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Innovation management of German wineries: from activity to capacity—an explorative multi-case survey

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Abstract

Innovation is declared as key to success in increasing competition. This study explores the innovation activities of German wineries. A multi-case survey of 25 wineries shows rich innovation portfolios with diverse activities. The innovation activities of the wineries indicate diminishing product centrality in the industry, since innovation is pursued not only for products but for services, in investment and finance, in processes, and in marketing and sales. Wineries are characterized by intensive innovation and change activities. Intensive change might be rooted in bandwagoning effects, being pushed by trends and fads. Entrepreneurs in the wine business are urged to adapt to changes in customer behavior and to react to trends that they perceive to be important, resulting in diverse innovation ideas and change activities. The self-reliance seem to push entrepreneurs and smaller companies in the wine industry to increase their innovation portfolio in without regard for capacity or resource scarcity considerations or adequate strategic profiling.

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Keywords: Innovation; Strategy; Capacity

1. Introduction

Innovation is considered a panacea to compete in today's competitive markets. Literature and practitioners ask for innovative solutions to address increasing competition and multiple changes in the environment to which companies need to adapt (Johannessen et al., 1999, D'Aveni, 1994, Denton, 1999, Jansen and Jorgensen, 2004). The aim of this study is to provide insight into innovation activities and the resulting changes looking specifically at entrepreneurial and small to midsize companies of the wine business.

An explorative multi-case survey on innovation management in the German wine industry analyzes innovation behavior and focal areas of innovation, as well as the intensity of innovation in an industry that is characterized by small entrepreneurs. On the basis of structured interviews with randomly selected German wineries, the study delivers insights on dimensions and activities of innovation and change and first ideas on innovation capacity issues by introducing proxies to assess it. The study reveals high intensity of innovation and change activities. It therefore raises ideas for future research in the direction of bandwagoning, capacity restrictions, and strategic profiling with aligned innovation management (Abrahamson and Rosenkopf, 1997, Abrahamson, 2000, Abrahamson, 1991).

The paper is organized as follows. Starting with a description of the German wine industry we then provide a view on the current status of research on innovation in the wine industry and a literature synopsis for innovation in the context of SMEs. Furthermore, the resource dependency theory is explained as guiding theoretical framework. In the following we provide information on the empirical approach and present the results of a multi-case survey. A section of discussion and interpretation of

Abbreviations: SME, Small and medium enterprises; RDT, Resource dependency theory.

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the results concludes the paper providing ideas for future research and also considering the limitations of this explorative study.

2. Wine and innovation theory

The wine industry is characterized by fragmentation and change. Besides industry background we therefore provide insight into the status of research on innovation management in that context. Special attention is given to the resource dependency theory as it should provide managerial advice for entrepreneurs in the specific industry to guide their innovation activities.

2.1. *Wine business characteristics and the German wine industry*

The German wine business is mature, with longstanding tradition but ongoing structural changes. Global supply and competition, changes in consumer behavior and preferences and international markets with individual, culturally influenced consumption and specific import barriers characterize the global wine industry with Germany as one of the most liberal markets characterized by heavy consumption (Gilinsky et al., 2008, Hoffmann, 2005). Germany is the fourth largest consumer market of wine in the world and the consumers drink more than 2 billion liters of wine annually (DWI, 2011) of which 40–45% is produced locally (Hoffmann, 2005, Hoffmann, 2010). Additionally, German wine producers are exporting almost 4 million hectoliters of wine (DWI, 2012). Considering an average annual wine production of 9 million hectoliters, Germany has hence developed into a hub for European wine sales (Scheuermann, 2012). Compared to Spain or Italy, each exceeding 20 million hectoliters of export, Germany is still a rather small player (OIV, 2012). The supplier side shows strong fragmentation. In the last 30 years, the number of wine growers in Germany was halved to about 50,000. Still, the average German producer owns less than 3 ha. The industry is therefore characterized by small and medium players. Despite their small size, wineries are generally highly integrated—from growing to harvesting to producing to sales and marketing. Wineries hence generally need managerial competence and attention for all value chain steps, also in regards to possible change and innovation. Average profitability in the German market is low (Oberhofer, 2011, Mend, 2009, Oberhofer, 2012).

