

## VTdentalab

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**Abstract:** In today's world, competition between businesses is not only big and demanding, but also challenging. Continuous advances in many industries affect the corporate environment and strategies of a company. These factors affect each size of business in proportionate proportions. This report will focus on a small- local company located in Greece-Athens. The field of the business is dental, an industry that caters to all types of consumers and aims at good hygiene and aesthetics of the mouth, and by extension, the face of human being. The external factors of the country through Porter's analysis and the internal environment through Vrio's analysis and others, have yielded important results for the development of the company during the 30 years it has been in the market.

In this study, it will analyze a small local dental company in Greece-Athens that was started by two good friends and fellow students at university. The company has been in the market for 30 years and an analysis will be made on the strategic decisions they made along with their consequences. The evolution of technology, the challenges, the economic crises of the country and the investment risks they took or not took played a role in the development of their clientele and the partnerships with suppliers both domestically and abroad. It has been proven that through true belief in themselves, authenticity, boldness and the conscious value that knowledge is power, they have been able through a combination of all the above to gain added value in the market with a strong competitive advantage. The company's vision since its inception has been and continues to be innovation in tooth preparation materials and technologies developed so that the result is excellent and authentic. Combined with the value of knowledge and their personality, they have managed to stand out in the market.

Key words: *Competitive advantage, Strategic decisions, Technological evolution, Economic crises, Innovation, Knowledge value.*

JEL: L26, M10, L25, O32.

## 1. Introduction

The company VTdentalab started its operation in 1994 in the area of Ano Glyfada in Attica. The company is a general partnership, as it consists of two natural persons partners named Dimitrios Varvatakos and Nikolaos Tzanidakis. The partners are fully and equally liable for the company's obligations. The both two main persons studied at the Department of Dental Technology of the Technical University of Athens and they both happened to get to know each other before the admission to the university. During their studies they found that they liked the subject of the school and after seeing that they fit together as characters and generally shared the same values and philosophy in terms of their development, they decided to set themselves the goal of establishing their own company. Graduating from the school, they first worked in other companies, gaining experience and two years later they established their own business. Of course, there were several difficulties at the beginning, mainly due to but with mutual understanding and mutual help they managed to overcome it. At they realized quite early and specifically from 2008 that digital technology would have a significant impact on the nature of our profession, essentially changing the existing techniques (Tzanidakis & Varvatakos, 2022).

The year 2009 marked the company's entry into the digital sector. The evolution of technology and applications brought a completely different perspective to the operation of the laboratory. In this year, the systematic study on the adaptation of digital machines for the imprinting of teeth began.

Another important year was in 2015, as the managers, through their contacts, received an offer for cooperation abroad. A partner dentist went abroad and the cooperation with him continued. Added Mr. Varvatakos: "As we had developed it here with Greek dentists, we applied it with dentists abroad." (Tzanidakis & Varvatakos, 2022). They used it immediately because they felt they could fully meet the high demands as they had the necessary knowledge, expertise, capital and digital equipment. On this point Mr. Tzanidakis stressed: "We were able to cope and we saw that the same production product would offer us a higher profit." (Tzanidakis & Varvatakos, 2022)

In 2022-2023 they are in a state of bloom. They have taken on a lot of work but there is a phenomenon of rejecting incoming new work. This is because they cannot cope due to workload and lack of organization and planning. The results of the current situation create a pressurized and stressful working environment and the rejection of several new tasks results in a reduction in profit.

From the beginning of the business their main mission is to have a satisfactory customer base in which they can manage their workload and make the best possible result in terms of minimizing the delivery time. With good planning and time management they want to reach the highest level of quality in relation to the time required. (Tzanidakis & Varvatakos, 2022) Because every patient and oral case is different and distinctive, very individualized work is required. The above goals/objectives have not been met to the extent they want but they are at a very good level of work delivery with good value for money and delivery time.

## 2. Literature review

It is a fact that in recent years there has been a strong movement towards integration of intraoral scanners in dental practices. The company Milling machine\*, as a pioneer in development of intraoral scanners, as it was the first company to create the early intraoral scanner in 1985, inspired VTdentalab to invest in this technology and to integrate it into the company.

