimuli on companies' choices represents a way for explaining firm's behaviour. By conceiving sustainability as a behaviour adopted by firms for responding to selected stimuli, we want to focus on the impact that forces (external or internal to the firm) have on firm's strategy; sustainability being one of the multiple facets of the set of firm's strategic decisions must be considered as part of a firm's strategy.

The presence of drivers affecting firm's orientation towards sustainability partially explains the differences in the overall degree of sustainability at a firm or at a country level.

Although the existing differences among countries in terms of sustainable orientation, due to the complexity of the sustainability issue, it is almost impossible defining a general country ranking: the numerous indexes available simply suggest that there are many differences among countries, but it is extremely hard to define which are the most sustainable countries in the world, because of the differences in index composition and in the aspect of sustainability observed. A focus on the key drivers to sustainability offers a balanced solution to this problem.

It has been progressively given emphasis to the issue of drivers both among academics and practitioners. Accenture has elaborated a list of six key drivers of sustainability, that "are not only reshaping the way businesses and governments operate, but also redefining the value they deliver" (from corporate website); they are: Consumer demand for sustainable products and services; stakeholder influence; Resource depletion; Employee engagement; Capital market scrutiny; Regulatory requirements.

Also background research (Dillon and Fischer, 1992; Lawrence and Morell, 1995; Winn, 1995; Bansal and Roth, 2000; Davidson and Worrell, 2001; Marshall et al., 2005; Gabzdylova et al., 2009) has highlighted the role of drivers – whether they are conceived as internal/external or internal/institutional - to describe firm's sustainable behaviour adoption.

Internal drivers are all those drivers that take place within the firm: they are ethical motives inspiring top management and entrepreneurs as well as strategic intentions based on the recognition

of an advantage that might arise from sustainability. External drivers, instead, take place in the firm's external environment.

3.1 Institutions, Associations, Regulators and Market Demand

External drivers are all those happening outside of the firm sphere: pressures coming from institutions, customers, communities, associations, environmental groups, activists, regulators and also competitors.

Background research has highlighted the role of industry associations in promoting an awareness among grapegrowers and wineries towards sustainability (Broome and Warner, 2007; Silverman et al., 2005; Warner, 2007).

An orientation towards establishing networks among local players is a key factor of success. In some specific contexts, such as California, it emerged that agroecological partnership became the leading vehicle for extending sustainable agricultural practices (Swezey and Broome, 2000; Dlott, 2004); it has also been recognised the proactive role that those partnerships had in spreading a green orientation among wineries (Broome and Warner, 2008).

Environmental concerns find a diffusion among wineries and are strictly related to corporate image. New Zealand is investing in environmental issues: "The New Zealand wine industry aims to be the first in the world to be 100% sustainable. The Sustainable Winegrowers New Zealand (SWNZ) programme introduced in 1995 is a framework of industry standards set up to achieve this by vintage 2012." (from the website: <http://www.newzealand.com>).

Besides initiatives promoted by associations and institutions it should be reminded the efforts paid by single companies for promoting practices that would reduce, if adopted, gas emission and wastes. The case of The Wine Group, in the US, symbolise the consideration that big companies give to environmental issues: The Wine Group has launched in 2008 a website (www.betterwinesbetterworld.com) for documenting how Bag in Box can help in reducing emissions and wastes (<http://www.winebusiness.com>). New World and Old World must face similar environmental challenges but they strongly differ in terms of fertiliser usage, that is significantly lower in Europe (<http://www.eea.europa.eu>).

The development of specific programmes for sustainable winegrowing has fostered the adoption of "ground to bottle" practices for producing grapes and wine (Broome and Warner, 2008). A key issue to consider is the willingness that institutions and organizations have to provide a long term financial support to sustainable programmes and training activities: it has been underlined by Warner (2007) how a sustainable committee requires financial supports for funding continuous investments.

Also institutions and regulators have played a key role in enhancing wineries interest towards sustainability by funding specific practices adoption and by educating through a sustainable orientation (Swinbank, 2009).