Hernández applies the theory of convention to describe the transition of the wine industry in general, also applicable for Germany. From a historically local world of production with strong agro-focus, the wine industry develops via an industrial approach, to enter a market world of production (Sánchez-Hernández et al., 2010). While quality of the products dominates earlier stages in such an industry evolution, in the later stages efficiency and commercialization are increasingly taking over as keys to success. In the context of innovation, such a transformation should result in a shift of focus of innovation. One expects less product centricity in the innovation portfolio once the later stages of transition are reached (Guthey, 2008).

The integrated value chain coverage of the German wineries results in the need to develop competencies for multiple markets and therefore impacts innovation behavior. Additionally, the

wine business belongs to the world of agriculture with its dependency on nature. Furthermore, wine is part of the food and beverages market, with multiple sales channels as well as the strong relative market power of the distribution side. Given the products' high emotional utility, wine also shows characteristics of luxury markets. As a result, the characteristics of asset focused as well as consumer driven markets with high emotional value and complexity of the product need to be considered in the wine context (Orth et al., 2007). Satisfying the needs of the different worlds, the product complexity as well as the need to deal with the transition of the market as described and the underlying changes of consumers stretches the entrepreneurs and might require technical as well as marketing innovation competence (Dell'Era and Bellini, 2009).

The wine industry is apparently an interesting industry for research as the growth rate of scientific wine industry articles is five times larger than the average across scientific disciplines (Orth et al., 2007). Indeed, the wine industry with its characteristics, its transition, and the complexity is well suited for research on innovation management (Cusmano and Morrison, 2010).

2.2. *Innovation in the context of SMEs and the wine industry*

Innovation is key for companies to develop, grow, position, and sustainably secure profitability in competitive business environments, especially where there are changing customer needs (Johannessen et al., 1999, D'Aveni, 1994, Denton, 1999, Jenssen and Jorgensen, 2004, Wang and Ahmed, 2004, Hauschildt, 2004, Crossan and Apaydin, 2010). Additionally, economies are characterized to evolve from factor-orientation via investment to become innovation-driven, with even more need to be innovative to successfully compete in the markets (Woodward, 2005, Prajogo and Ahmed, 2006). Indeed, a current global study on future capabilities rate innovation management as the capability with strongest growth in importance of all capabilities (BCG, 2009).

Since the average German winery has less than 10 employees and annual revenues of less than €2 million, it qualifies as very small enterprise. Even the largest German private winery with its 60 employees and about 10 million Euros of revenues belongs to the small enterprises, as defined by the EU (Kommission, 2003). Hence, the literature and body of knowledge on innovation management referring to SMEs seems highly relevant.

While innovation theory is strongly developed (Wang and Ahmed, 2004), its application and explanatory strength is initially and primarily focused on larger organizations (Caputo, 2002, Gilinsky et al., 2008, Vermeulen et al., 2005). Indeed, a database keyword search delivers almost 29,000 hits for innovation with “corporate” and less than 2000 hits for innovation and “SME”.¹ Freel and Mazzarol deliver a concise overview on the genesis and status of innovation theory for SME with an increasing body of knowledge. Still, often contradictory perspectives are not resolved, even such basic ones as if size of companies impacts innovativeness positively

¹Data base research on Business Source Premier June 2012: 28.850 hits for innovation and corporates meanwhile 1.804 for SME.

or negatively (Mazzarol and Reboud, 2008, Freel, 2005, Harrison, 1994, Stoeberl et al., 1998).

A keyword search in the wine specific literature database “vitis vea” results in 172 relevant articles on innovation in the wine industry, thereof 45% are on enology, 30% on viticultural innovations, and the remaining 25% are on management and marketing. Hence, the wine business specific literature targets practitioners primarily with advice on product and production. Identified scientific articles on innovation in the wine industry in the context of management show three focal areas of innovation: cluster and network (about 40%); product and marketing innovation (about 30%); innovative organization and leadership (about 12%). The first focus “cluster and networks” can be explained by two factors. One, the wine industry serves as a success story for emerging countries catching-up against old economies via clustering and networked innovation-based initiatives, leading to corresponding publications (Touzard, 2010). Second, since the famous management guru Michael Porter developed his regarded theory on clusters as a means for competitive advantage in management practice and theory by looking at the California wine industry, his work led to strong publications as well as following work on cluster strategy, often in the context of the wine industry (Porter, 1991). The second identified focus addressing managerial aspects of innovation in the wine industry – product and marketing focused articles – supports the notion that product centrality still prevails in the industry. The articles mostly describe individual innovation projects and are oriented toward practitioners providing ideas or advice on how to realize specific product oriented wine innovations. An indication that product differentiation might still be the main strategic lever for competitive advantage in the industry (Aylward and Glynn, 2006). The lower extend of publication on the basis of leadership and organizational perspectives legitimate for further research.