\*Pseudonym of the partner company because of the protection of rights in VT dentalab's partnerships

This resulted in a change in the production process and raw materials, as new materials were used (zirconium) and the production method from traditional casting (metal base) to the CAD CAM process, (Computer-Aided Design/ Computer-Aided Manufacturing). After 2009 they made business trips to international exhibitions of dental products in order to do market research and attend seminars for the acquisition of expertise.

CAD/CAM technology was first introduced in 1985 and has been an innovation in the field of dental technology. The name is an acronym from Computer- Aided Design / Computer- Aided Manufacturing, meaning computer aided design and production of the product. (Alexiou, 2015-2016) This technique is used to optimize the design, impression analysis and excellent manufacturing of the final product. This technique is used to manufacture facets, bridges, crowns, inserts etc. from zirconia wafer.

The CAD CAM system consists of:

- the digital scanning (scanning) stage for data collection Clarifying Mr. Varvatakos said: "It can be done either in the laboratory with a scanning machine or by the dentist with an intraoral scanner." (Tzanidakis & Varvatakos, 2022)

- The CAD stage for planning the restoration and

- the CAM stage for cutting and producing the final product.

After 2009 they made business trips to international exhibitions of dental and dental products in order to do market research and attend seminars for the acquisition of expertise.

Through these trips they met and worked with Milling Machine\* who offered them the following deal.

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By purchasing a cutting machine at a better price, they became a Pilot Lab of Dentsply in Greece. This means that those other Greek dental technicians who were buying the corresponding machine, contact the company (VT dentalab) and they offer them the necessary training (consulting).

The revenue from the work that went to dentists abroad was higher than that of domestic dentists. This is because the standard of living in each country is different, so the profit was correspondingly higher as the cost of production remains the same, but the price of the final product is more expensive.

One of the main advantages of digital imaging is the direct and immediate access to the improved communication between dentist and laboratory when taking a digital impression. The

dentist can check the quality of the impression, the recording of the impression, the quality of the impression and the occlusion and at the same time the control can be done by us. Any, if any, defects can be corrected on the spot, without wasting any time.

### 3. Research methodology

A PESTLE analysis studies the key external factors (Political, Economic, Sociological, Technological, Legal and Environmental) that influence each organization. It can be used in a range of different scenarios, and can guide people professionals and senior managers in strategic decision making.

#### Political-Legal Factors

Although the political situation of a country directly affects the business sector, companies such as VTdentalab are not so much a concern in the political arena. However, like all professionals, they are bound by a code of conduct, operate with respect for their partners and customers as well as the environment and in accordance with the legal framework that has been established.

Some of the laws concerning the dental technician profession are:

LAW 1666/1986, Government Gazette 200/A/15-12-1986 THE PRESIDENT OF THE HELLENIC REPUBLIC We issue the following law passed by Parliament:

#### Article 1 Exercise of the profession of dental technician

1. The profession of dental technician shall be exercised after obtaining a license from the Minister of Health, Welfare and Social Insurance.

2. A license to practice the profession of dental technician is granted to Greeks or to expatriates of foreign countries settled in Greece who speak and write the Greek language, provided that they have either a degree of a Technological Educational Institution (T.E.I. ) or an equivalent degree from a school in Greece or abroad, specializing as a dental technician, (b) either a technical vocational high school diploma or an equivalent degree from a school in Greece or abroad, specializing as a dental technician. (Nomothesia, 2023)

### 4. Results and discussions

#### Economic Factors

Throughout the economic fluctuations in Greece, VT dentalab do not seem to have been negatively affected during the recession and crisis periods that affected Greek businesses. According to Mr. Tzanidakis, the coronavirus pandemic has favored their business. People during these periods went in the process of spending money on cosmetic purposes both at home and abroad (Belgium, Switzerland) from which their partners sent them extra business. Furthermore, the phenomenon of structural unemployment prevailing in this business sector also played an important role in the growth of the company's business. In particular, they had a large workload, but were short of employees, i.e., despite the fact that there is an increased demand, the staff with the necessary training and expertise for the profession of dental technician are few, so that they often fail to perform such a large volume of work (Eurostat, 2020).

