Empowering NAU´s product diversification

An analysis about the introduction of a new bottle size of NAU

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Abstract

Thesis Title: Empowering NAU´s product diversification: An analysis about the introduction of a new bottle size of NAU.

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This dissertation aims to understand to what extent the introduction of a smaller bottle´s size of NAU beer, with 33cl of capacity, would influence the final consumers' decision-making process and the decision of being a distribution channel of the product; and its impact on company´s success.

The introduction of a new product´s version is an important innovation tool. It emphasises that in order to get a new product into the market, it may be only necessary to make the essential changes so that consumer´s needs are continuously met. The launch of a smaller bottle´s capacity seems to be able to improve the NAU´s beer position on the Portuguese craft beer market and strengthen the company´s success.

In this case, the introduction of a NAU´s new product size version is used as a strategic measure. In fact, it will promote the product and maximize the creation of brand awareness, which is expected to increase the sales of the original bottle size of NAU.

The interconnection of both NAU´s versions over the time, the willingness to pay curve and the distribution channels choice, were computed for both bottle´s sizes through the online survey results. The main conclusions are complemented by a detailed analysis made by interviews, with the current distribution channels of the brand.

Resumo

Título da tese: Empowering NAU´s product diversification: An analysis about the introduction of a new bottle size of NAU.

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A dissertação que se segue petende perceber de que forma a introdução de uma garrafa de menor tamanho da cerveja NAU, mais especificamente com 33cl de capacidade, poderá influenciar o processo de decisão do consumidor e a decisão de os canais de distribuição distribuirem o produto; e o respectivo impacto no sucesso da empresa.

A introdução de uma nova versão de um produto é um importante instrumento de inovação. De forma a inserir um produto novo no mercado é apenas necessário garantir que as necessidades dos consumidores são continuamente garantidas.O lançamento de uma garrafa de menor capacidade como alternativa à garrafa original, parece ser capaz de beneficiar o posicionamento da cerveja NAU no mercado Português de cerveja artesanal e fortalecer o sucesso da empresa.

A introdução da garrafa de 33cl da cerveja NAU é caracterizada como sendo uma medida estratégica com o objectivo de promover o produto e maximizar o conhecimento da marca; traduzindo-se num possível aumento das vendas da garrafa original.

A interligação entre as vendas de ambas as versões da marca ao longo do tempo, a curva que expressa a procura por ambos os modelos da garrafa da cerveja NAU e a escolha dos canais de distribuição mais indicados para cada versão da garrafa, foram elaborados com base nos resultados de um inquérito online. As principais conclusões foram complementadas com os resultados de entrevistas realizadas junto aos actuais canais de distribuição da marca.

Preface – Acknowledgements

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As a gesture of gratitude and as a way to encourage them to pursue their dreams, I would like to dedicate this dissertation to my sister and brother.

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2. Introduction

NAU beer was created in the beginning of 2015 by a group of entrepreneurial and visionary students of Católica Lisbon School of Business & Economics. NAU´s mission is to be the reference handcrafted beer brand and to be a reliable partner of all the customers' exclusive moments. It is entirely produced through handcraft methods and 100% natural ingredients, which provides it a special and single character. These characteristics distinguish it from other recognized handcraft beer brands produced and consumed in Portugal.

NAU beer presents itself with a dark colour and brown reflexes, as well as, a soft foam, malt and hops aroma. It is characterized by a consistent and strong full bodied aspect which leaves a unique flavour in the mouth. The brand has just one bottle model with a capacity of 75cl, since it proposes itself as a substitute for wine.

NAU is perceived as a high quality product and it is present in multiple distribution channels, although the number and volume of orders are not being as positive as NAU´s founders were expecting.

The aim of this research is to understand to what extent the existence of a new bottle's size of NAU, a smaller one, would influence the final consumers' decision-making process and the decision of being a distribution channel of the product; and consequently its impact on the company profits. It was assumed an optimal capacity equal to 33cl, since it was referred by the company and its distribution channels as the ideal capacity for a smaller bottle of NAU.

The brand started the business investing in four distribution channels, bars, restaurants, gourmet stores and online. In order to manage the product´s positioning, it seems important to analyse all the current distribution channels and which are the most suitable ones.

On the other hand, it is important to study if a real need for the new bottle (33cl) exists in the market and which is its willingness to pay curve. Keep the main characteristics related to the image of the original bottle is critical to ensure the transmission of NAU´s concept.

Considering the previous analysis, it would be predicted the most suitable prices to charge for each bottle´s size, in order to maximize NAU´s profit.

Further, it has to be studied if the company should sell both of the bottle´s formats in the same distribution channels, or if they should make some distinctions.

Finally, it would be interesting to examine what would be the level of product´s cannibalization in short, medium and long term. Intuitively, during the short run the consumers will mainly consume the new bottle, for two reasons: on one hand the consumption of a smaller bottle represents a lower risk in consumer´s mind comparing with the original bottle. On the other hand, the smaller bottle would increase the chance of impulsive purchases. Taking this into account, the original bottle (75cl) would be mainly sold after the brand becomes recognized by consumers.

Aligned with this purpose, this dissertation will focus on answering the following research questions:

1. How is represented the willingness to pay curve for the 33cl bottle of NAU?
2. The optimal choice of the distribution channel would be different between the original (75cl) and new size (33cl) of NAU?
3. Which would be the sales evolution of original and new bottles' size of NAU and their interconnection, during the short, medium and long term?

This dissertation is sectioned into 5 chapters, starting with a brief overview of dissertation´s context and the main objectives. The 2nd chapter will approach the relevant literature review regarding the factor for start-ups and new products´ success, the willingness to pay curve role, the impact of product´s size in marketing communication & impulsive buying behaviour and the product cannibalization during the diversification process. On the 3rd chapter it will be broach the methodology used to collect the necessary data, in order to answer to the research questions. The following chapter will reveal the results of the analysis and its discussion. Finally, the 5th will make a brief overview about what has been discussed and give recommendations for NAU´s founders.

3. Literature Review

3.1. Start-up & New product requirements for success

The likelihood of an organization´s surviving its start-up years is influenced mainly by two factors, environmental resources and competitive conditions at the time of funding, and strategies that an organization uses during its early years to exploit environmental conditions. On average, specialist organizations, the ones with deep knowledge of few areas, are more likely to survive their early years than generalists. However, generalist organizations which have a superficial knowledge of many areas will have a higher likelihood of early survive than specialists when industry sales are increasing. Overall, young firms' chances for survival are improved when industry sales are increasing (Romanelli 1989).

The launch of a new product is always costly and risky and it has a failure rate between 40% and 75% (Stevens & Burley 2004), whereat it requires information-gathering activities which are critical to product success.

Launch timing is also a critical variable (Kahn et al. 2013), since companies that wait too long in product development or testing, allow competitors to launch a similar product first successfully (Griffin 1997). The firm must choose the correct moment to launch the product according to the objectives of top management, distributers and customers (Calantone et al. 2012), what could be surprinsingly complex since the objectives of multiples shareholders may not be coincident. Delays in product launch can create serious problems, such as, poor channel cooperation and coordination, missed market opportunities and lost competitive opportunities (Calantone & Di Benedetto 2012), what inevitably will affect the product success. As a way to improve the new product success rate, some compaines conduct a post-launch review which compares results achieved with targets and hold the project team accountable. This is a standout best practice, since a continuous learning and improvement will benefit the product, however only 22,1% of businesses conduct a solid and formal post-launch review (Cooper et al. 2004).

The strategic and tactic decisions are the two broad categories of launch decisions identified on product launch literature (Benedetto 1999). On one hand, the strategic decisions are concerned with product and market issues, such as, the desired innovation level of the product, type of market where it should be launched, competitive stance and product positioning aspects. On the other hand, tactical decisions involve marketing mix decisions, such as, product and branding, pricing, advertising and distribution. These decisions are

critical for the product´s success and more easily modified in later stages of new product development process, usually influenced by strategic decisions.

3.2. Dichotomous choice contingent valuation Model

Demand and supply curves may be assumed as a demand schedule of the potential buyers and a supply schedule of the potential sellers, which express the amounts these groups are ready to buy and sell at different prices at any given time. Consequently, the market situation would be represented by the point where the curves intersect (Working 1927).

In order to construct a demand curve it would be necessary to plot correspondent prices and quantities and draw a curve which will fit as nearly as possible all the plotted points.

The practice of dichotomous choice contingent valuation model on surveys has increasingly turned to obtaining information about the public´s willingness to pay (WTP). It is possible to estimate alternative econometric models, such as, the basic "single-bound" model that uses the responses to the first payment question, traditional interval-data or "double-bound" models for surveys with a follow-up payment question and the bivariate "binary response" model.

The efficiency of the estimates would crucially depend on the survey design. The optimal design to the "single-bound" model corresponds to a survey in which each respondent is administered with only one payment question. Each respondent is invited to reveal whether or not he would be willing to pay a determined price to use the object of the valuation study. Using the available "yes" or "no" responses, the discrete choice contingent valuation researcher must trace out the distribution of the underlying willingness to pay (Alberini 1995).

Concerning the "single-bound" model, it is possible to state the WTP´s model could be described as:

$$y_i^* = x_i.ß + \varepsilon_i$$

The dependent variable could be defined as the willingness to pay while the independent variable represents the plan and the individual characteristics. The zero-mean error term is represented by ε_i.

Following the same approach, it is necessary to consider a logarithmic transformation of WTP and apply the binary response model to this transformed variable, since WTP ought to be positive. The previous statistical model expresses the likelihood that the respondent will agree on the proposed amount, given the plan and the individual characteristics.

3.3. Product package role in marketing communication & Impulsive buying behaviour

The package as a tool of sales promotion has been growing increasingly. For most of firms, package becomes an ultimate selling proposition simulating impulsive buying behaviour, increasing market share and reducing promotional costs (Kuvykaite & Navickiene 2009). Since quality and functionality, both core product attributes, become increasingly homogeneous (Reimann et al. 2010), companies are shifting their differentiation efforts away from concrete product characteristics towards less tangible features, such as, aesthetics (Brunner et al. 2009).

Aesthetic product characteristics seem to generate positive responses on consumer behaviour, as an immediate desire to own the product (Norman 2016), a higher willingness to pay for it (Bloch et al. 2003) and an increased inclination to show off and care about the product (Bloch 1995). The affective process between an aesthetic packaging design and a standardized design would be different. In fact, the emotional response for product packaging designs would be more intense and thus it would create longer reaction times for aesthetic packaging design rather than for standardized packaging (Chatterjee 2004).

The package has an important role in marketing communications, since it transmits valuable information about the product, which would help to position the product in consumer´s minds and have an impact on consumer´s purchase decision (Butkeviciene et al. 2008). In fact, package´s overall features can underline the uniqueness and originality of the product, which will influence quality judgements and consequently the formation of brand preferences (Silayoi & Speece 2007). On one hand, product package is characterized by visual elements, such as, graphic, colour, size, form and material features. On the other hand, it is characterized by verbal elements, such as, product information, producer, country-of-origin and brand (Kuvykaite & Navickiene 2009). These characteristics will allow the package to become the symbol that communicates favourable or unfavourable implied meaning about the product. If package communicates high quality, consumers frequently assume that the product

is a high quality product. Contradictory, if the package is perceived as low quality, consumers will transfer this perception for the product itself (Underwood et al. 2001).