It has been demonstrated that competitors' orientation towards sustainability can promote a mechanism of adoption that affects other companies in the competitive environment: Murphy (2000) describe the introduction of the flange-type bottle with a C-cap on the market by Mondavi, that has been subsequently adopted by other wineries in the market who, conscious or unconscious, have embraced the same principles that have inspired Mondavi before the product launch.

Consumers' involvement in sustainability is also reshaping wineries' interest toward this issue, as it has been perfectly described by Bisson et al. (2002): "As consumers become more aware of the vulnerability of our global environment, the demand for sound agricultural production practices is increasing. In the future, the perception of the producer as a conscientious environmental steward will be an important influence on the consumer's purchasing decision. This is due in part to the fact that the typical wine consumer is well educated and affluent." (p.698). The pressures coming from consumers have created a market for wines that have been realised taking into account environmental issues, such as organic or biodynamic wines (Forbes, et al. 2009): in particular, in

some countries, as the UK, organic wine moved from a niche to a mainstream position (Sharples, 2000).

3.2 Entrepreneurs and Top Management

Most of the research has focused on explaining the role of external drivers in enhancing a sustainable orientation within firms and fewer has been done about internal drivers.

A consistent body of research, instead, can be found in the general management and business strategy literature, that analyses the role of people involved within the organization in promoting a sustainable orientation: it has been investigated the role of top management's values in determining sustainable orientation (Berry and Rondinelli, 1998; Quazi, 2003), entrepreneurial commitment to sustainability (Shaltegger, 2002) or management practices and principles reshaped by a sustainable orientation.

In some cases, some niche research fields were borne by providing a "sustainable" perspective to diffused and internationally adopted research approaches: it is the case of Ecopreneurship (ecological entrepreneurship) or Natural Resource based View a version of the Resource Based View of the Firm approach mainly based on environmental issues.

Ecopreneurship is a term that has been introduced in early 90s (Bennett, 1991; Berle, 1991; and Blue, 1990) and that names a growing body of literature that investigates most of the critical questions in Entrepreneurship from an ecological and environmental perspective. The works by Walley and Taylor (2002), Shaltegger (2002), Schaper (2002) provide a comprehensive overview of this research field. From the research it emerges the prominent role that personality traits can have on the degree of a sustainable orientation within firms: Regouin (2004), exploring the conversion to organic agriculture determinants has highlighted that it depends on some personal traits such as curiosity, flexibility, risk propensity and creativity in exploring innovative marketing approaches.

Although the presence of a growing body of academic literature that is exploring the "internal" drivers towards sustainability, a few has been done on wine.

3.3 Sustainability & Strategy

Bonn and Fisher (2011) say that Sustainability is often a missing ingredient in strategy: there is a great debate on corporate social responsibility, corporate environmentalism, sustainable practices adoption, green marketing, green corporate image, etc..but the issue of sustainability is not considered as priority in strategy making.

Research in wine has focused on the relationship between a sustainable orientation and a competitive advantage.

It has been shown how being organic gives a contribution to an effective differentiation (Bernabeu et al., 2008): Delmas the al. (2006) explores the case of a winery in California (it is the Ceago winery, owned by Fetzer), that chooses to produce organic wine for differentiating its product from the mass; Pugh and Fletcher (2002) examine how a wine multinational corporation (the BRL Hardy) addresses itself to a specific and different market segment through one of its controlled brands (Banrock Station) who releases organic wine to the market.

4. THE ROLE OF RESEARCH

As well as the wine industry, also wine research is going green. Research in sustainability in the wine business has been fostered by the growing interest of the wine industry itself and by the active role of institutions - that funded specific research programmes - associations or single companies. A kind of virtuous circle has happened in this research field: once supported research has promoted a further interest in sustainability and new researches have been promoted. Generally speaking we can say, by observing some cases, such as the Washington State Wine Industry, that University research has fostered the development of the wine industry (Stewart, 2009). Ohmart (2008), when observing the diffusion of sustainable practices among grapegrowers, suggests that it depends on two factors: the rigorous science and its effective delivery to grapegrowers, two issues that might

explain any existing difference in terms of penetration and diffusion of sustainable practices in viticulture.