### **Sociological Factors**

The mentality of Greek people as well as the latest fashion trends regarding “smiles” and the aesthetics of teeth, e.g., porcelain veneers, contribute to the success of this profession. For many people, their physical appearance and in particular their faces and smiles have a direct impact on their career. Especially in professions such as modeling, journalism, but now also youtuber is imperative since most of their work is done in front of cameras. It is also important to mention that in Greece the lack of prevention, information and awareness since childhood about proper dental hygiene and the necessity of regular cleanings has led to the premature decay of teeth, resulting in an increase in the number of cases. In addition, due to social media alongside beauty standards that implicitly impose a standardized flawless image, more and more young people are becoming insecure about their smile and thus resorting to solutions such as veneers.

### **Technological Factors**

The use of equipment brought about by technology such as computers and more specifically the CAD/CAM process greatly facilitated the profession as all processes were now easier, faster and more accurate. In the following years, however, the use of 3d dental printers is coming slowly but intensively. Along with the use of AI can completely change the form of the profession let alone make it disappear. (Alexiou, 2015-2016)

Porter’s five forces analysis is a strategic instrument that we use to evaluate the competitive position of an industry and the attractiveness of an option of entering or staying within the industry. Undefined as:

#### **Threat of New Entry**

Although there are several dental laboratories in our country, the creation of new laboratories is considered difficult. The amount of capital required is quite high for the facility and the expensive equipment needed. Combined with the above, the differentiation of some dental laboratories from others due to the acquisition of more technologically advanced equipment facilitates the selection decision on the part of the companies supplying the materials. There is a relationship of trust between suppliers and businessmen and, as Mr. Tzanidakis pointed out, the reputation that the dental technician has due to brand name, experience or consistency in payments plays a very important role. Based on the above, suppliers choose the customers they know and work with and not those who first enter the industry. (Tzanidakis & Varvatakos, 2022). In addition, there is a significant shortage of assistants and professionals in the sector, which is largely due to the lack of proper presentation of the profession to high school children through vocational guidance.

#### **Bargaining Supplier Power**

In this business sector, the number of companies supplying dental materials is quite large and they all know each other. The degree of product differentiation does not affect VT dentalab so much as the individual case is important so that the best material can be selected according to the situation. In such a case even though they have an agreement in place with one company for a

particular material they can enter into a new agreement in parallel with another company if that company does not have a material required for a patient, even if they have to confront the suppliers. (Kalaitzidou, 2012-2013). Despite this, they can work together again. In the future, the suppliers can go through the process of vertical integration forward, i.e. in addition to the part of the dental materials they produce and distribute, they can also produce sockets, dentures, etc., thus becoming competitors of the dental laboratories and further increasing their bargaining power.

#### Bargaining Buyer Power

In this profession, whether we refer to the direct buyers who are the dentists or the indirect buyers who are the patients, it is a fact that they have a special negotiating power as prices are not standard based on the materials and the case. There is a constant pressure for a better price and even though the products supplied by dentists are usually in the dimensions and measures that the dentist himself is asking for to increase his profit he presses for a friendly price. (Tzanidakis & Varvatakos, 2022). In addition, direct buyers are particularly price sensitive which means that when they use the product and process and place it on the patient, they have a large profit margin over and above the profit they gain through lobbying dental technicians. In addition, dentists can themselves produce dental materials (vertical forward integration) so they often have no need for dental technicians. Of course, it is important to mention that because most dental materials cannot be obtained from another dental technician, their bargaining power may be reduced.

#### Threat of Substitution

In terms of substitutes beyond a cheaper solution to the material there is nothing that can replace dental technicians at present. However, in the future it is thought that much of the profession will depend on artificial intelligence. More specifically, there will be software that, with the right algorithms, will be able to suggest the best solution based on the patient's problem and suggest what the result will look like after application in the patient's mouth and produce the product directly and accurately. As Mr. Tzanidakis told us, this particular job tends to be modified and the teeth are homogenized. In addition, through digitalization, doctors will be able to detect caries, periodontitis and other tooth diseases in X-rays by studying the human neural networks. The evolution of technology will also help in the evolution of toothbrushes into smart ones that will let you know if you are brushing your teeth properly and the flourishing of regenerative dentistry whereby teeth will be able to heal themselves with proper fillings (Alexiou, 2015-2016). All of this will go a long way in preventing and quickly and perhaps painlessly treating teeth. This will mean that a large proportion of people will turn to this area, resulting in a blow to the dental industry and a rapid increase in competition. However, all of this will be accompanied by quite high costs that may not be able to be met.