The package becomes an important factor in consumer decision-making process, since it communicates to consumers at the time they are actually deciding in store (Silayoi & Speece 2007). Products purchased during shopping excursion often appear to be chosen without prior planning and represent an impulsive buying behaviour (Hausman 2000), which are accompanied by a powerful urge and feelings of pleasure and excitement (Verplanken et al. 2005). Time pressure is one of the main important constrains in consumer´s purchase decision. Based on previous researches results (Silayoi & Speece 2007; Butkeviciene et al. 2008) was assumed that visual elements of the package, as product´s size, have stronger influence on product selection when costumers are under time pressure in contrast with verbal elements.

3.4. Product Diversification & Cannibalization

The creation of new products is an important component of firm innovative capabilities, once they create important mechanisms for organizations to diversify, adapt and reinvent themselves in changing and technical markets (Schoonhoven et al. 1990). The creation of new products is also responsible for the improvement of market share, market value and survival of firms (Banbury & Mitchell 1995). However, cannibalization is a real threat for the vast majority of new product launches.

Multi-product firms have to carefully consider the cannibalization problem while they are designing their product lines, since usually products within a product line are partial substitutes (Desai 2001). A new product entering the market will take share from all the existing players in proportion to their size. Indeed, it is expected a higher cannibalization for larger brands and lower for smaller brands.

Cannibalization can be measured as the percentage of the new product´s sales which derives from the sales of an existing product within the company´s portfolio. A first order cannibalization is characterized by any cannibalization of the parent brand´s revenue. It could be defined as expected when it is in line with the size of the parent or excessive if it involves a disproportionate share loss. A second order cannibalization refers to share loss by other brands in the corporate portfolio and may also be at the expected or excessive level (Lomax et

al. 1996). It is important to appreciate that for most line extensions, some cannibalization is almost inevitable.

4. Methodology

4.1. Research Questions

This dissertation aims to answer to three different Research Questions:

RQ1: How is represented the willingness to pay curve for the 33cl bottle of NAU?

RQ2: The optimal choice of the distribution channel would be different between the original (75cl) and the new size (35cl) of NAU?

RQ3: Which would be the sales evolution of original and new bottles' size of NAU and their interconnection, during the short, medium and long term?

4.2. Type of Methodology

Both primary and secondary data were collected in order to answer the previous research questions.

First of all, as primary qualitative data source, individual interviews were made with the current distribution channels of NAU. Similarly, as primary quantitative data source, it was made an online survey focused on the final consumer.

As a secondary qualitative data source, a model that describes the willingness to pay curve for both bottles´ capacity was constructed, as described on section 4.3.3

4.3. Primary Data Source

4.3.1. Interview

The interviews were constructed both for the consulting project and the thesis. Thus, this analysis will only reflect the main conclusions related to the topics addressed to the thesis and it will solely focus on NAU´s physical sale points.

During 4 weeks, from March 14 to April 11, 9 interviews were conducted, focused on the 3 out of 4 distribution channels of NAU: 3 interviews with restaurants, 3 with bars and 3

with gourmet stores. It seems important to highlight that the 7 interviewed channels already knew the brand, while 2 did not.

The main goal of these interviews was to understand if there is a real need for a new bottle size of NAU and come up with the decisive improvements for the success of the brand, based on the distribution channels perception, since they have a close relationship with the final costumer.

Each interview started with an introductory component where it was explained the concept of the brand and the product characteristics. It was useful to understand if there is a real need for NAU in the Portuguese market and if it corresponded to the needs of the current distribution channels. Furthermore, it ensured that the interviewed distribution channels were aligned with NAU´s purpose.

Secondly, some concepts related to the price charged by NAU were tested, aiming to understand if it was set correctly and consequently if it could be one of deterministic factors for the success of the brand. It was questioned which would be an acceptable purchase and selling price for the 75cl bottler of NAU. The difference between the selling and purchase price illustrates the profit margin of each distribution channel. It was also questioned which would be the optimal selling price by the distribution channel if the purchase price was 5 euros, which corresponds to the distribution channels' average purchase price of NAU. The main purpose of this question was to understand which price must be practiced along the distribution channels and consequently certify that price being applied is the correct one, or if the company should change it.

Afterwards, it was ascertained if the brand should change some physical characteristics on the product´s image, in order to strengthen the company's position. It seems important to highlight that the distribution channels own this information since they deal directly with the final consumers and receive their feedback on a regular basis. In this context, it was questioned if the introduction of a new bottle´s size could be considered as a physical change with positive impact on the company´s performance. Thus, it was examined if it would influence the decision of becoming or remaining a distribution channel of NAU.

Assuming that the new size of NAU was considered a positive change, it was asked which should be the selling and purchase price for each distribution channel for the new bottle. Therefore, it would be possible to predict which would be the profit margin for the new bottle of NAU on the distribution channels side.

4.3.2. Online Survey

An online survey was conducted during 1 week, from 20th to 27th of April. It is important to emphasize that a pre-test was done with a sample of 6 people, in order to ensure that the survey was comprehensible and a few changes were made before launching it online.

It is important to note that the survey´s construction was based on the "single-bound" model, an econometric version of the Dichotomous choice contingent valuation model, explained in detail on section 3.2.

The survey was conducted in partnership with my consulting project colleague, since it was perceived as a good strategy to achieve more complet answers and an efficient way to collect important information shared by both parts. However, during the survey analysis it will be presented exclusively the major conclusions related with the topic addressed to this dissertation.

The online survey was diffused to Portuguese citizens through social networks.

The goal of this survey was to collect the necessary data to build the curve which reflects the willingness to pay (WTP) for the new bottle´s size of NAU based on the final consumer data; which was referenced as a desired and determinant improvement for the brand by the interviewed distribution channels.

It was also important to figure out which were the most appropriate distribution channels for each bottle of NAU. In addition, it was essential to estimate the consumption of the two versions of NAU beer over time.

In total 899 respondents started the survey, however only 726 finished which represents the data that should be considered for the analysis.

In the beginning of the survey it was asked if the respondents were 18 years old or older, in order to ensure that only people with legal age to consume alcoholic beverages were able to proceed on the survey. The results revealed that 3 respondents had less than 18 years reducing the sample to 723. Additionally, 91 respondents that do not consume alcoholic beverages and 74 respondents that have tried but did not like crafted beer were erased, since they do not represent neither current nor future NAU´s costumers.

In order to test the respondent's attention and ensure that the survey results were as accurate as possible, it was made a question in the middle of the survey where respondents were asked to choose the option "never". There were 13 people who have chosen a different

option from the indicated one, which reveals that they were not truly paying attention to the survey, consequently they were also excluded from the sample.

Taking this into consideration, the valid sample for the analysis was equal to 545.

The survey started with an accurate description of the brand´s concept and the product characteristics, which were followed by an image of a 75cl bottle of NAU. It was questioned if the respondent already knew the product, where they expected to find it and if they would be interested to buy the 75cl bottle of NAU for a specific price. This specific price was a randomized value between 6 different values, such as, 3, 6, 9 12, 15 and 18 euros, this means that it was presented only one value for each respondent. The respondents could only answer "yes" or "no", which originates the required data to build the curve that represents the WTP for the 75cl bottle of NAU. In fact, the people who answered "yes" could be interpreted as the number of people who demanded NAU beer for each determined price, as it is presented in detail on section 5.2.5.

The same questions were asked for a hypothetical 33cl bottle of NAU. Regarding the 33cl bottle of NAU, the randomized price values were 1, 2, 3, 4, 5 and 8 euros.

Afterwards, it was requested to assume that the 33cl bottle of NAU already exists and it was launched to the market. Taking this into consideration, it was questioned which were the most suitable situations for the consumption of each version of NAU.

In order to ascertain if there is a relationship between the consumption of each version of NAU over time, there were made 3 questions that illustrates the short, medium and long term. First, it was asked to imagine that the brand was just created and were launched both size versions of NAU. Second, it was asked to assume that the brand already exists and even though the respondent has never tasted the product they received positive reviews about that. For the two scenarios presented above and considering that each respondent desired to try the product, it was questioned if they would buy the 33cl or the 75cl bottle of NAU. Finally, it was asked to assume that the respondent had already tasted the product and he really appreciated it. Considering that the respondent wanted to buy the product once again, it was asked which size version of NAU would be chosen.

Lastly, in order to characterize the sample there were included some demographic variables, such as, age, gender, education level, professional situation, average monthly income and residence.

4.3.3. The NAU´s Willingness to pay model

In order to compute the construction and analysis of NAU´s WTP model it was used the R Studio.

The survey´s data enabled the construction of the WTP curves for each bottle size. In fact, it was questioned to all respondents if they would be interested to buy NAU for a specific price. This price varied across the respondents. It was a randomized value between 6 different values, more specifically, it would be 3, 6, 9 12, 15 or 18 euros for the 75cl bottle of NAU. Similarly, it would be 1, 2, 3, 4, 5 or 8 euros for the 33cl bottle of NAU. It seems important to highlight that the lower price value for each bottle´s size must be a price that the majority of the respondents would accept. Contrary, the higher price value for each bottle´s size must be a price that the majority of the respondents would reject. The possible answers were "yes" or "no", which would be considered as 1 and 0, respectively.

Previously to the model construction, it was necessary to organize and transform the sample. Two columns were created, one with the price that was proposed to each respondent and the other, with the respondents´ answer, as represented in figure 1 and 2.

	Price	Buy
1:	3	0
2:	9	1
3:	6	1
4:	18	0
5:	6	0
6:	12	0

Figure 1: Head of the columns of 75cl bottle´s data in R| Source: Survey results

	Price	Buy
1:	5	0
2:	1	1
3:	8	0
4:	3	1
5:	8	0
6:	4	0

Figure 2: Head of the columns of 33cl bottle´s data in R| Source: Survey results

Similarly, it was necessary to define the empirical model for NAU´s WTP curve. It should be explained by a binary logistic regression model, since the dependent variable is binary. The empirical model could be represented by:

$$P(Y=1) = P(Yes/A) = \frac{e^{\alpha+\beta A}}{1+e^{\alpha+\beta A}} = \frac{1}{1+e^{-(\alpha+\beta A)}}$$,where α > 0 and ß < 0

The independent variable "A" represents the price and the independent variable "P(Yes/A)" represents the probability of accepting to pay "A".