Also Guthey and Whiteman (2010) when analysing the history of winemaking in California, say that funded university research has contributed to shape Californian wine production thanks to the useful inputs provided for developing winemaking practices and understanding human environment relationships.

The field of sustainability in the wine industry appears as a breeding ground for the development of academics and university collaborations: the paper proposed by Lee (2000) provides a general framework that can be used for describing the benefits arising from the relationship between academics and industry. In general it can be said that the industry, by cooperating with research institutions, can be helped in solving technical problems; can have an easier access to useful findings and can be facilitated in the innovation implementing process. There is no surprise about the fact that the industry is supporting research in some countries: it is the case of the Wine and Food Institute in California cofounded by Robert Mondavi Winery, the Anheuser-Busch Foundation and Ronald and Diane Miller of Silverado Vineyards to conduct research on wine and food (www.winespectator.com).

Due to the social implications that sustainability, as a research issue, has, we can say that researchers who are working in this field have a social responsibility; through their work, researchers can foster the adoption of sustainable practices among wineries at different levels and contributing, indirectly to the growth of the overall welfare of people living in a certain area.

5. RESEARCH ORIENTATIONS: A SELECTIVE LITERATURE

5.1 Methodology

Where is research going and what has been done? In order to answer to this specific question we have carried out a systematic literature review by analysing academic database and some wine academic journals. In particular we have performed a keywords based research in the following academic search engines: ISI web of knowledge, Scopus and EBSCO (that contains Econlit, Business Source Premiere and Greenfile databases).

It has been chosen to perform the research among selected sources and specific database and not to start from other academic search engines that are more generic (i.e. Google Scholars) and would surely provide much more results. This choice has been made because the search engines selected are the most widely diffused among scholars and search results are more likely to be generalised rather than others coming from a search on university library catalogues or internal database or generic search engines.

The keywords used, combined with the word “wine” are: *green, organic, sustainable, sustainability, biodynamic, ecopreneurship, environment*. We have also selected some academic journals specialised in wine, and we have checked the presence of articles that examine the issue of sustainability in wine; the journals selected are: the International Journal of Wine Business Research; the Australian journal of Grape and Wine research; the Journal of Wine Research, Enometrica and the Journal of Wine Economics. We have decided not to focus on practices analysis: there is a wide literature on environmental and organic practices in the wine industry, but it mainly focuses on winemaking and agronomic aspects and we are interested in management, strategic and marketing issues. Background research has provided us useful inputs for performing our systematic literature review; in particular the works by Lobb (2005) and Thieme (2007) have been helpful for the methodology designing of the analysis. The work by Hart (1998) has been extremely useful for understanding how to analyse results. After having verified their contents, the articles have been included in a database that has been created for sorting and analysing results. We have then classified the articles collected into four main categories, that have been built on the basis of major JEL classifications.

5.2 Topics, Geographic area and Research techniques employed

The main four categories corresponding to our classification of the main body of research are (table 1): Strategy; Entrepreneurial and Top Management Behaviour; Consumer Behaviour; Supply chain management and certification. Along these categories it is important to observe the differences emerging from the geographic area in which researches have been carried out.

The category “strategy” includes all those articles that deal with the issues of business strategy and sustainability. It is a matter of fact that research on strategy is mainly performed in the New World Countries: Chile, New Zealand, US, Australia, Argentina lead the way to understand the links between wine and sustainability in a strategic orientation. Research techniques employed are often qualitative and case study research is frequently performed. One of the reasons could be the necessity to explore the main drivers of pressure towards sustainability taking into account the motivations and opinions of different wineries’ stakeholders. In fact, according to Flint (2009), in order to conduct such exploratory researches, it is necessary an appropriate methodology such as the grounded theory that has been used to reveal how social actors interpret and act within their environments. In other papers, the aim is to give an enlightenment of an entire sector at national or regional level and for this reason a multidisciplinary case study approach is employed (Guthey and Whiteman, 2009; Cederberg et al., 2009). The issues investigated in this category is extremely wide but it is possible to synthesize two trends: at country level the analysis is carried out to understand the boundaries of emerging organic wine industry and in some instances the implications to promote place branding activities; at firm level the interest is for internal and external pressures towards sustainable and environmental practices.