#### Rivalry among existing Competitors

When the growth rate of the market is high and more specifically when there is an increased demand for materials from dentists, Mr. Tzanidakis informed us that it is very likely that they will give some work to a competitor due to the already high workload. This means that in such periods it is very likely that competitors are also "allies" and companies such as VT dentalab do not need additional buyers as they are already thriving. (Tzanidakis & Varvatakos, 2022) However, he stressed that, although this is sometimes the case, competition between firms remains high.



This, confirmed by the lack of differentiation in the products (with exceptions) offered by dental practices. In such businesses there are high barriers to exit. The cost of investing in another sector is high and, of course, the difficulty of transferring technological equipment and machinery. Therefore, many businesses remain in the industry until they go bankrupt, continuing to operate and occupying even a small share of the competition.

Internal environment analysis reveals the strengths and weaknesses of a company or organization; thus, it gives the management essential information for decision-making as well as for strategy development.

In this profession, the division of labor is necessary because it is both personalized and specialized. Nevertheless, the craftsman has all the technical knowledge to respond to all the work that will arise and this is important because he can help at any time in whatever work is required that may not be of his own department but of the one that is needed.

Currently the company's workforce consists of three (3) assistants and two (2) people for the distribution of work to the associate dentists in addition to the founders. A total of seven (7) people are employed within the laboratory. (Tzanidakis & Varvatakos, 2022)

The smooth cooperation of the employees of the laboratory is essential for its proper functioning, as one stage of production is directly linked to the others. This is practically proven by the long-term operation of the company until today with the will, loyalty, high level of knowledge with continuous training and knowledge of the subject.

The structure of the workshop consists of four departments.

- Department of mound making
- Department of fixed prosthetics (sockets and bridges)
- Department of mobile prosthetics (dentures)

and from 2009 onwards, the following section was added

- Digital system department (CAD CAM)

At the end is the distribution department that sends the work to the dental office.

In 30 years of presence in the market, the company has exploited and developed tangible and intangible resources that have led the company to have a strong professional standing. (Alexiou, 2015-2016)

The main material resources of the company are the machinery, which is state-of-the-art and we can add the company's own activity space that ensures zero operating costs (rent).

The intangible resources consist of the continuous training and unbreakable knowledge acquired over the years. Thus, they have strong experience and can offer an excellent and quality product. In this way they have built through word of mouth a remarkable name in the market, increasing the company's profits while increasing their clientele. In addition to a good reputation among customers, they developed a credible position among their suppliers as their payments are prompt. Suppliers recognize that the company is consistent in its commitments and have built such a strong relationship of trust that they send new products to them to test them and evaluate them accordingly if they need improvement, or are satisfactory in processing. Thus, the laboratory also functions as a research department but has the advantage of first contact and knowledge of new products.

In conclusion, the resources of this company contributed significantly to its value to customers and suppliers. A strong two-way relationship has been established.

Having for customers dentists, who in their own words have for customers a target group that concerns people aged 20 to 100, men, women. Some recent requirements for collaboration with dentist are having the necessary equipment that has digital dental imprinting. Today it cooperates with thirty (30) dentists based in Greece, of which 63% are located in Attica (Glyfada, Athens center, Piraeus, Nea Smyrni, Kifissia) and 23% are located in the rest of Greece (Thessaloniki, Veroia, Kalymnos). Also included are four (4) partners abroad who constitute 14% of the clientele, of which three are in Switzerland and one in Belgium.

The company has overcome many invitations and has managed to gain a satisfactory market share from customers and suppliers during its time in the market. It is noteworthy to mention the first investment they made in the digital part because it has played a significant role in their development both in the production process and in the brand name they have acquired. Through quality, fast and authentic work with innovative materials WoM (word of mouth) was the way they became known in the business.