Interest in innovation in the context of SMEs and especially in the wine industry is on the rise (Crossan and Apaydin, 2010). Scozzi et al. (2005) explore the SME specific innovation management challenges that Gilinsky assesses for the wine industry (Gilinsky et al., 2008). Rama provides empirical evidence specifically for the relevant food and beverages industry (Rama and Tunzelmann, 2008). Despite a focus on sustainability, Lubell et al. (2011) deliver relevant information on innovation practices in the wine business. Despite the vast and still increasing body of literature on our research seems relevant in the light of contradictions such as the high expectations of small entrepreneurs to innovate in order to create sustainable competitive advantage and hence leverage their flexibility, but the stated limitations in regards to resource access and capacity restrictions. (Forsman, 2011, Terziowski, 2010) Overall, the literature rather unanimously favors innovation activities for small enterprises. Additionally, it reiterates the common notion that SMEs are an important source of innovation. Although Harmsen challenges a parallel pursuit of product and process innovation focus, capacity restrictions of SME are rarely subject in innovation research (Harmsen et al., 2000). As a result, “... there is little empirical evidence about how companies improve their innovation capacity” (Freel, 2005). This paper intends to look at the innovation activities of

individual companies and to provide some food for thought for future research on the notion of focus and capacity (Jørgensen and Ulhøi, 2010) by exploring innovation behavior of German wine producers.

2.3. Resource dependency theory as a possible guiding theory

Given the industry structure characterized by small companies we expect resource limitations to guide the activities of the entrepreneurs. Hence, the resource dependency theory (RDT) seems appropriate as an underlying theoretical framework (Barney, 2001), additionally since in the wine industry assets are of paramount importance, as can be illustrated just by considering the vineyard as a resource. Wine is a natural product that is highly impacted by the soil and the location of the vineyard. Extreme temperature, hail, or other weather have a strong impact on the product and the harvest. Securing attractive vineyards is therefore a financial and also a managerial challenge. In a densely populated country such as Germany, prices for land are high. Prime vineyards are rarely on the market since they are inherited over generations. Furthermore, the planting of vines is regulated and restricted resulting in increased scarcity of the resource. Besides access to vineyards, resource dependency is a permanent managerial challenge in each step of the value chain. Wineries are seizing opportunities to leverage their resources. To provide some examples such as terror wines to make the best of the soil and vineyard; newly built wine cellars or fashionable sales rooms to gain attention; access to sales representatives for export markets to profit from growth opportunities; attracting good winemakers to increase product quality, change profiles for new customer segments, or adapt to changes and trends in customer preferences. Wineries hence entrepreneurially try to gain and defend positioning and profiling based on resource access (Conner, 1991).

Indeed, in the German wine business with global competition, small business size, costly and capital intensive expansion opportunities, cost leadership as a generic strategy can at best be chosen by a few players in the industry. The majority of the players need to differentiate in the market. Hence, innovation could be a key lever for differentiation strategies and resource dependency therefore should accordingly guide strategic innovation management (Touzard, 2010). RDT furthermore fits well for situations where human and social capital is part of the coordinated resources to realize innovation (Jenssen and Jørgensen, 2004), as is the case in the German wine industry.

3. Multi-case survey to explore innovation in the context of the German wine industry

We conducted a multi-case survey as explained in the following to assess innovation measures and intensity. On the basis of the literature review we expected support for the following thoughts:

- Innovation and its implementation are important for wineries.

- Product centric innovation focus in the wine industry has been overcome.
- Capacity limits result in prioritization, clusters, and focal areas of innovation—hence strategic innovation strategies can be identified.