Identically, the NAU´s model could be represented as the following model:

$$Buy = \beta 0 + \beta 1 Price + \varepsilon.$$

Concerning the 75cl bottle of NAU, the independent variable was defined as "Price" which could be equal to 3, 6, 9, 12, 15 or 18, as defined on figure 3. Equivalently, the independent variable of the 33cl bottle of NAU could be equal to 1, 2, 3, 4, 5 or 8, as shown on figure 4.

```
> dt.NAU3[, Price:= ifelse(!is.na(Q_Price3),3
+                 ,ifelse(!is.na(Q_Price6),6
+                 ,ifelse(!is.na(Q_Price9),9
+                 ,ifelse(!is.na(Q_Price12),12
+                 ,ifelse(!is.na(Q_Price15),15
+                 ,ifelse(!is.na(Q_Price18),18,NA))))))]
```

Figure 3: Definition of 75cl bottle´s Independent variable in R | Source: Survey Results

```
> dt.p3[, Price:= ifelse(!is.na(Q_Price1),1
+                 ,ifelse(!is.na(Q_Price2),2
+                 ,ifelse(!is.na(Q_Price3),3
+                 ,ifelse(!is.na(Q_Price4),4
+                 ,ifelse(!is.na(Q_Price5),5
+                 ,ifelse(!is.na(Q_Price8),8,NA))))))]
```

Figure 4: Definition of 33cl bottle´s Independent variable in R | Source: Survey Results

On the other hand, the dependent variable was defined as "Buy" and it would represent the probability of accepting to pay "Price" for NAU.

```
> dt.NAU3[, Buy:= ifelse(!is.na(Q_Price3),Q_Price3
+               ,ifelse(!is.na(Q_Price6),Q_Price6
+               ,ifelse(!is.na(Q_Price9),Q_Price9
+               ,ifelse(!is.na(Q_Price12),Q_Price12
+               ,ifelse(!is.na(Q_Price15),Q_Price15
+               ,ifelse(!is.na(Q_Price18),Q_Price18,NA))))))]
```

Figure 5: Definition of 75cl bottle´s dependent variable in R | Source: Survey Results

```
> dt.p3[, Buy:= ifelse(!is.na(Q_Price1),Q_Price1
+       ,ifelse(!is.na(Q_Price2),Q_Price2
+       ,ifelse(!is.na(Q_Price3),Q_Price3
+       ,ifelse(!is.na(Q_Price4),Q_Price4
+       ,ifelse(!is.na(Q_Price5),Q_Price5
+       ,ifelse(!is.na(Q_Price8),Q_Price8,NA))))))]
```

Figure 6: Definition of 33cl bottle´s dependent variable in R | Source: Survey Results

Taking this into account, the logistic regression for both bottle´s size was estimated, permitting to understand if the variable "Price" was significant or not. Then, both WTP curves were computed, reflecting the probability of buying NAU for each price.

Lastly, it was estimated the revenue and the variable costs for each version of NAU and consequently the profit for a range of prices between 1€ and 20€. Concerning the price value of each bottle´s version that maximizes NAU´s profit, the price that should be charged for each bottle´s size was predicted. Taking into account the predicted optimal prices to charge, an estimation of the profit´s increase with the introduction of the 33cl bottle of NAU was done.

5. Results

5.1. Interview Result

The interviewed distribution channels referred that NAU could be described as an interesting, appealing and innovative concept, which could take advantage of the growth of the handcrafted beers market in Portugal. They admitted that there is a market for the Portuguese handcrafted beers, but they referred it as a niche market. This idea is supported by the fact that the handcrafted beers are part of the beers market and the consumption of the traditional beer is rooted on the traditional culture. Based on their experience, they think that NAU would be mostly consumed by people who already have some interest and knowledge about handcrafted beers or from people who like to try new products, which correspond to a specific segment of the market.

The beer was described as a high quality product, with a beautiful, refine, classy touch and original packaging. The packaging characterists that were most referred were the bottle´s single format, the grace of the label and the stopper of the bottle made of cork. The format of the bottle and the detail of the bottle´s stopper make it similar to a bottle of champagne, which was mentioned as a key element that distinguishes it from the other handcraft beers in the Portuguese market. In fact, it was mentioned several times that NAU´s bottles are probably one of the most beautiful bottles on the handcraft beers market.

Taking this into account, the interviewed distribution channels recognized that the physical characteristics of NAU´s bottle and the high quality of the beer reflect the underlying concept of the brand, in terms of constant delivery of a high quality product and the passion of an exclusivity and refinement sentiment.

However, it was unanimously that the irreproachable packaging of NAU increases the production costs and consequently the price of NAU, which could be considered a market entry barrier for the brand. The majority of the interviewed distribution channels considered that the brand could change some of the packaging features for cheaper ones, in order to solve this obstacle. On one hand, they argued that the decrease on price would probably potentiate the purchase of NAU, first by the distribution channels and secondly by the final consumers, which would have an immediate and meaningful impact on the company´s success. On the other hand, they advocated that this type of packaging changes should be made while the

brand is still not well known and it does not have many sales, which means that there is still no physical association with the product. It is important to highlight that they defended that the brand should make these changes with the intention of cost reductions, but trying to keep the main characteristics of the NAU´s bottle.

The 9 interviews carried out in the 3 existent distribution channels of the brand reflect a transversal need in all of them. In fact, in the 9 interviews conducted it was noticeable the necessity for a smaller version of NAU´s bottle.

The bars referred that NAU has the quality required and all the characteristics needed to become a reliable partner of all the exclusive moments of its customers, however they mentioned that the bottle´s capacity is an evident problem. As a matter of fact, they considered that is really difficult to sell a 75cl bottle of beer, since NAU should be shared and most of their customers will not drink the same beverage, this becomes even more difficult when it is a drink that few people know. Instead of the bars, the restaurants stated that the original bottle of 75cl would be a viable capacity to be consumed in these establishments, since usually customers share a bottle of wine which has the same capacity and consequently NAU could work as a substitute for the wine. However, when considering the first purchase, both agreed that the probability of buying a smaller bottle is higher than the probability of buying a 75cl bottle. In addition, all mentioned that this first purchase is likely to motivate future group purchases, and consequently increase the demand for the bigger bottle. It was also mentioned that it could happen if at least two people decided to buy a bottle of 75cl to share, but in most of the cases the decision to try a new product without prior knowledge is not unanimous. In fact, it would depend, for example, on a prior taste of NAU provided from the distribution channel, which is not feasible for NAU founders, since they must offer some bottles as trials.

Bars and restaurants emphasized the importance of a continued, targeted and effective advertising; once, probably, no one will take the initiative to ask for a product that is not known, even with the employee suggestion.

The gourmet stores are the ones with a higher volume of NAU´s sales. They assumed that their target audience is mainly composed by tourists. Although, it is important to note that a small part of their target customers is composed by national people who buy gourmet products for later consumption or to offer. They described tourists as a curious target that wants to enjoy Portugal and its traditional products; they also want to taste new and innovative products and are willing to pay higher prices. Despite being the only distribution

channel that successfully sells the 75cl bottle of NAU to people who usually do not know it, most purchases are made during tour trips and NAU is consumed afterwards. Thus, gourmet stores argued that a smaller bottle would provide an easier and practical transport for the international target, and would increase the frequency of impulse purchases for both international and national consumers. They also referred that sometimes tourists would like to buy more quantity in order to take the NAU beer to their origin countries, but they are conditioned since they are traveling with standard luggage. But this constraint cannot be solved with the launch of the new bottle, since it will always have more than 10cl, which is the maximum volume allowed by airlines. It is important to note that the interviewed distribution channels mentioned that the optimal capacity for the new bottle size would be 33cl, which was also referred by the company.

Regarding the information gathered during the interviews through which it was concluded that exists a real demand for the new bottle size of NAU, it was questioned the purchase and sale price for both bottle sizes of the 9 interviewed distribution channels, as shown on figure 7. The analysis will first be presented for the 75cl bottle of NAU and afterwards for the predicted values of the smaller bottle size.

On the table below are exhibited the purchase price, always in terms of maximum value, that the distribution channels are willing to pay for the 75cl bottle of NAU and for the new bottle size of NAU, as well as an indicator value for the sale price. It is possible to conclude that exists an atypical opinion between the 3 different distribution channels, bars, restaurants and gourmet stores, which is more visible in terms of sale price rather than purchase price. However, the indicated values within each sample of this distribution channels appear to be somewhat uniform.

	Purchase Price (75cl)	Sale Price (75cl)	Profit margin (%)	Purchase Price (33cl)	Sale Price (33cl)	Profit margin (%)
Bar 1	5 €	10 €	100%	2 €	3,80 €	90%
Bar 2	2,50 €	12 €	380%	-	-	-
Bar 3	5 €	10 €	100%	1,80 €	5,50 €	206%
Restaurant 1	7 €	16 €	129%	-	-	-
Restaurant 2	6 €	10 €	67%	2 €	6 €	200%
Restaurant 3	4 €	16,50 €	313%	1,50 €	5 €	233%
Gourmet Store 1	5 €	10 €	100%	1,50 €	3 €	131%
Gourmet Store 2	5 €	15 €	200%	2 €	6 €	200%
Gourmet Store 3	6 €	10 €	67%	2 €	4 €	100%
Average	**5 €**	**12 €**	**162%**	**1,83 €**	**4,76 €**	**266%**

Figure 7: Analysis of NAU´s price allocation for both bottle´s sizes | Source: Interview results

The average purchase price indicated by the interviewed distribution channels for the 75cl bottle was 5 euros, which corresponds to the average price charged by the company; this shows that NAU has been embracing an efficient strategy of price collocation. The average sale price designated by the interviewed distribution channels for the 75cl bottle was 12€.

When it was questioned what would be the changes on the sale price considering a purchase price equal to 5€, 4 interviewed distribution channels out of 9 affirmed that they would keep the sale price, while 3 out of 9 would probably decrease the sale price, once their current purchase price is higher than 5€. Similarly, 2 interviewed distribution channels out of 9 would presumably increase their sale price or in a worst case scenario they would be unable to commercialize NAU, since their current purchase price is lower than 5€.

The difference between the sale and the purchase price leads to the profit margin for each interviewed distribution channels. Taking this into account, the average profit margin of the 75cl bottle is equal to 162%, which means that the sale price was more than twice as much as the purchased price practiced.

Regarding the new bottle´s size of NAU, exist 2 interviewed distribution channels, 1 bar and 1 restaurant, they did not agreed with the introduction of the new bottle. On one hand, Bar 2 argued that it did not want to remain a partner of NAU in the future; therefore it

considers that it does not make sense to state a purchase and sale price for the new bottle size, since it was not interested on it. On the other hand, restaurant 1 assumed that the new bottle would not be a greater asset, since it considered that the 75cl bottle is the right size for a restaurant. Although, taking into consideration the characteristics of the entire sample these 2 elements do not portray the real demand for the new bottle size.

According to the data collected about the new bottle size of NAU (33cl), it is possible to predict that 2€ would be the average purchase price for the interviewed distribution channels. Considering a total of 7 valid answers, 4 interviewed distribution channels out of 7 stated that they would be willing to pay a maximum of 1,83€ for the smaller size of NAU, while 2 out 7 declared that they would be able to pay 1,50€ and 1 out 7 affirmed that their maximum amount would be 1,80€, as presented on figure 7.

5.2. Online Survey Result

The following analysis is divided into two different subsections. First, it will be used descriptive statistics to characterize the sample, such as, demographics and consumption of traditional & craft beer characterization. Secondly, a linear regression will be run, in order to build the willingness to pay curve that best suits the demand for each bottle´s size of NAU. Additionally, it will be predicted the most suitable distribution channels for each bottle´s size of NAU and estimated the consumption evolution of the two versions of NAU over time.

During the analysis it will be considered a valid sample equal to 545, since it will only be contemplated the surveyed people who respected the following constraints, those who demonstrated that they were paying attention to the survey and those who finished the survey.

5.2.1. Demographics

The age, gender, education level, professional situation, average monthly income and residence were considered on this survey as demographic variables, in order to summarize the sample.

In terms of age, 372 respondents were aged between 18 and 24 years old, which correspond to 68% of the sample. The other four age ranges were composed by 14% of

respondents aged between 25 and 35 years old, 6% aged between 36 and 45 years old, 10% aged between 46 and 60 years old and only 2% with more than 60 years old. The majority of the responds were aged between 18 and 35 years old, which corresponds to NAU´s target. The survey was conducted online what could explain the scarcity of responses of elderly people.