Participation in seminars, either as a speaker or as a listener and the exchange of views and knowledge is invaluable, since the "information" can come from anywhere, as long as it is of course willing and open to receive it. It concludes that it is one of the main reasons why contributes to the development of the company, not only in dentistry, but as people in general.

Digital technology and more generally the evolution of techniques and materials has improved the working conditions compared to earlier years. The digitization of the industry includes: delivery and automation technologies, e-commerce platforms, customer tracking systems, and production process monitoring systems. As organizations face various challenges in motivating their workforce, the shift toward non-financial motivational strategies is gaining increasing attention (Matei & Veith, 2023). Many stages of the work have been simplified or become more controlled. Also, with the use of the internet there is quick and immediate access to information, learning (through webinars, or web links and training videos). Furthermore, social and economic development has been influenced by many changes, particularly due to investments (Voica, et al., 2021). The truth is that all this improvement in manufacturing conditions and times in some work has also led to reverse pressure on the delivery time of the work. Indeed, in some cases there has been a significant improvement in construction time and this is to the benefit all (dental technician - dentist - patient), but it should not be a panacea and be taken for granted in all cases. It should not be forgotten that elsewhere more, elsewhere less, the participation of the classical technique of each dental technician is necessary, which requires a considerable amount of time to deliver a proper work.

In discussion there should be no opposition between proportional and digital technology (Alexiou, 2015-2016). Digital technology comes as a continuation of analogue technology to offer greater ease and more controlled handling of the various techniques, but also based on knowledge that must be available from analogue technology. In addition, digital technology shows the possibility of using new materials which are more aesthetic and biocompatible and improve the quality of the work it produces. does the company believe that the goal should be, where the



two techniques can be combined, taking advantage of the advantages offered by each mixture. Digitalization is, in fact, an integral part of all our lives, bringing both advantages and disadvantages (Veith, et al., 2021).

## 5. Conclusions

In general, throughout the period they have been on the market they have made good strategies choices. When it first introduced digitalization in the dentistry sector, they were the first in Greece to implement it and this gave them a competitive advantage. However, there are some suggestions that can be made to the business to continue to improve their upward path.

In this industry you can stand out in the market if you keep improving your knowledge and the new technology that is being developed. Investing in the ongoing education and training for your employees is essential in order to keep them well-informed about recent developments and methodologies in dental technology in combination with patient service soft skills, which include, but not limited to, communication and service. It is good to emphasize that it will be very beneficial for the company to be up to date with the new features, but it must be passed on correctly and ethically to the employees as well. This develops the quality of your services, and also, you can prove your dedication to perfection.

Another important part that the company tries hard to maintain is the personalized communication with the dentist and the patient throughout the duration of the dental restoration. Customer Relationship Management (CRM) systems should improve to be used to administer customer relationship, lead tracking, and personalized client interactions. This feature ensures that your channel is always active and you can follow-up with clients even after the event.

Another possibility for improvement is optimization of workflow processes with the view to removing any inefficiencies and reducing the number of bottlenecks. By introducing standard procedures, defining clear guidelines, and utilizing technological tools like practice management software to automate processes, procedures will become more efficient.

One last improvement that can be made for better management in the company is to improve the inventory management systems to decrease the waste, cost savings, and quicker delivery of materials and supplies on time. Utilize inventory tracking systems with the reorder points established to keep the required stock. A more specific improvement they can make is electrification through solar panels for less cost. The machines run 24 hours a day so the electricity consumption is high. Greece has the sun all year round therefore the use of sunlight to reduce the cost of electricity can benefit from the use of solar panels.

Digital technology offers many opportunities that should be exploited by the companies. It is a fact that intraoral scanners will be an essential part of the equipment of a and perhaps quite directly, so technical companies, like VTdentalab will need to be prepared to be able to to be able to handle this new reality and the conditions that are created.

In conclusion, it should not demonize digital technology, but instead integrate it into our everyday working life, making the most of the benefits it offers in combination with the knowledge and techniques of analogue technology and thus be prepared the new reality that has been created in the field of dental technology field.

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