The intention of this research was to explore current innovation activities of wineries as their reactions to market challenges, to identify focal areas of innovation, and to address the theoretically derived question of whether wineries, given small company size and restricted resources, pursue accentuated innovation activities—do they manage their innovation intensity in the light of restricted capacity and resources? Given the explorative nature and ambition of the research we applied a multiple case survey approach (Yin, 2008, Eisenhardt, 1989).

Innovation in this study is defined in a multifaceted and broad way as a new idea (Van de Ven, 1986). It therefore includes "... the introduction of new or improved processes, products or services based on new scientific or technical knowledge and/or organizational know how" (OECD, 2004b). We assessed completed and planned innovation and change activities as proposed in the literature (Mazzarol and Reboud, 2008). (Johannessen et al., 1999, Touzard, 2010, Antonioli et al., 2010) Using the terms change as well as innovation has been successful in prior studies when evaluating innovative measures (Gilinsky et al., 2008).

Twenty-five German wineries were interviewed by two interviewers jointly with structured face-to-face interviews. A random selection of the wineries resulted in wineries of different sizes and diverse regions in Germany. All wineries have direct end consumer contact. The limited number of cases neither justifies hypotheses testing nor does the study deliver representative results for the industry. But given the aim of the study to explore the subject matter, we intentionally included a diverse portfolio of cases. Although the cases also include larger German wineries, as described their size and structure still characterized them as SME.

The questionnaire collects descriptive data on the winery, perception of importance of strategic planning (importance for the industry as well as their own assessment), the realized (last two years) or planned (next two years) innovation and change activities, the utilization of planning tools, and individual growth ambitions. This approach hence looks beyond the "potential" of a firm to innovate as requested in the literature since we evaluate actual and planned managerial activities (Neely and Hii, 1998). For the core of the multi-case survey, the assessment of innovation activities, we utilized a proven framework that we extended and adapted to the wine industry. The study builds on Wang's innovation construct combining product and organizational innovation perspectives (Danneels, 2002). We defined wine industry specific innovation activities that we then grouped on the four dimensions: products and services, process and HR (Human Resources), investment and finance, marketing and sales. For each dimension, four to eight specific innovation activities in the context of the wine industry built the basis for the questionnaire (see Table 1 and for more details questionnaire details in Appendix). The definition of activities and the grouping on the dimension was the result of four interactive focus group

Table 1

Overview on innovation dimensions and categorized activities.

Innovation dimensions	Maximum number of activities
Investment and financing	4
Product and services	8
Process and HR	8
Marketing and sales	8
Max. activities	28

workshops—two of them with wine producers and two with wine producers and consultants in the industry. Furthermore, the questionnaires were tested with five wineries. Since every proposed innovation activity was realized as well as planned in the future by at least one winery, our defined innovation activities and the resulting innovation portfolio proved to be relevant for the industry.

We furthermore introduce the notion of capacity of innovation management by looking at the intensity of activities pursued by the interviewees. A proxy indicator of "innovation intensity" for the wineries was developed. The ratio of "innovation activities realized" over "maximum of activities" was used to assess innovation intensity. A maximum of 28 activities could be named by the respondents determining the maximal innovation portfolio of the wineries for this study.

4. Results

The interviewed wineries stated various current and planned innovation activities and creative measures for all activities on all dimensions. We provide some examples for the categories of innovation: for the dimension "investment and finance" examples are financial restructuring with investment funds or investors to substitute banks or equity financing; innovative participating certificates to win end customers for debt financing; godparenthood for vineyards of fans of the winery; or building new and fancy tasting rooms. Not surprisingly, extension and development of products and services showed a rich pool of creativity in that category: creating new wines, unusual design of bottles, new packages with new materials and often new closures, fungicide resistant vines, wine storage offers ("wine bank"); creative bundles and new pricing structures are just few striking ideas to mention. Far reaching outsourcing of process steps, cooperative sourcing, integration of experts or consultants to substitute so far internal know how are examples of innovation and change for the category of process and human resources. Marketing or sales innovation is surely often triggered by new technology, such as creating internet based offers to win new clients but also to change interaction and create new channel activities. But we found there is a wide variety of new ideas such as offering events or touristic add on or clients becoming sales people realizing the notion of virtual marketing.