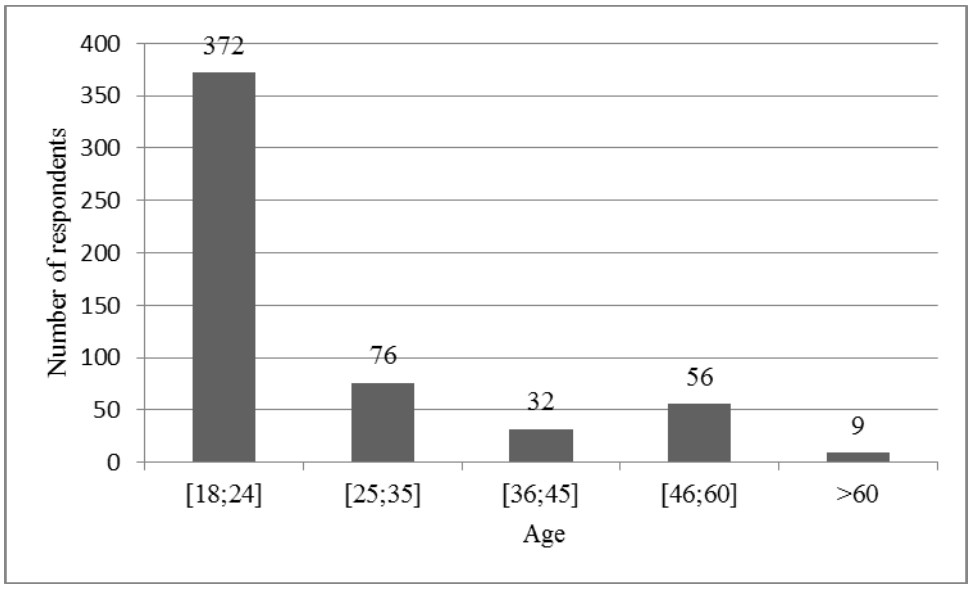

Figure 8: Age distribution | Source: Survey results

The results reveal a balanced sample in terms of gender, since 57% of the people surveyed were female while 43% were male, which corresponds to 312 responses by women and 233 by men.

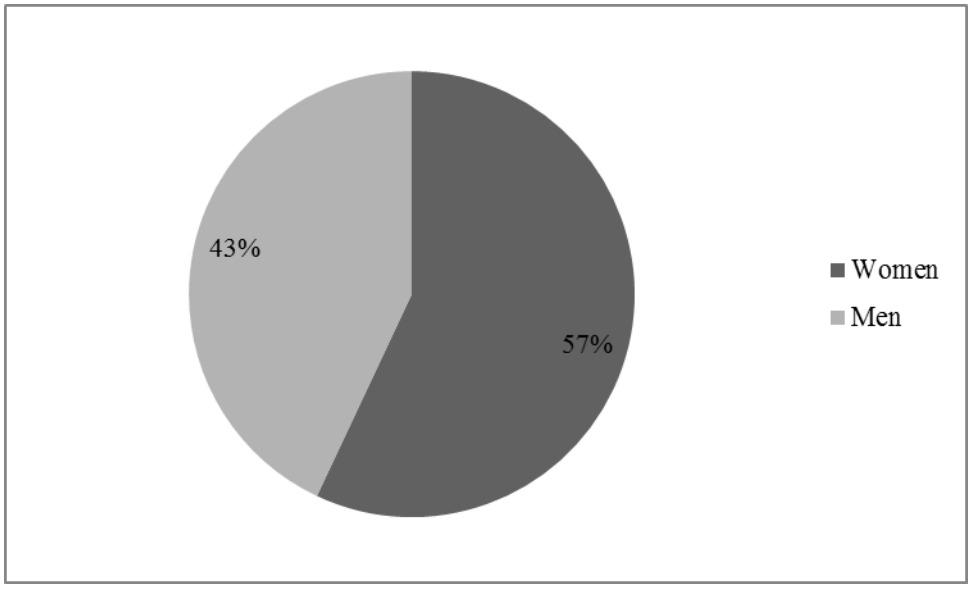

Figure 9: Gender distribution | Source: Survey results

Concerning education level, 86% of the respondents had superior education, more specifically 53% had a Bachelor Degree, 31% had a Master Degree and 2% had a PhD or more. Contrary, 14% had a High School level and only one individual had Elementary School level.

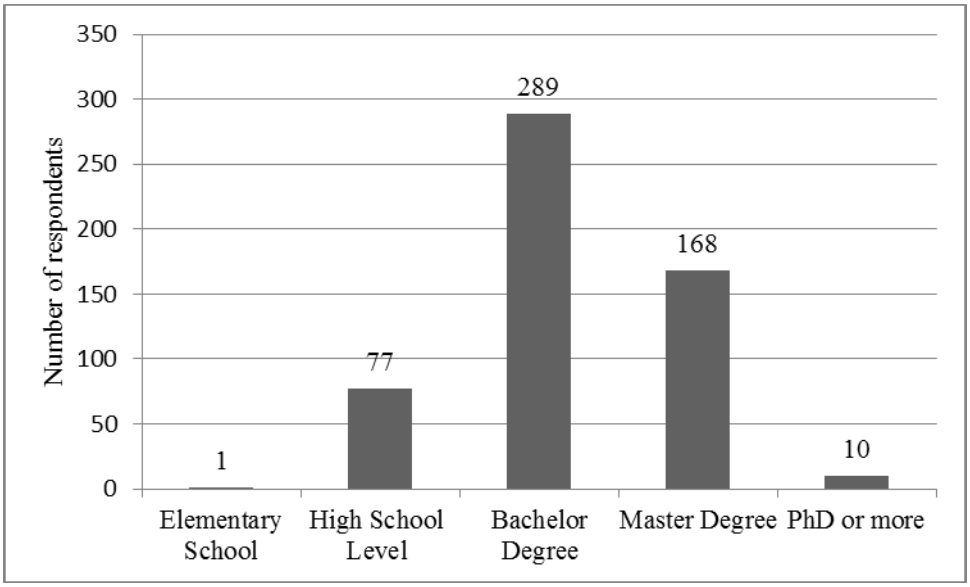

Figure 10: Respondents´ Education Level | Source: Survey results

Regarding the professional situation, 58% of the people surveyed were students, 38% were employed, 3% were unemployed and 1% were retired. The predominance of students in the sample is justified given the age of the majority of respondents, as presented before.

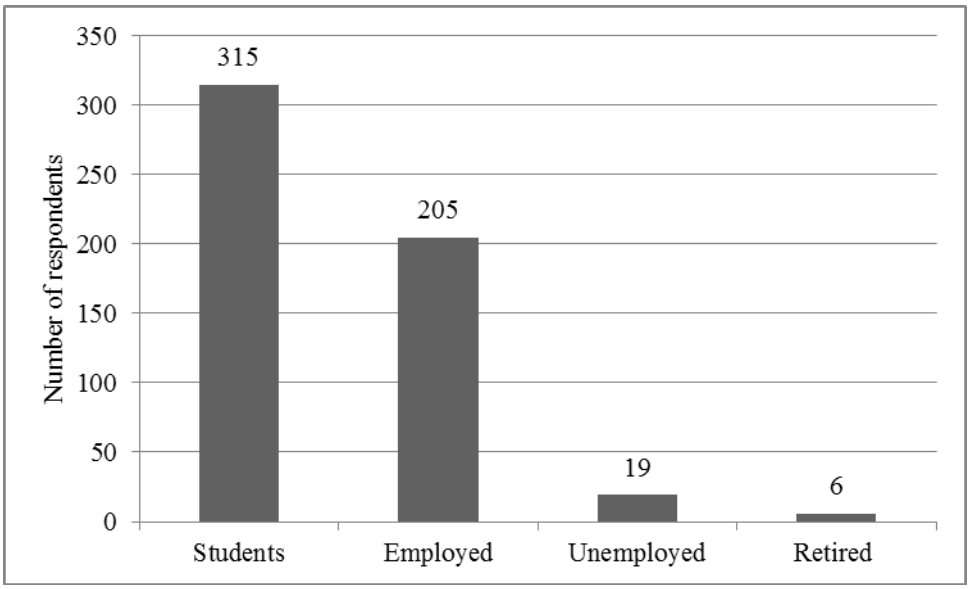

Figure 11: Respondents´ professional situation | Source: Survey results

In terms of monthly average income, 37% of the individuals answered it was below 300€, 12% between 300€ and 499€, 22% between 500€ and 999€, 17% between 1 000€ and 1 999€ and 12% equal or higher than 2 000€, as shown on figure 12. Given the age and the professional situation of the majority of the people surveyed, it seems important to highlight that the lower ranges of monthly average income would probably correspond to the allowance value received while they are students.

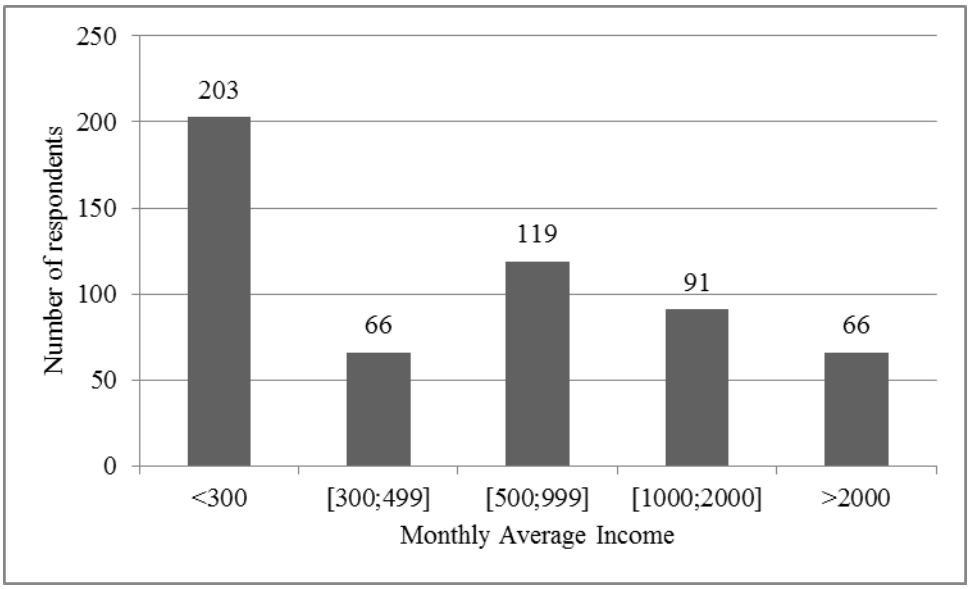

Figure 12: Respondents´ monthly average income | Source: Survey results

The residence analysis started with the distinction between people who lived in Portugal or not. For a total of 90% residents in Portugal, the distribution across NUTS II (Nomenclature of Territorial Units for Statistics) revealed that 67% of the respondents lived in Lisbon Metropolitan Area, 15% in the Centre, 13% in the South, 3% in the North and 2% in Madeira and Azores, as described on figure 13. In fact, there is significant difference between the respondents who live in Lisbon Metropolitan Area when comparing with the remaining NUTS II, what could be a limitation for the analysis.