Even more concentrated is the research investigating “entrepreneurial and top management” drivers for the adoption or improvement of environmental behaviours: Marshall, Cordano and Silverman, use the Theory of Planned Behaviour and the previous Theory of Reasoned Action mainly in US (California) and New Zealand wineries. Results are not univocal because the weight of internal and external pressures, attitudes and subjective norms can change case by case and the papers give evidence of interactions among considered variables.

Consumer behaviour field instead is investigated worldwide. In this review it emerges as Europe is focusing more on consumers’ perception of, and wtp for, organic wine while the New World research is oriented to a more complex issue such as the environmental friendly label or a more general topic as the green production practices. This is the category where quantitative analysis and statistics techniques are more used and developed.

Finally, research in the field of supply chain management and certification aim to give an overview of various tentative to implement codes of sustainable winegrowing practices and to reduce the impact of environment based activities on carbon emission; these researches are carried on both in the New and Old World. It is worth to stress the various methods employed to analyse impacts and practices efficiency on environment; this is the evidence that not a precise technique or tool seems to have been recognized worldwide as a standard for such measurement and thus more research is needed.

A brief final note is about the kind of journal and publications’ year. Over 34 papers collected only 5 have been published before 2005 while 22 during 2008-2010 period. This is a proxy to understand how “young” is this field of study. Particularly, the field of Strategy seems to be the newest one.

An analysis of Journals reveals a multidisciplinary interest in sustainability and wine: journals such as *Renewable Agriculture And Food Systems*, *Journal Of Cleaner Production*, *E:Co Emergence: Complexity And Organization*, *International Journal of Sustainable Development & World Ecology* devote a specific attention to sustainability in its various facets; on the other side *Journal of Wine Research* and *International Journal of Wine Business Research* have a wine sector focus. Then we can find other kind of reviews with a general focus on agri-food sector (*British Food Journal*, *Food Quality and Preference* and *Acta Agriculturae Scandinavica Section B-Soil And Plant Science*, *Journal of Rural Studies*) or new journals with specific topics on firms and sustainability such as *Business Strategy and the Environment*.

Table 1: Topics, geographical coverage and techniques used in selected literature