Looking at the activities of the current innovation portfolio, no focal areas could be identified. Pricing is one activity with high attention meanwhile lower activity was reported for creating new services, changes in sourcing, new capital

sources, or new alliances. Concerning planned activities, the wineries plan high on further changes in pricing, then on new innovative facilities and sales rooms. Meanwhile creative capital sources or sourcing are neither in current nor in future scope, new media gains strong momentum in the planned innovation portfolio. Product innovation shows highest decrease in activity level. Hence, the current and planned activities underline industry centrality. Some innovations that are general practice outside the wine industry seem to be disregarded. Innovative services are an increasingly important element in offerings in other industries to gain sustainable differentiation where products are substituted by solutions to win customers. The wine entrepreneurs intend to win the customers via investment in facilities and show rooms, which is capital intensive and, in years with lower yield, rather risky. Strategic sourcing as a means to cut costs and increase capacity without touching the core business is neglected in the wine business but commonly part of innovation portfolios outside the wine business. New media, given its strong increase in importance in the innovation portfolio, has not yet lived up to its potential to change the way to interact with the customer or to create a powerful business model. Indeed, the strong focus on pricing in the current and future portfolio can be explained by consecutive years with low yields due to different negative natural impacts. Hence, pricing dominates as it is in the wineries' focus to keep earning levels up given lower volume to market. One would expect that given the lower production volume as a result of less grapes and the implicit risk of financial drawbacks would result in innovative financing, but such reaction is not observed since scores in that activity dimension were low.

The interviewed wineries show an overall high level of current and planned innovation activity level. Surprisingly, an innovation intensity of 40% or more on each of the four innovation dimensions characterizes current and planned portfolios (Tables 2).

While activity level is highest (53%) in the product dimension, the remaining dimensions score close to that result with 46–48%. Comparing the actual and planned activities, the strongest decrease is in the product dimension so that all dimensions show almost equal levels for the planned innovation portfolio. On every dimension the activity level decreases comparing currently pursued versus planned activities, an indication that entrepreneurs might strive for more stability and less change. Since the wineries state to increase usage and reliance on tools and planning they might intend to substitute some innovation activeness by routine work and processes supported by managerial planning and steering infrastructure.

Table 2
Innovation activity level by dimension.

Innovation dimensions	Activity level	
	Current (%)	Planned (%)
Investment and financing	47	41
Product and services	53	42
Process and HR	48	41
Marketing and sales	46	40

Table 3
Innovation intensity and number of wineries

Activities pursued	Respondants
> 70%	5
50–69%	6
30–49%	11
20–29%	3
< 20%	0

About 45% of the interviewed wineries report to be engaged in more than 50% of the activities and two state 77%. No winery was inactive for all activities of innovation (see Table 3). Only two respondents report no activity on one of the four dimensions, a possible sign of focus. Still, the majority of interviewed entrepreneurs are currently and in the future parallelly addressing all four dimensions of innovation with a lot of the activities in the innovation portfolio.

The empirical study indicates overall a high level of innovation activity. Innovation intensity neither correlates with size nor strategic orientation nor with usage of management tools. Innovation clusters could not be identified.

5. Discussion, limitations and future research

Despite the maturity of the wine industry and the small size of its entrepreneurs, the high intensity of innovation stated in the interviews supports that innovation is highly relevant for competition in the German wine world. Apparently, the goal of differentiation, satisfying different worlds of industries, and the extended coverage of the whole value chain of German wineries results in rather extensive and therefore high innovation intensity with complex portfolios of innovation. Given the high scores across all dimensions with slightly more intensity in the product dimension and rather equal scores for all dimensions in the future, product centrality is not as dominant as expected by the literature review. The wineries are actively pursuing innovation in all relevant dimensions and individually show a diverse and intensive portfolio of innovation.

In regards to the life stage of the industry and the notion of overcoming the product centric focus we find support that the German wine industry is in transition from a market production world to “... an incipient interpersonal world of elitist production” (Sánchez-Hernández et al., 2010), requiring new and additional innovation activities. Indeed, our observed intensity of change supports the idea that the innovation requirements of each world of production rather require additive innovation activities and therefore result in more, extended and intensive innovation. Hence, it supports that the wine industry in Germany is characterized by cumulative innovation (OECD, 2004a). Overcoming industry centrality in the innovation portfolio could be a lever for more strategic orientation to differentiate successfully in the future. It could also close the apparent gap of innovation literature in the wine business and empirical evidence since the focal areas of the literature were not reflected in the interviews. Product

centricity and networks dominated the literature, but were not reflected equally in our interviews.

