# EDULEARN21

## 13TH INTERNATIONAL CONFERENCE ON EDUCATION AND NEW LEARNING TECHNOLOGIES

# CONFERENCE PROCEEDINGS

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# "DIVINO" CONCEPT: A PASSIONATE WINE EXPERIENCE THROUGH AN INNOVATIVE, INTERACTIVE REFRIGERATOR

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## Abstract

Over the centuries, wine has always enticed consumers, researchers, and connoisseurs alike. Ever since its origin, wine has become a symbol of human socialization, cultural heritage, and of man's connection with nature. Wine's sensorial experience can be best appreciated by learning more about its origin, how it is made and how it is stored. Cellars have been traditional locations for wine storage as they take on the environmental characteristics necessary, including adequately low temperatures and sustained humidity levels, to contribute to the proper maturity of wine before it is consumed. However, not all locations are suitable for wine storage and, therefore, the need to create storage methods which replicate this environment, even if artificially, cannot be underestimated, particularly when wine is on display and for sale at retail.

Today, consumers' interest in learning about enology is growing. The importance of wine in a healthy diet and how it should be stored will be of fundamental importance in expanding the appreciation of wine worldwide. Thanks to the increased appreciation of enology and the wine industry, there has been a noticeable expansion in the sale of wine particularly at retail. In today's fast-paced world, however, potential consumers who may want to learn about wine before purchase may not always have the time to deepen their knowledge of the subject. They require immediate, state-of-the-art, innovative solutions to help them decide which wine to buy at retail with informative detail about each bottle of wine on sale.

As a result, an innovative "wine" project concept has been developed by the Design School of the Polytechnic Institute of Milano (Italy) with the participation of a leading Italian manufacturer of plug-in commercial refrigerators, IARP: a solution targeted to all types of consumers, regardless of their knowledge of the wine industry. The solution is designed not only to respond to the wine storage needs of the retailer at the point of sale but also to the needs of the retail customer for greater information about wines, their origin, location, and their particular characteristics. DIVINO affords consumers and end-users a much more interactive role in the purchasing process, as they are readily informed through the use of an interactive touch screen which is implemented within the wine cabinet itself. Consumers are guided as to the salient eno-gastronomical characteristics of each wine in the cooler, allowing for a more informative and emotional customer purchasing experience.

Besides serving as a virtual sommelier at the point of sale, the DIVINO solution offers three distinguishing features. First, it is a refrigerator cabinet with three different temperature storage cycles according to wine (red, white, sparkling). Secondly, when searching for wine according to specific criteria, such as food and wine pairings, a luminous visual response appears underneath the exact location of where the wine is displayed. At the same time, an audio-visual description of the selected wine is available from the main screen if requested. Consequentially, its third distinguishing feature is its ability to serve as an instrument for data collection. This can be beneficial not just for supplier companies, including wine producers, refrigerator suppliers, and retailers, but also for the retail customer, who can benefit from learning more about the wine industry through an interactive touch screen.

Keywords: grocerant, IoT, Winelover, personal sommelier, emotional connection.

## 1 IARP MARKET PENETRATION STRATEGY AND COUNTERBRIEF

The project described below is based on a careful analysis of IARP (Industria apparecchi refrigeranti professionali), an Italian leader in the plug-in type commercial refrigerators for the retail sales channel and now part of the EPTA multinational conglomerate, through its product portfolio, its reference markets and its direct and indirect competitors. The resulting data led to the development of a market penetration strategy, which took into consideration some of the strengths and weaknesses of the company. For example, with regard to the services offered, the company does not adequately exploit the data collected directly by the end user, concentrating and exploiting only the data acquired by retailers. On the other hand, with regard to territorial expansion, IARP is well positioned both in markets thanks to its company

acquisitions, and in unsaturated but promising markets. However, among the products present in its catalogue, those based almost entirely on a digitalized framework are scarce in number, even though they represent higher growth levels compared to overall sales volumes. In light of this, a design team produced a counter-brief, which suggested placing greater importance on the role of the final customer, supporting a transition from a B2B logic to a B2B2C logic, thus leading to the acquisition of the resulting end customer data. Finally, the counter-brief suggested placing greater emphasis on improving social media communication in the marketing process due to its extensive use and as a factor of fundamental importance regarding design strategy.