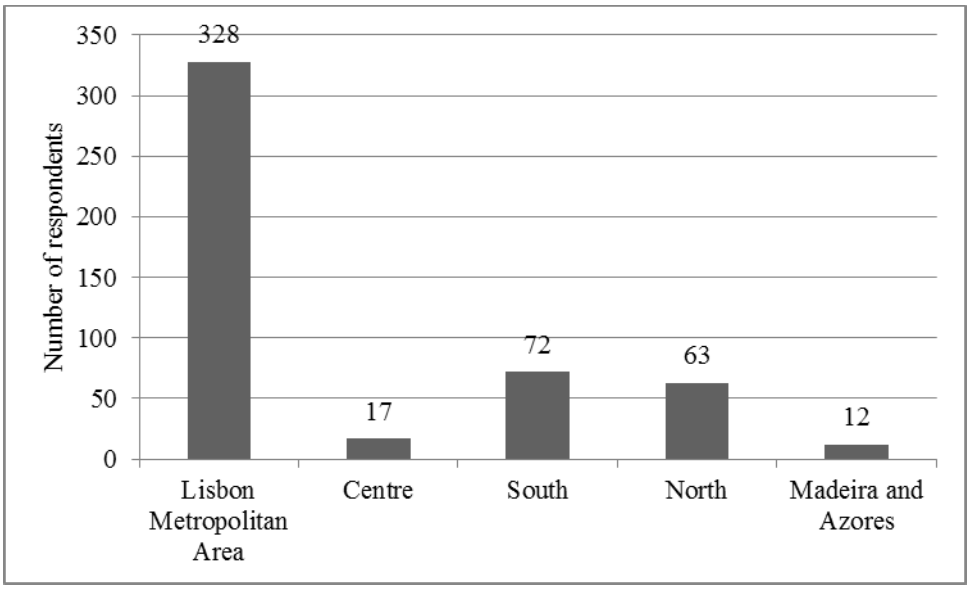

Figure 13: NUTS II for residents in Portugal | Source: Survey results

5.2.2. Consumption of Traditional & Craft Beer

Concerning the consumption of alcoholic beverages, the majority of people surveyed mentioned that they consume it in a regular basis. In fact, 2% of the respondents declared that they consume it more than once a day, 5% consume it once a day, 28% more than once a week and 27% referred that they consume it once a week, which corresponds to 334 people surveyed. On the other hand, 211 people surveyed mentioned that they consume alcoholic beverages less frequently. Indeed, 15% of the respondents answered that they consume it more than once a month, 4% consume it once a month and 20% consume it only on special occasions, as exhibited on figure 14.

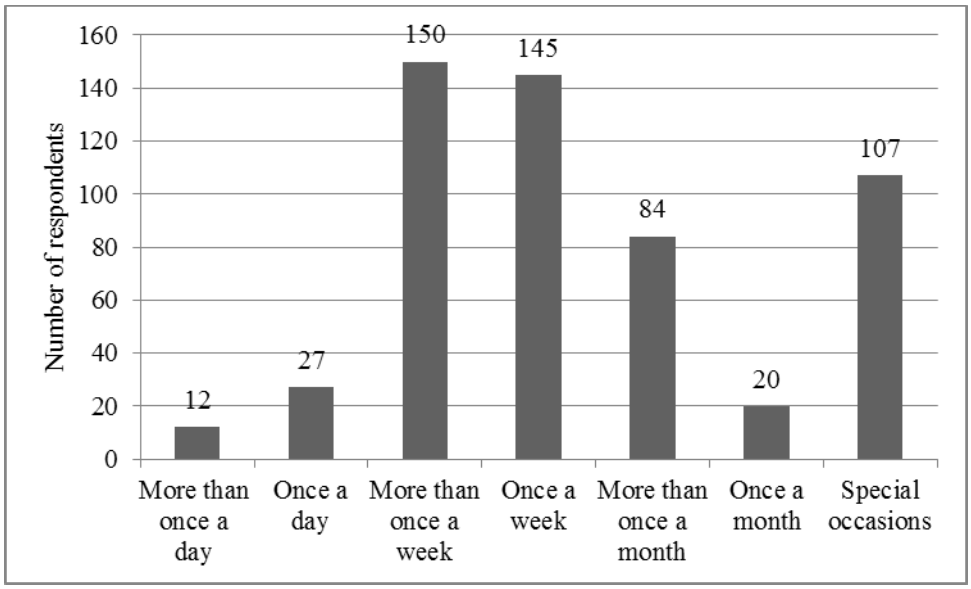

Figure 14: Consumption´s frequency of alcoholic beverages| Source: Survey results

The analysis reveals that 86% of the surveyed people like beer. It is the alcoholic beverage consumed more frequently, followed by cider, wine, liqueurs, spirit drinks and champagne. As shown on figure 15, the majority of respondents mentioned that they consume beer daily (4%) and weekly (52%), which corresponds to 261 people surveyed. On the other hand, 20% of the respondents answered that they consume it in a monthly basis, while 8% referred that they consume it rarely and 16% only consume it in special occasions.

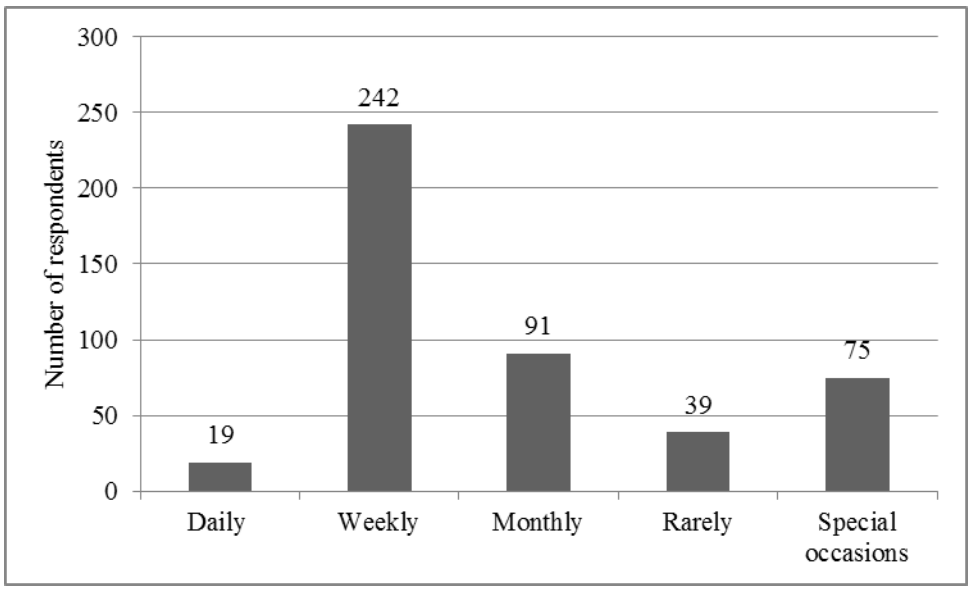

Figure 15: Consumption´s frequency of traditional beer| Source: Survey results

Regarding the consumption of craft beer, the majority of respondents mentioned that they consume it rarely (62%) and in special occasions (22%). Only 1% of the respondents referred that they consume it on a daily basis, while 5% of the respondents affirmed that they consume it on a weekly basis and 10% on a monthly basis, as portrayed on figure 16. It is possible to state that traditional beer´s consumption is more frequent in contrast with the consumption of craft beer.

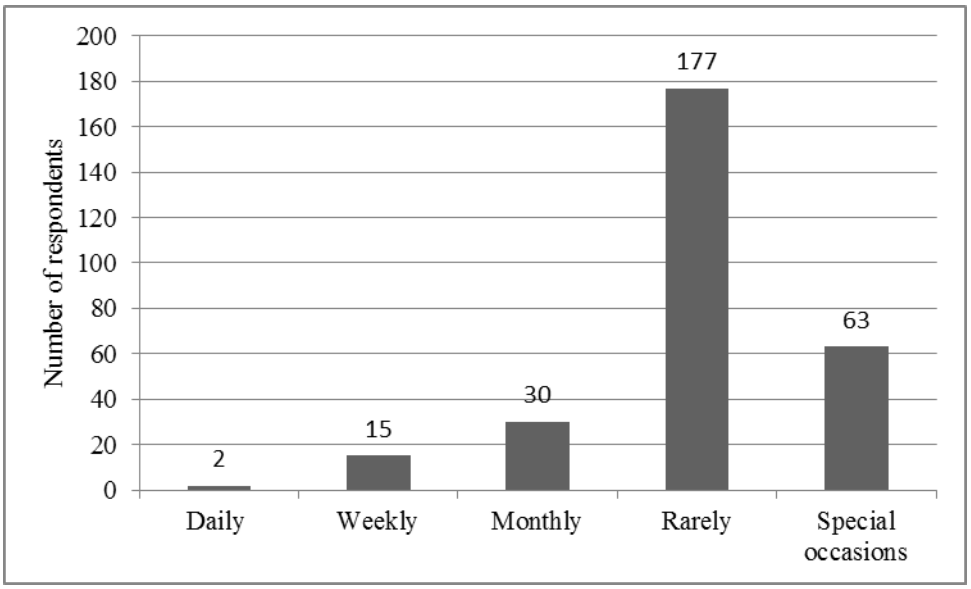

Figure 16: Consumption´s frequency of craft beer| Source: Survey results

Thereabout 53% of the respondents were craft beer lovers while 47% of the respondents never tasted craft beer. It seems important to note that 273 of the responds who like beer are also craft beer lovers. With regard to the people surveyed, only 11% already knew NAU.

5.2.3. The most suitable distribution channels for each bottle´s size of NAU

Concerning respondents' expectations regarding NAU distribution channels, it was questioned in which distribution channels they expected to find NAU beer. In this question the people surveyed could choose within 5 different options, the current four distribution channels of the brand (bars, restaurants, gourmet stores and online channel) and they also had

the possibility to fulfil a free text box with another channel (other). In order to answer this question it was given the possibility to choose more than one option.

The analysis will first be focused on the existent bottle of NAU with a capacity of 75cl and afterwards on the 33cl bottle of NAU.

When considering the 75cl bottle of NAU, the "gourmet stores" were mentioned 390 times, followed by "restaurants" selected 277 times and "bars" referred 255 times. Similarly, "online" was chosen 185 times. The free text box named "other" was mentioned 54 times, where were suggested new distribution channels, as presented on figure 17.

Figure 17: Expected distribution channels for NAU´s 75cl model | Source: Survey results

The supermarkets were mentioned by 91% of the respondents as the most suitable distribution channel for the 75cl bottle of NAU, while a residual percentage of respondents considered parties and beer events as potential channels.

Regarding the most suitable distribution channels for the 33cl bottle of NAU, the most mentioned channel was "bars", referred 423 times. It was followed by "restaurants" chosen 341 times, "gourmet stores" selected 286 times and "online" mentioned 151 times, as shown on figure 18. As it happened for the 75cl bottle of NAU, the supermarkets were referred by 90% of the people surveyed as the most convenient channel for the new bottle´s size of NAU. A residual percentage of respondents indicated events, festivals and night clubs as convenient distribution channels.