There are several restrictions of this study. Firstly, a small sample with focus on one industry in one country without longitudinal analysis limits the general validity and certainly does not deliver representative results. Furthermore, innovativeness (Salavou, 2004) of the activities has not been measured. Neglecting the newness and therefore the degree of innovation (Garcia and Calantone, 2001) does not allow to differentiate between incremental and more radical innovation, which certainly impacts capacity management and needs to be considered in future analysis (Gilinsky et al., 2008, Hauschildt, 2004). An analysis of strategic positioning versus innovation activities would help to develop concrete recommendations for strategic innovation capacity management as well as organizational alignment and resulting strategic configurations (Remaud and Couderc, 2006, Tidd, 2001).

This study delivers some empirical data for the discussion on the impact of company size on innovation, with the interviewed small entrepreneurs stating high to very high innovation intensity. Indeed, entrepreneurs are self-reliant in managerial decisions and miss counterbalances that larger organizations possess because of different persons and roles in all stages of innovation management. Therefore, the observed units show a broader scope of innovation and an intensive innovation portfolio. As Glynn (1996) describes, the interaction of individual and organizational intelligence plays an important role in innovation management and might be missing in small enterprises.

The interviews failed to provide evidence for prioritization or specific innovation clusters. Our expectation based on the RDT, that differentiation is a result of concentration on specific assets, and therefore results in different and accentuated innovation portfolios, could not be fulfilled. Although the wineries show high activity levels on innovation, no strategically induced innovation clusters were apparent. Missing support to that expectation might be rooted in the rather limited sample and our explorative approach, but in the course of the interviews we gained the impression, that the respondents intended to score high on a lot of activities and want to state innovation intensity and a rich innovation portfolio per se. There seems to be an anxiety on the part of the entrepreneurs to miss out on opportunities. In a context of small business, with resource restriction based on size, managerial, and financial capacity (Deimel, 2008), this might result in a lack of efficiency, efficacy, and orientation. For SME that want to focus and to strategically manage innovation, a capacity perspective on innovation could be helpful. There is a need to better understand initiation and diffusion of change and innovation, also in the light of networking and considering phases of more or less activity (Baskerville and Myers, 2009, Abrahamson and Rosenkopf, 1997, Abrahamson, 2000). Indeed, further research on innovation focus and intensity, strategic positioning, and managerial planning would be valuable to overcome normative or fad advices. (Gibb and Scott, 1985, Deimel, 2008) Our observations nourish the so called “bias of proinnovation” as stated in the literature, the rather unquestioned positive view of

Table A1

Categories for interviews on innovation and change (questionnaire basis)
Investment and financing

Investment and financing

New buildings/facilities
Innovative machinery
Creative capital structure
New investors

Product and services

New varieties
Change and adaptation in products
New creative wine products
Product design changes
Price changes
Price structure changes
New services
New offerings (tourism/event)

Process and human resources

Upstream process (vineyard)
Wine design process
Admin processes
New sourcing
New information technology
New controlling
Changes in HR
Optimizing of value chain

Marketing and sales

Change of strategic positioning
New cooperations and alliances
New client target groups
Additional regional markets
New sales channels
Changes in promotion
New internet presence
New media (Facebook, Twitter, Blogs, Community, etc.)

innovation activities ignoring possible stretch or managerial challenges of such behavior (Abrahamson, 1991). Based on the empirical interviews we further raise the concern that managerial capacity limitations might be neglected or perhaps ignored in the innovation approaches. Further research could assess possible capacity limitations as well as any bandwaggoning phenomena of innovation in the wine industry (Abrahamson, 1996, Abrahamson, 2000, David and Strang, 2006). Given the understanding that innovation should serve the strategic positioning and foster differentiation as well as efficacy, players in the wine industry might be well advised to approach their innovation activities and portfolio strategically.

Appendix

Table A1

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