As a result of what was suggested in the counter-brief, the team conducted a research brief on market trends which led to the creation of six cornerstones of interest, defined as follows: adaptability to the customer, the relationship with the territory, environmental sustainability, digitalization, end-user involvement and personal care. Each member of the counter-brief team set out to develop the project individually, outlining the micro-scenarios, which would take into account any or all of the aforementioned cornerstones. There were 3 cornerstones of the micro-scenario assigned to be further examined as a means to create the single concept: the first concerned digitalization and, in particular, innovative technologies like virtual reality and augmented reality. This is because the commercial refrigeration market is highly reliant on the interaction between retailer/supplier and the final customer. The second was the involvement of the end user, also linked to the general strategy of the counter-brief that consisted in focusing more on the needs of the end customer rather than on the retailer – which was suggested as a win-win situation in which the supplier, the retailer and the end user all benefit. Finally, the third concerned the issue of the overall well-being of the end consumer, which is, also due to the situation generated by the Covid-19 pandemic, an increasing trend in the food sector linked to a greater desire to feel good and create greater awareness of what is considered healthy to eat.

## 2 A DIGITAL B2B SOLUTION FOR THE WINE INDUSTRY

The research set the following objective: to contribute to increasing the emotional connection that customers have with food, for example, through the technique of storytelling of a certain product. Based on this objective, a select group of products was determined most suitable for this purpose, of which wine was one of the most important. According to preliminary research, it was determined that wine has become an excellent example of how a food product can emotionally involve the final consumer's interest, even involving the user through augmented reality technologies to make labels appear "alive", when accessed on the smartphone app. This is the case, for example, with the software app developer, "19Crimes" (www.19crimes.com). Another example is the increasingly growing phenomenon of the creation of apps that act as a "personal sommelier", providing the end user with real-time, useful information on a particular wine, thanks to a scanning mechanism of the label or by typing its name of the wine directly on the app. Examples for the global market include Tannico (www.tannico.it), and Vivino (www.vivino.com). In addition to these innovative digital technologies, digital totems with scan codes are emerging more and more in supermarkets as well as in grocerants to give the retail customer more information and a wider choice when selecting wine.

Based on the research done, a design project for the following solution was proposed: a refrigerated wine cabinet or wine cooler with an incorporated digital display to attract the consumer's attention by recommending and providing more information on the wines available on sale and finally helping him choose the product best corresponding to his needs through IoT technology functions. The moment in which the retail customer needs to select which wine to buy was the moment focused on most during the redesign process of the wine cooler. The process of recommendation makes the wine a customized product with respect to tastes or needs of the end- consumer and thus makes it even more appreciated.

From a historical point of view, wine products have been sold according to various tastes and customs dictated by the consumer. During the decade of the 1960s, wine products were part of the "Made of" culture, which made explicit reference to what you were drinking, such as the grape variety contained in the bottle. The next fashion statement was during the decade of the 1980's, when the "Made in" culture attributed importance to the territory and, thus, of the wine's origin (mainly from France or Italy), followed by the "Made by" culture of the 1990s, when it was important to indicate who was behind the product, i.e. the brand. Today, we have acknowledged the "Made by for me" culture, where product customization is a reflection of consumer needs.

The use of digitalization as a marketing strategy in the wine industry is actually quite recent; historically, the wine industry has been rather conservative and has relegated marketing communication to true or presumed connoisseurs according to nostalgic criteria. However, this does not mean that by using

digitalization as a marketing strategy its communication would be less persuasive in the wine industry. According to research conducted by the Neuromarketing Research Center in IULM, the University Institute of Modern Languages located in Milan, a personal sommelier service offered in the Esselunga online shopping App was analyzed with regards to consumer spending habits. It was determined that most of the consumers who had used this service declared they preferred to buy recommended wines more than those that were not recommended. Specific neuromarketing tools were applied in the creation of the App such as brain EEG analysis that measures emotional criteria linked to the salivary glands. The target consumer referred to in the research is one who likes to drink wine, is curious to try new types of wines and is willing, at the same time, to invest more money for quality, despite not having great knowledge of the industry. This target group of consumers would be at the heart of a successful marketing strategy based on how best to direct consumers in the wine selection process at retail.

## 3 UNITED STATES: THE TARGET MARKET AND IMPULSE PURCHASES

Given the characteristics of the target audience, the research focused on the United States wine market, the second largest importer of Italian wines in value. According to statistics, American men and women over 35 consume wine in equal measure and are willing to spend a little more for even higher wine quality. Italian red wine is the most purchased in the US, while sparkling wine sales from Italy are also increasing. In addition, it should be noted that there have been substantial increases in the interest of American millennials in purchasing wine, particularly with regards to women, thus offering the wine industry the opportunity to engage in marketing activity more geared towards digitalization and innovation. The grocerant is probably the most conducive retail channel to embark on this new strategy. It is a new restaurant model that works very well in the United States as it reconciles the propensity of Americans when shopping towards budgeting their time efficiently with an increased awareness of health and dietary concerns. Grocerants are becoming a trend as a new retail channel especially for millennials as it allows them to save time while shopping without giving up a healthy lifestyle.