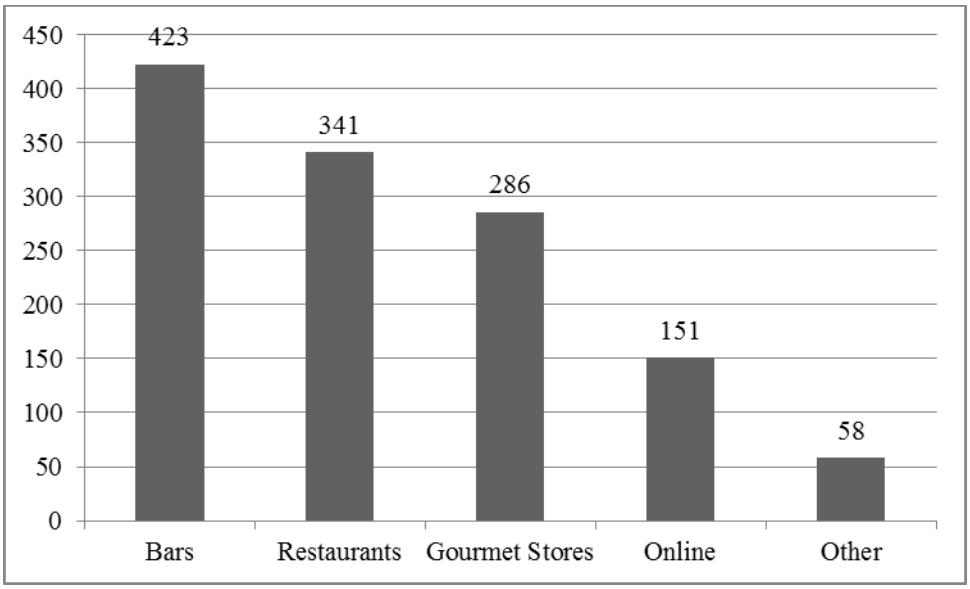

Figure 18: Expected distribution channels for NAU´s 33cl model | Source: Survey results

5.2.4. The consumption of the two versions of NAU over the time

The surveyed people´s answers reveal that exist a relationship between the consumption of each version of NAU over the time.

In fact, when it was asked to "imagine that the brand was created in this moment and were launched both size versions of NAU", 40 respondents mentioned that they would choose the 75cl bottle of NAU while 505 would choose the 33cl bottle of NAU. In terms of analysis, this sentence represents the moment 0 of consumption. Additionally, when it was asked to assume that "the brand already exists and even though the respondent has never tasted the product they received positive reviews about it", 60 people surveyed answered that they would choose the 75cl bottle of NAU while 485 would choose the 33cl bottle of NAU. This sentence represents the moment 1 of NAU´s consumption. Finally, for the scenario where it was assumed that "the respondent had already tasted the product and he really appreciated it", 262 respondents said that they would choose the 75cl Bootle of NAU while 283 people surveyed would choose the 33cl bottle´s version; which reflects moment 2 of NAU´s consumption.

Assuming the existence of both bottles in the market, the analysis reveals that in the beginning it would probably exists a higher demand for the smaller bottle, which would

cannibalize the 75cl bottle sales. With the gradual discloser of the brand, the 75cl bottle sales would start to increase and it is expected a cannibalization on the 33cl bottle sales.

It seems possible to predict that the consumption between the two bottle´s size of NAU would be inversed, as shown in figure 19.

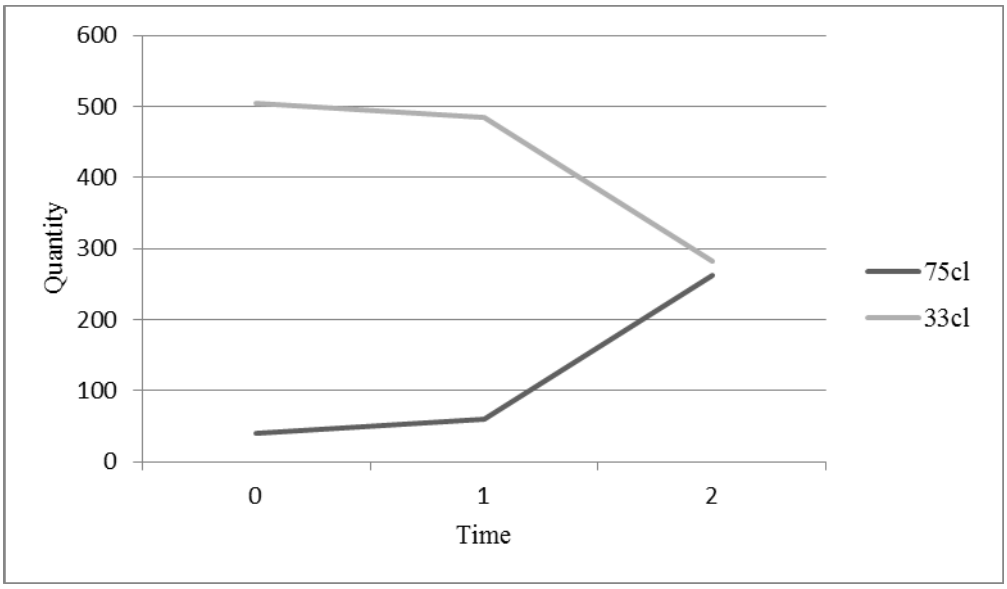

Figure 19: The prediction of the two versions´ consumption over the time | Source: Survey results

It is important to assume the existence of both bottle´s size sales in the long run, since after the sale´s oscillations the sales values are expected to stabilize.

The new bottle´s size would be a valuable opportunity to promote the product, since it would be cheaper than the NAU´s 75cl bottle, it has the ideal capacity for one person and represents a lower risk on the consumer´s minds. In fact, the surveyed people referred that the 33cl bottle of NAU would only be preferable when they want to consume it alone or in business lunches and dinners, where they could not drink a lot and they do not drink the same beverage. In contrast, the majority of the respondents assumed their preference for the 75cl bottle of NAU in occasions with family and friends, romantic moments and when they want to buy NAU in order to consume it later or as a gift.

5.2.5. The NAU´s Willingness to pay model results

The information collected on the survey regarding the number of respondents who said "yes" for the randomized prices is exhibited on figure 20 and 21. As expected, the number of respondents who said "yes" decreases as the price increases, intuitively the WTP is higher for lower prices.

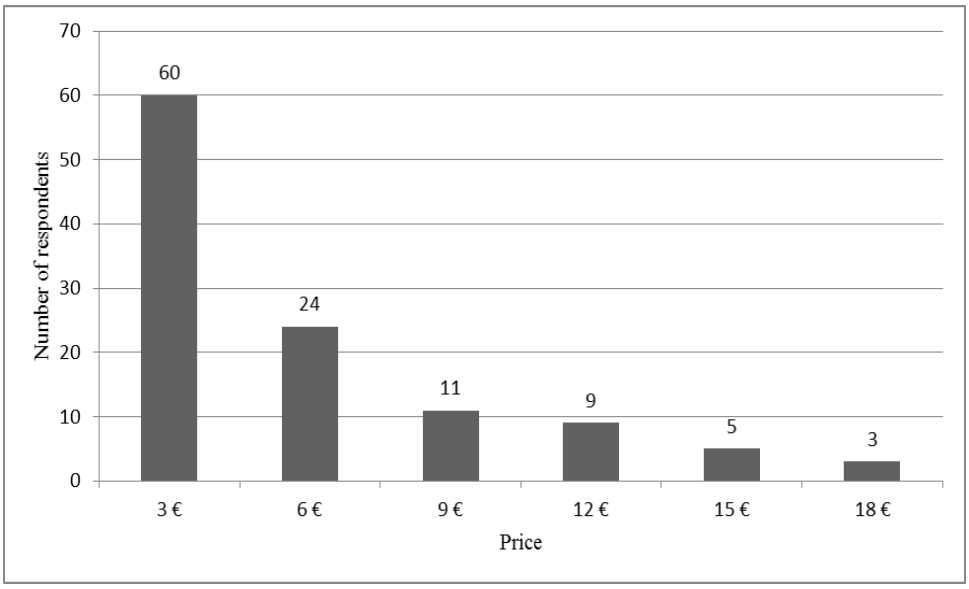

Figure 20: Number of respondent who would purchase the 75cl of NAU for each randomized price values | Source: Survey results

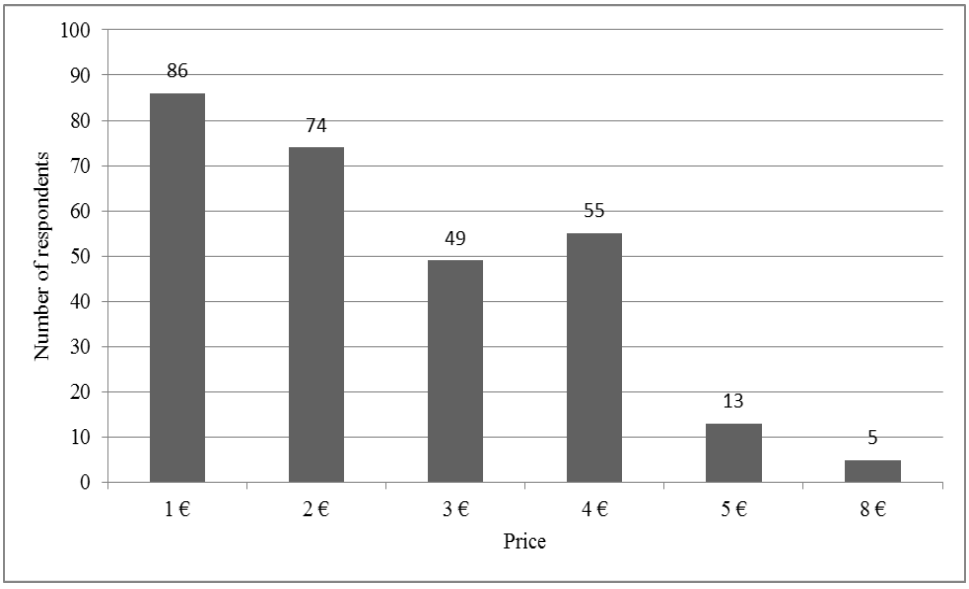

Figure 21: Number of respondent who would purchase the 33cl of NAU for each randomized price values | Source: Survey results

Taking this into account, the data was reorganized and the variables were designated in order to create the model. Afterwards, it was estimated the logistic model regression as shown on figure 22 and 23.

	Dependent variable:
	Buy
Price	-0.290***
	(0.032)
Constant	1.110***
	(0.250)
Observations	545
Log Likelihood	-212.833
Akaike Inf. Crit.	429.667
Note:	*p<0.1; **p<0.05; ***p<0.01

Figure 22: Logistic Regression for NAU´s 75cl bottle | Source: Survey Data

	Dependent variable:
	Buy
Price	-0.926***
	(0.082)
Constant	3.216***
	(0.296)
Observations	545
Log Likelihood	-248.106
Akaike Inf. Crit.	500.212
Note:	*p<0.1; **p<0.05; ***p<0.01

Figure 23: Logistic Regression for NAU´s 33cl bottle | Source: Survey Data

Given the logistic model characteristics, the analysis of the logistic regression must be done through the marginal effect of "Price" on "Buy", as shown on figures 24 and 25.

According to the results, it is possible to state that the independent variable of the WTP model for both versions of NAU is statistically significant, with a significant level equal to 99%. In fact, the p-value associated to the variable "Price" is lower than 1%.

```
           dF/dx       Std. Err.       z              P>|z|
Price - 0.036456       0.005     - 6.361          2.003e -10 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Figure 24: Marginal effect of "Price" on "Buy" for NAU´s 75cl bottle | Source: Survey Data

```
           dF/dx       Std. Err.       z              P>|z|
Price -0.138324     0.019514  -7.0883        1.358e -12 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Figure 25: Marginal effect of "Price" on "Buy" for NAU´s 33cl bottle | Source: Survey Data

The logistic regression stated above could be graphically represented by the WTP curves for the 75cl and 33cl bottles of NAU, as shown on figure 26 and 27. Both WTP curves portray the relationship between the variable "Price" and the probability of "Buy". As expected, it is possible to state that the relationship between the dependent and independent variables is inversely proportional. The ß of the independent variable is negative for both models, this justifies the negative slope of both curves.