Topics	Author(s)	Geographical coverage	Study Tipology	Technique	Sustainability aspects
Strategy	Cederberg et al (2009)	Chile	Qualitative	Case study at country level	Potentiality of industry organic wine
	Flint and Golicic (2009)	New Zealand	Qualitative	In-depth Interviews (Grounded Theory)	Drivers of wine industry sustainability
	Guthey and Whiteman (2009)	US (California)	Qualitative	Case study	Firm-ecology relationships
	Gabzdyllova et al. (2009)	New Zealand	Mixed	Interviews	Internal and external drivers of sustainability
	Pullman (2010)	US	Mixed	Interviews	Sustainability practices
	Bonn (2010)	Australia	Qualitative	Case study	Sustainability as a business strategy
	Sinha and Akoorie (2010)	New Zealand	Quantitative	Multivariate Analysis	Environmental practices
	Sampedro et al. (2010)	Spain	Qualitative	Interviews	Environment as a business strategy
	Warner (2007)	California	Qualitative	Interviews and Focus Groups	Links between sustainability and place-based branding
	Preston (2008)	France and Australia	Qualitative	Case study	Change in supply chain practices
Entrepreneurial and Top Management Behaviour	Novaes Zilber et al. (2010)	Argentina	Qualitative	Case study	Potentiality of industry organic wine
	Poitras and Getz (2006)	Canada	Qualitative	Case study	Host community perspective
	Marshall et al. (2010)	US and New Zealand	Quantitative	Multivariate Analysis	Motivations for improving environmental performance
	Marshall et al. (2005)	US	Qualitative	Focus groups and Interviews	Environmental behavior drivers
Consumer Behaviour	Cordano et al. (2010)	US	Quantitative	Multivariate Analysis	Drivers of adoption of voluntary EMP
	Silverman et al. (2005)	US	Quantitative	Multivariate Analysis	Drivers to improve environmental performance
	Brugarolas et al. (2010)	Spain	Quantitative	Contingent Valuation	Organic wine
	Forbes et al. (2009)	New Zealand	Quantitative	Descriptive Analysis	Green production practices in vineyards
	Bernabeu et al. (2007)	Spain	Quantitative	Conjoint Analysis	Organic wine
	Thogersen (2002)	Denmark	Quantitative	Multivariate Analysis	Organic wine
	Krystallis et al. (2006)	Greece	Quantitative	Factor Analysis	Organic wine
	Loureiro (2003)	US (Colorado)	Quantitative	Probit Model	Environmental friendly label
	Blondel and Javaheri (2004)	France	Quantitative	Experimental procedure	Organic wine
	Fotopoulos (2003)	Greece	Mixed	Means-end chain analysis	Organic wine
Supply chain management and certification	Barber et al. (2010)	USA	Quantitative	Multivariate Analysis	Environmental friendly labels
	Barber et al. (2010)	USA	Quantitative	Multivariate Analysis (Factor, Discriminant)	Environmental friendly labels
	Bernabeu et al. (2008)	Spain	Quantitative	Multivariate Analysis	Organic wine
	Desta (2008)	California	Quantitative	Cross sectional survey	Code of sustainable winegrowing practices
	Ohmart (2008)	California	Mixed	Context analysis based on secondary data	Code of sustainable winegrowing practices
	McManus (2008)	Australia	Qualitative	Case study	Environmental sustainability
	Ardente et al. (2006)	Italy	Qualitative	Case study	Estimation of direct and indirect env impact with LCA
	Colman and Paster (2009)	Global	Qualitative	LCA Analysis	Impact on environment based on carbon LCA
Supply chain management and certification	Marchettini et al. (2003)	Italy	Qualitative	Emergy analysis	Ecological performance of wine production
	Cholette and Venkat (2009)	US	Quantitative	LCA analysis	Energy and carbon emission

6. CONCLUSIONS

We have seen how a tight relationship between academics and industry can provide benefits to the wine industry and improve its overall orientation towards sustainability: research can help winegrowers in the adoption of sustainable practices and can provide answers to some managerial issues.

Scholars (Guthey & Whiteman, 2009) suggest to focus research on a few critical aspects, such as the reconfiguring and understanding of economic performance and the creation of the conditions for incremental adjustment and multidisciplinary learning to happen.

Research has a social responsibility in the development of a sustainable orientation in the wine business: research results once spread can motivate wineries to adopt a sustainable behaviour and create a sustainability awareness among industry and consumers.

The main challenge is “to change perceptions and mind-sets, among actors and across all sectors of society, from the over-riding goal of increasing productive capacity to one of increasing adaptive capacity, from the view of humanity as independent of nature to one of human and nature as coevolving in a dynamic fashion with the biosphere” (Folke, 2002, in Guthey & Whiteman, 2009); research plays a key role in this goal achievement, by helping managers and people during the process of learning and adaptation to the evolving social conditions.

Some scholars perceive as critical the understanding of drivers role in the sustainable orientation: “We encourage further intra-industry, as well as inter-industry, research in order to better understand when internal and external drivers are most critical, and perhaps at times, less critical, in ushering in environmental stewardship” (Marshall, et al 2005).

It emerges that one of the key question research should answer to is “under what conditions sustainability happens”. The wine industry is particularly suitable for research on sustainability, as it has been shown by the analysis of the literature performed.

Anyway, although sustainability issues are affecting the wine industry all over the world, research doesn't show to keep the path of such a diffusion and it is much more intensive in some countries rather than others, as it has emerged from the analysis provided. It can be said that research is much more concentrated and focused on sustainability in wine in those countries where drivers' pressure is stronger.

The originality of this paper (Hart, 1998) relies in being the first classification about research on sustainability and wine. The paper aimed to identify the main methodologies and research technique used, as well as the main problem observed by scholars. Further investigations in order to highlight any relationship between university research and key drivers pressure should be carried out.

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