In order to facilitate consumer impulse purchases by means of the wine cabinet or cooler, an interactive screen was used on the cabinet to attract and emotionally involve the consumer by graphically depicting the locations of where the wines come from, the faces of people involved in the wine production process, and accompanying text. The creation of this emotional bond involves the user so that he is more aware of what he is going to buy. According to the psychologist D.P. Goleman and his book on emotional intelligence, the role of emotions is crucial in decision-making processes, and for those involved in wine marketing there is a greater need to use adequate emotional levers. The user's emotional intelligence allows him to grasp the value of decision-making process and interpretative guidance of emotions. It is therefore important to study the mind of the consumer but equally important to study and focus on his emotions, as this will increase the probability of an impulse purchase. Consumers in recent years, and especially during and beyond the Covid-19 pandemic crisis, are becoming increasingly more and more attentive to the choice of food products and want to know who is behind these products and how they work. Consumer's greater interest in which food products are purchased is demonstrated by the fact that today there exist more and more so-called natural wine shops, which sell wines produced by small wineries that work according to the principles of zero emissions, organic farming and respect of nature overall.

## 4 TECHNICAL CHARACTERISTICS

The aforementioned analysis and subsequent research of the US market led to the conception of a wine cooler/cabinet powered by digital display named DIVINO. The DIVINO wine cabinet is composed of a refrigerated base and a column where the display is located. The IOT interaction consists of the connection between the embedded display system, such as raspberry, and the refrigeration base, which has various LEDs under each bottle of wine displayed. The cabinet is controlled by an electronic platform, like arduino, allowing for interactivity, thanks to its wireless capabilities, which communicate between the display commands and the LEDs. When searching for wine according to specific criteria, a luminous visual response appears on the screen display with the exact location of the wine found. The selection criteria of the wine on the display are determined based on three criteria. The first is associated with food and wine parings: when selecting a specific dish from the database, the most suitable wines to drink appear with the type of food selected. The second criterion is special events, including gift giving during specific celebrations and occasions, while the third criterion is the selection of the wines that have already been sold the most for that cooler according to temporal criteria (last week, last month, last year). For each criteria, the chosen wine is displayed with its description. Since sound also plays an

important role in the world of consumption and nutrition, the final screen display with the selected wine is also programmed to include a function allowing the potential customer to turn on the audio and listen to the description of the wine. Overall, the audio-visual display acquires important data to understand purchasing trends of each consumer, particularly with regards to seasonal purchases and specific events (ceremonies, parties, holidays), allowing the retailer to be better able to organize which wines will be displayed as a means to maximize wine sales.

The morphological process implemented to reach the final form of the cabinet was as follows: the classic vertical-standing cooler was adopted and subsequently subdivided into separate parts to obtain different internal temperatures suitable for the various types of wines on display. Therefore, the classic vertical standing cooler was divided into three cells, all three functioning with a single motor and fan coil, allows for greater environmental sustainability and less energy waste. In this way, three separate spaces for the various wines were obtained, taking into account that red wines would need a temperature of about 18° centigrade, white wines around 12° and sparkling wines around 7°.

According to studies with neurosciences techniques and eye tracking, recognition activities of a shelf and the choice of wine take place in extremely rapid phases: there is a first phase of initial approach to the shelf or cabinet which involves a time span of about 2-6 seconds, followed by a second phase of understanding the logic of the shelf or cabinet which can last from about 1-3 seconds. This is a particularly delicate phase as it can influence the consumer's choice in a preponderant way. If the logic of subdivision of the shelf or chiller is not easily understood, the risk of purchase abandonment is high. In the case of DIVINO, this is why the visual division of the different wines in different display areas clearly helps every type of consumer, regardless of whether or not they deem themselves "experts", to immediately understand the logic behind the distribution of the bottles. With regards to their display, maximum focus was put on the visibility of the labels of the various wines, as these are also decisive in the choice of the consumer. According to a recent study conducted by Ipsos, over 40% of consumer goods purchases are made at the point of sale, while almost 20% of purchases are for products that had already been planned to buy. This poses the question of the visibility of the bottle which depends on its position on a shelf but also on its own packaging. Consequently, the bottles were displayed for maximum visibility in two different ways: by making the walls of the coolers positioned laterally with a transparent roofing, while adding a sliding bottle rack to allow bottles to be displayed at 90° and 45° angles. The bottles in the lower rack could be positioned at 45 degrees and be more visible, or placed vertically in the upper compartments, increasing visibility even more. The rack is completely removable should the retailer require maximum capacity of bottles in the cooler.

## 5 METHODOLOGY

The initial stage of product development involved group analysis to research empirical and non-empirical data, while the second stage was dedicated to personal research and product design. The methodology that led to design stage of DIVINO was initially empirical, starting from the observation of personal experiences related to the wine selection process and wine culture habits identified around the world. Subsequently a theoretical research brief was conducted which was more focused on the marketing stage of this type of product through the information of the sites that deal with enology on the web and in the bibliography cited.