Concerning the 75cl bottle of NAU, it is possible to predict that when the price increases 1€ the probability of buying decreases 3,65% (*ceteris paribus)*, as represented on figure 24. Similarly, for the 33cl bottle of NAU, when the price increases 1€ the probability of buying decreases 13,83% (*ceteris paribus)*, as showed on figure 25. The company mentioned that the 33cl bottle of NAU would be cheaper than the 75cl, once it has less capacity. As a consequence, the impact on the probability of buying the product of increasing the price by 1€ would be much higher on the 33cl bottle of NAU, as it is confirmed by the results.

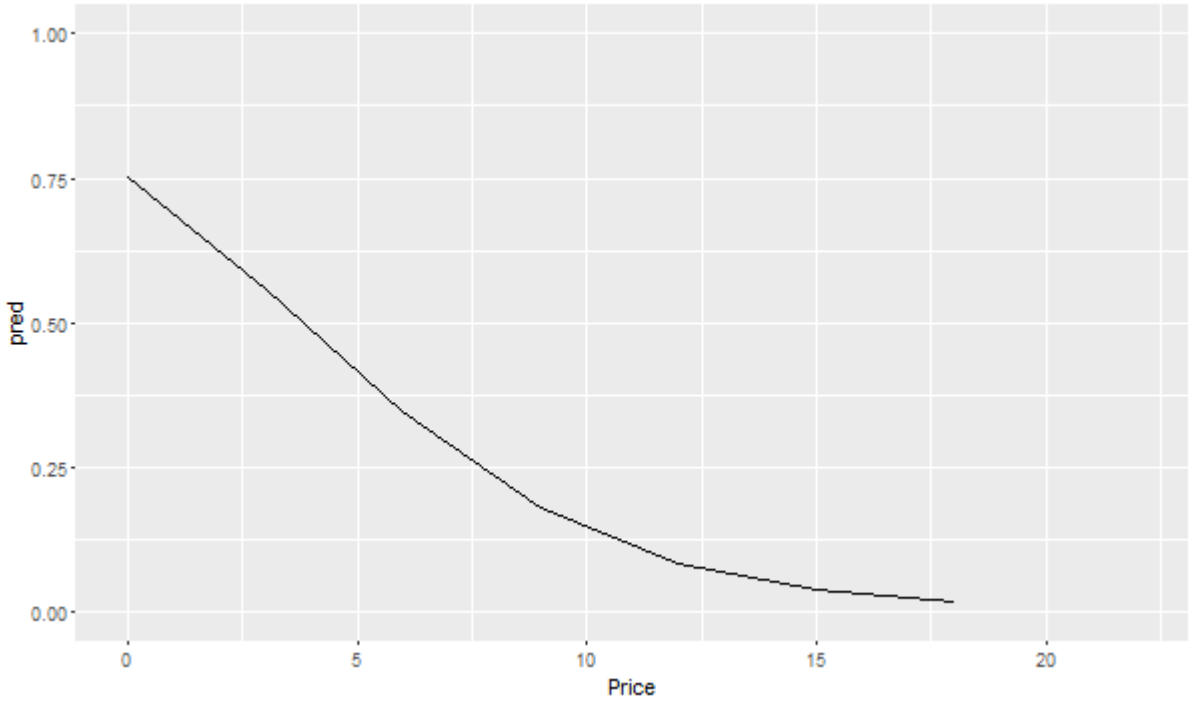

Figure 26: The WTP curve for NAU's 75cl bottle | Source: Survey Data

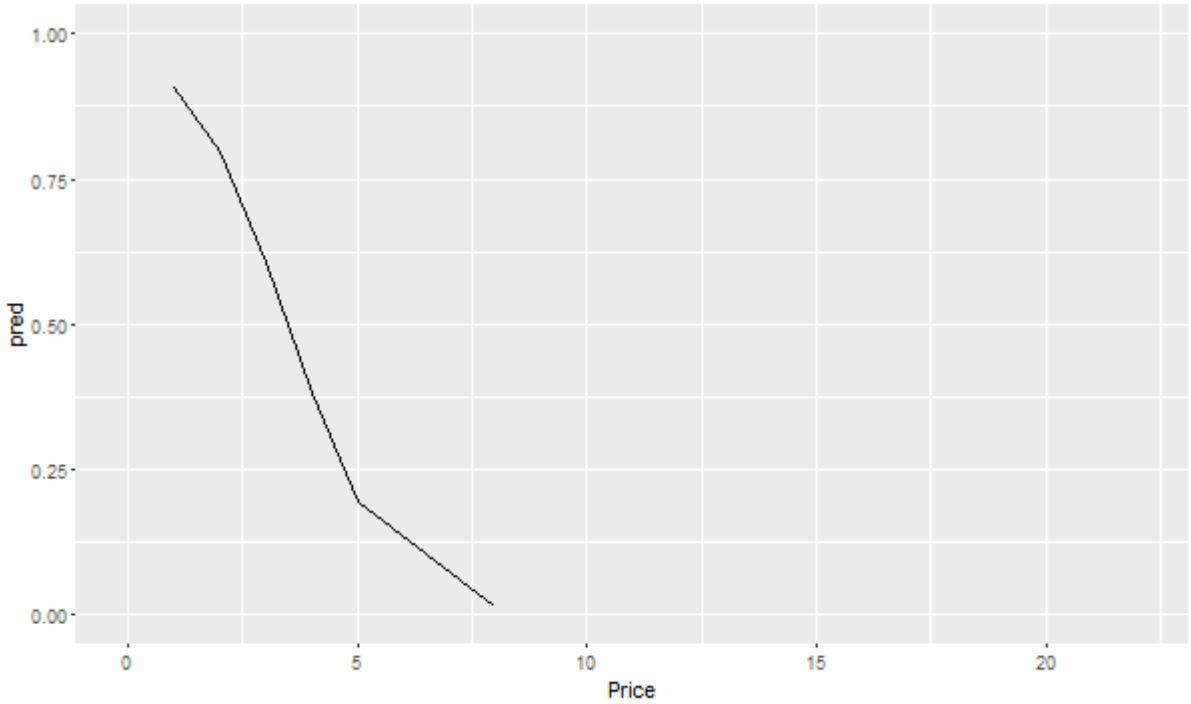

Figure 27: The WTP curve for NAU's 33cl bottle | Source: Survey Data

It is possible to conclude from figure 26 that exists a higher percentage of respondents who are not interested in buying the 75cl bottle of NAU independently of the price value, when compared with the 33cl bottle. More specifically, 3,9% of the respondents would not be interested in consuming NAU´s 33cl bottle for free, while around 25% of the respondents would not be interested in consuming NAU´s 75cl bottle. Taking this into account, it is possible to predict a higher demand for the smaller version of NAU.

The price value that maximizes NAU´s profit for each bottle´s size is the price that should be charged to the final consumer. It seems important to highlight that the "Quantity" was defined as the predicted quantity demanded by 100 people based on the "Probability of buy". Taking this into account, the profit result would be equivalent to the profit´s value per 100 customers. The profit would be figured out through the subtraction of the "Variable Costs" on the "Revenue". The "Variable costs" are computed by:

"Variable costs" = (Production costs of NAU) x (1+VAT)

The production costs of 75cl bottle´s size of NAU were 3,5€ without VAT while the production costs of the 33cl bottle´s size were 2,20€ without VAT. The VAT value for alcoholic beverages in Portugal is equal to 23%.

Similarly, the "Revenue" is computed by:

"Revenue" = [Quantity (Q)/100 customers] x "Price" x (1-0,23)

It is necessary to discount the VAT equal to 23% which is included on the "Price" charged to the final customer, in order to figure out the "Revenue" value.

The scenario where the company sells directly to the final consumer is presented from figure 28 to 31.

Probability of buy	Quantity/per 100 customers	Price	Revenue	Variable costs	Profit/per 100 customers
0,694158681	69,4158681	1	53,45021844	298,8353122	-245,3850937
0,629294586	62,9294586	2	96,91136624	270,9113193	-173,999953
0,559405426	55,9405426	3	129,2226534	240,8240359	-111,6013825
0,487079616	48,7079616	4	150,0205217	209,6877747	-59,66725296
0,415290843	41,5290843	5	159,8869746	178,7827079	-18,89573336
0,346926245	34,6926245	6	160,2799252	149,3517485	10,92817672
0,284342893	28,4342893	7	153,2608193	122,4096154	30,85120389
0,229088943	22,9088943	8	141,1187889	98,62278996	42,49599893
0,181843816	18,1843816	9	126,0177645	78,28376279	47,7340017
0,142540534	14,2540534	10	109,7562112	61,36369989	**48,39251129**
0,110583975	11,0583975	11	93,66462683	47,60640124	46,05822559
0,085080960	8,508096	12	78,61480704	36,62735328	41,98745376
0,065029454	6,5029454	13	65,09448345	27,99517995	37,09930351
0,049448194	4,9448194	14	53,30515313	21,28744752	32,01770562
0,037450712	3,7450712	15	43,25557236	16,12253152	27,13304084
0,028277552	2,8277552	16	34,83794406	12,17348614	22,66445793
0,021301537	2,1301537	17	27,88371193	9,170311679	18,71340025
0,016018122	1,6018122	18	22,20111709	6,895801521	15,30531557
0,012029045	1,2029045	19	17,59849284	5,178503873	12,41998896
0,009024278	0,9024278	20	13,89738812	3,884951679	10,01243644

Figure 28: Profit calculation for NAU´s 75cl bottle | Source: Survey Data

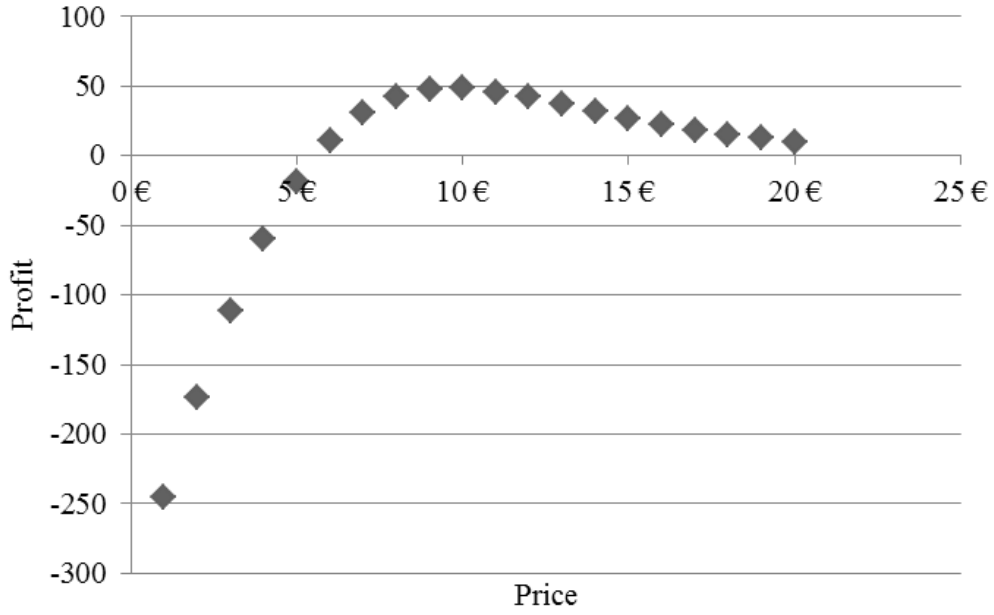

Figure 29: The predicted profit for NAU´s 75cl bottle | Source: Survey Data

Assuming that all NAU´s sales would be realized through the online channel, the price that should be charged in order to maximize NAU´s 75cl bottle profit is equal to 10€, as represented on figures 28 and 29.