In the first stage, each member of the team group had access to the MIRO software, an interactive digital platform which allows for the enactment of specific micro and macro scenarios to better understand the scope of the research and the environment in which potential solutions would be placed. Each of the members in this stage could add or delete specific requirements interactively. It was particularly effective as a research tool given that the work was primarily conducted remotely as a result of the COVID-19 pandemic. Another important software platform used in the first stage of research was related to trends forecasting, called Nextatlas, which proved quite useful when conducting market analysis to understand potential scenarios for the trends.

This intense cooperation between the Design School of the Politecnico and IARP contributed to the creation of the initial first phase governed by research groups to further enhance the efficacy of refrigerated display of wine at retail. Regular fortnightly meetings held by representatives of the two groups paved the way to a further understanding of the potential of the industry solution, both from an engineering and marketing standpoint. IARP's years of experience in developing commercial refrigeration solutions proved to be of enormous importance in the second project development stage of the project, guaranteeing the solution's viability. Moreover, the company's exposure in a wide range of retail outlets around the world has been pivotal in contributing to the success of the solution in terms

of location and positioning within the store. Grocerants and the HORECA Industry were included in the IARP brief as the main retail outlets to benefit from the presence of the solution. Moreover, the brief suggested the adoption of a strategy including solutions that would be conceived in an international context and, in this regard, the DIVINO solution would be most effective when positioned in grocerants in the United States.

Other important actors contributing to the success of the product's development during the second stage were the software application companies involved in the digitalization of wine include the aforementioned Tannico, Vivino, Combivino, Vinhood and others that drive the consumer in the choice of a wine giving him information about the history of the producing company and the organoleptic characteristics of the product. Tannico was selected as a partner with IARP to create the DIVINO refrigerator solution whereby Tannico supplied a database with the inclusion of data related to a multitude of different types of wine, including origin, type of wine, its association with different types of food and more. A digital display was implemented within the refrigerator and therefore was best suited to communicate the data directly to the end-user during the selection of the wine. It was demonstrated how a win-win relationship could be developed between Tannico and IARP. IARP would benefit from Tannico's digital solution which would allow for the most immediate, convenient and economical solution vis-à-vis its direct communication with the end user in a unique tailor made database. At the same time, Tannico could benefit IARP's partnership by being given the opportunity to have its name printed on the refrigerators provided by IARP as part of the DIVINO solution and, therefore, improving its market exposure. Overall, the contribution of these companies provided a greater awareness of the potential reach of the solution in terms of numbers and types of wines available on the market, and how the companies can fundamentally instruct end-users on how to select wine according to a multitude of criteria.

## 6 RESULTS AND DISCUSSION

DIVINO represents a scalable, state-of-the-art digital wine cooler which, when offered in the grocerant retail channel, creates new technological ways for retailers to interact with customers during the wine selection process. Retailers can benefit in terms of data acquisition from their customers, so that they have the opportunity to plan and forecast purchasing habits, while end-consumers have the opportunity to gain better knowledge of the wine they are purchasing. The educational potential of the solution is also quite remarkable thanks to the scalability of the database when interacting with potential customers and how it could revolutionize the way in which wine has been previously communicated on the market.

Future prospects for the development of the DIVINO cooler/cabinet solution appear promising. It is fully customizable and can be enhanced with more functionalities, including face recognition technology to allow retailers to get to know consumers personally, learn what their wine tastes are, and compare those choices with others in order to be able to recommend other customers in an even more detailed and customized way. Furthermore, if we want to imagine ourselves in an even more distant future, the personal sommelier appearing through display will be able to humanize himself more and more through recognizable holograms that would talk to the user when he/she approaches the cabinet and make him/her answer questions through the display, advising him/her directly on which wine to choose. With regard to territorial expansion, in the future, DIVINO could also be strategically proposed to China, a market now open to innovative products and growingly receptive to new products like wine. In fact, more and more Chinese people have an interest in a wine for its quality, which they use to drink in social or business occasions. Few in China have an "adequate" enological knowledge such as to be able to judge the quality or taste in an "appropriate" way. For instance, the Chinese traditionally do not consume alcohol at home, but only in bars, restaurants or other retail outlets. These modalities, while in the process of changing in recent years, thanks in particular to greater adaptation of the Western culture especially in the large Chinese cities, remain tied to tradition in much China. Thus, in order to be successful marketed in China, DIVINO should be specifically customized to the specific cultural characteristics of the Chinese market; its potential for market growth is increasing but products need to be adapted according to Chinese habits, contexts, and cultural usages. Using a system that suggests and helps to understand the different types of wines available on the market could be a winning strategy for China. Notwithstanding the population's lack of knowledge regarding wine and wine culture, potential consumers are becoming more and more interested to understand it and spend money on it. All this, however, taking into account the culture, contexts and very different ways of consuming wine in China.

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