Similarly, regarding the profit calculations for NAU´s 33cl bottle, the predicted quantity that maximizes NAU´s profit refers to an online price equal to 5€, as shown on figures 30 and 31.

Probability of buy	Quantity/per 100 customers	Price	Revenue	Variable costs	Profit/per 100 customers
9,080820E-01	90,8082	1	69,922314	245,7269892	-175,8046752
7,965375E-01	79,65375	2	122,666775	215,5430475	-92,8762725
6,080558E-01	60,80558	3	140,4608898	164,5398995	-24,07900968
3,807188E-01	38,07188	4	117,2613904	103,0225073	14,23888312
1,958962E-01	19,58962	5	75,420037	53,00951172	**22,41052528**
8,804128E-02	8,804128	6	40,67507136	23,82397037	16,85110099
3,684713E-02	3,684713	7	19,86060307	9,970833378	9,889769692
1,493383E-02	1,493383	8	9,19923928	4,041094398	5,158144882
5,971753E-03	0,5971753	9	4,138424829	1,615956362	2,522468467
2,375023E-03	0,2375023	10	1,82876771	0,642681224	1,186086486
9,425150E-04	0,0942515	11	0,798310205	0,255044559	0,543265646
3,737083E-04	0,03737083	12	0,345306469	0,101125466	0,244181003
1,481249E-04	0,01481249	13	0,148273025	0,040082598	0,108190427
5,870354E-05	0,005870354	14	0,063282416	0,015885178	0,047397238
2,326360E-05	0,00232636	15	0,026869458	0,00629513	0,020574328
9,218928E-06	0,000921893	16	0,011357719	0,002494642	0,008863077
3,653256E-06	0,000365326	17	0,004782112	0,000988571	0,003793541
1,447700E-06	0,00014477	18	0,002006512	0,000391748	0,001614765
5,736885E-07	5,73689E-05	19	0,000839306	0,00015524	0,000684066
2,273388E-07	2,27339E-05	20	0,000350102	6,15179E-05	0,000288584

Figure 30: Profit Calculation for NAU´s 33cl bottle | Source: Survey Data

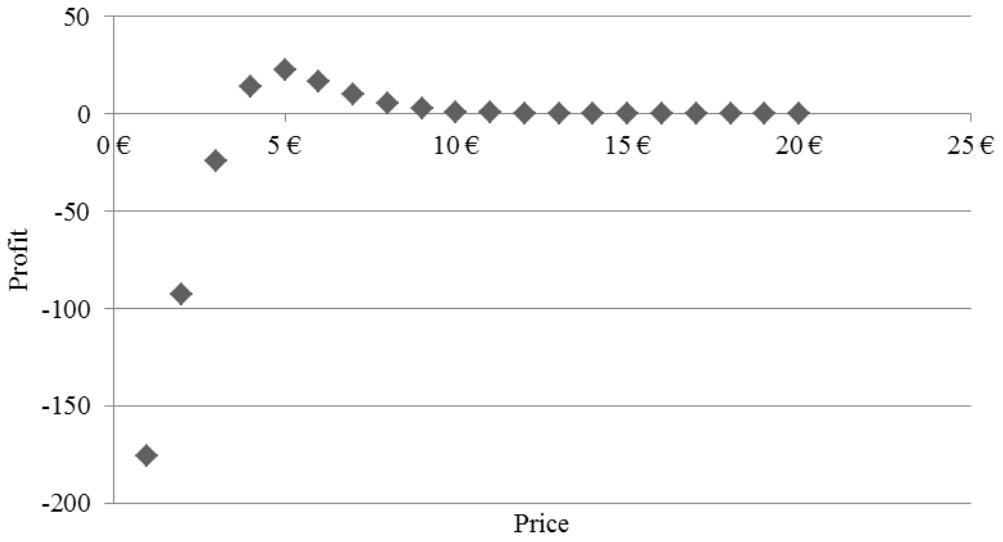

Figure 31: The predicted profit for NAU´s 33cl bottle | Source: Survey Data

Assuming the previous price values as the prices that should be charged on the online channel, the predicted profit of the company is equal to 70,8€/per 100 people. It increased 22,41€/per 100 customers with the introduction of the 33cl bottle of NAU.

However, the online channel is only one of the current distribution channels; they also have a strong presence on the indirect channels of NAU. On the following analysis, it would be studied which is the impact of the current distribution channel´s margin on the optimal price to charge to the final consumers. This analysis would portray the present market situation, with the current distribution channel´s margin rate and variable costs.

Note that the variable "Price_DC" would be equal to the price charged to the distribution channels, in order to maximize NAU´s profit. The variable "Price_DC" could be computed by:

"Price_DC" = "Price" x (1 – distribution channels margin)

It was assumed the minimum distribution channel margin referred on the interviews, equal to 67% for the 75cl bottle´s size and 90% for the 33cl bottle´s size, according to figure 7. The remaining variables are calculated on the same basis as the previous analysis.

The scenario where the company sells through distribution channels is represented for both bottle´s sizes, from figure 32 to 35. The price that should be charged to the distribution channels in order to maximize NAU´s 75cl bottle profit is equal to 6,6€, what corresponds to a final consumer´s price equal to 20€.

Buy	Q/per 100 customers	Price	Price_DC	Revenue	Variable costs	Profit/per 100 customers
0,694158681	69,4158681	1	0,33	17,63857208	298,8353122	-281,1967401
0,629294586	62,9294586	2	0,66	31,98075086	270,9113193	-238,9305684
0,559405426	55,9405426	3	0,99	42,64347562	240,8240359	-198,1805603
0,487079616	48,7079616	4	1,32	49,50677217	209,6877747	-160,1810025
0,415290843	41,5290843	5	1,65	52,7627016	178,7827079	-126,0200063
0,346926245	34,6926245	6	1,98	52,89237531	149,3517485	-96,45937316
0,284342893	28,4342893	7	2,31	50,57607038	122,4096154	-71,83354506
0,229088943	22,9088943	8	2,64	46,56920033	98,62278996	-52,05358963
0,181843816	18,1843816	9	2,97	41,58586228	78,28376279	-36,69790051
0,142540534	14,2540534	10	3,3	36,21954969	61,36369989	-25,1441502
0,110583975	11,0583975	11	3,63	30,90932685	47,60640124	-16,69707439
0,085080960	8,508096	12	3,96	25,94288632	36,62735328	-10,68446696
0,065029454	6,5029454	13	4,29	21,48117954	27,99517995	-6,514000407
0,049448194	4,9448194	14	4,62	17,59070053	21,28744752	-3,696746983
0,037450712	3,7450712	15	4,95	14,27433888	16,12253152	-1,848192637
0,028277552	2,8277552	16	5,28	11,49652154	12,17348614	-0,676964595
0,021301537	2,1301537	17	5,61	9,201624938	9,170311679	0,031313259
0,016018122	1,6018122	18	5,94	7,32636864	6,895801521	0,430567119
0,012029045	1,2029045	19	6,27	5,807502636	5,178503873	0,628998763
0,009024278	0,9024278	20	6,6	4,58613808	3,884951679	**0,701186401**

Figure 32: Profit Calculation for NAU´s 75cl bottle | Source: Survey Data

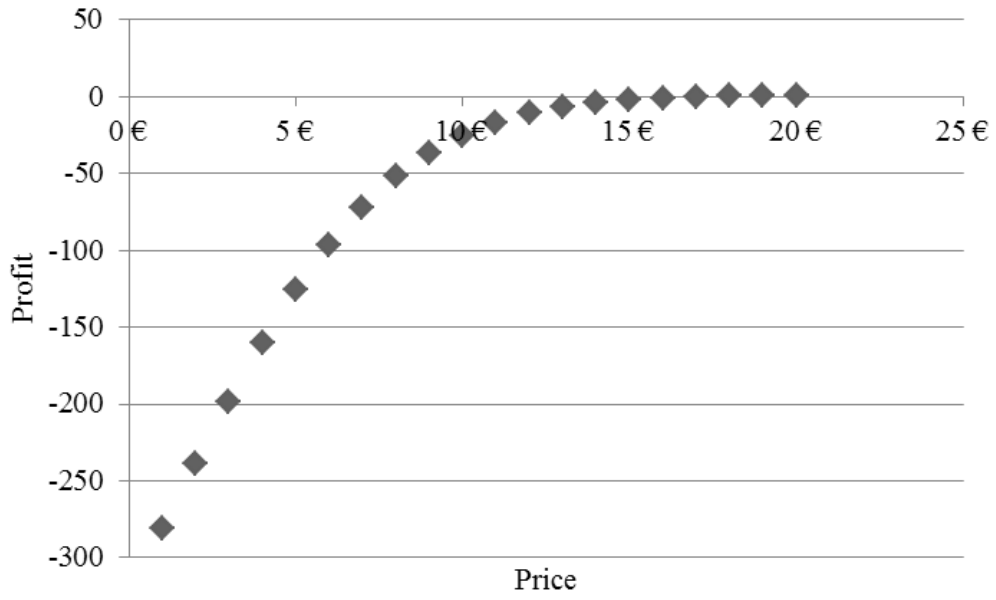

Figure 33: The predicted profit for NAU´s 75cl bottle | Source: Survey Data

According to the profit calculations for NAU´s 33cl bottle, the final consumer´s price that would maximizes NAU´s profit should be higher than 20€.

Buy	Q/per 100 customers	Price	Price_DC	Revenue	Variable costs	Profit/per 100 customers
0,908082	90,8082	1	0,1	6,9922314	245,7269892	-238,7347578
0,7965375	79,65375	2	0,2	12,2666775	215,5430475	-203,27637
0,6080558	60,80558	3	0,3	14,04608898	164,5398995	-150,4938105
0,3807188	38,07188	4	0,4	11,72613904	103,0225073	-91,29636824
0,1958962	19,58962	5	0,5	7,5420037	53,00951172	-45,46750802
0,08804128	8,804128	6	0,6	4,067507136	23,82397037	-19,75646323
0,03684713	3,684713	7	0,7	1,986060307	9,970833378	-7,984773071
0,01493383	1,493383	8	0,8	0,919923928	4,041094398	-3,12117047
0,005971753	0,5971753	9	0,9	0,413842483	1,615956362	-1,202113879
0,002375023	0,2375023	10	1	0,182876771	0,642681224	-0,459804453
0,000942515	0,0942515	11	1,1	0,079831021	0,255044559	-0,175213539
0,000373708	0,03737083	12	1,2	0,034530647	0,101125466	-0,066594819
0,000148125	0,01481249	13	1,3	0,014827302	0,040082598	-0,025255295
5,87035E-05	0,005870354	14	1,4	0,006328242	0,015885178	-0,009556936
2,32636E-05	0,00232636	15	1,5	0,002686946	0,00629513	-0,003608184
9,21893E-06	0,000921893	16	1,6	0,001135772	0,002494642	-0,00135887
3,65326E-06	0,000365326	17	1,7	0,000478211	0,000988571	-0,00051036
1,4477E-06	0,00014477	18	1,8	0,000200651	0,000391748	-0,000191096
5,73689E-07	5,73689E-05	19	1,9	8,39306E-05	0,00015524	-7,13095E-05
2,27339E-07	2,27339E-05	20	2	3,50102E-05	6,15179E-05	-2,65077E-05

Figure 34: Profit Calculation for NAU´s 33cl bottle | Source: Survey Data

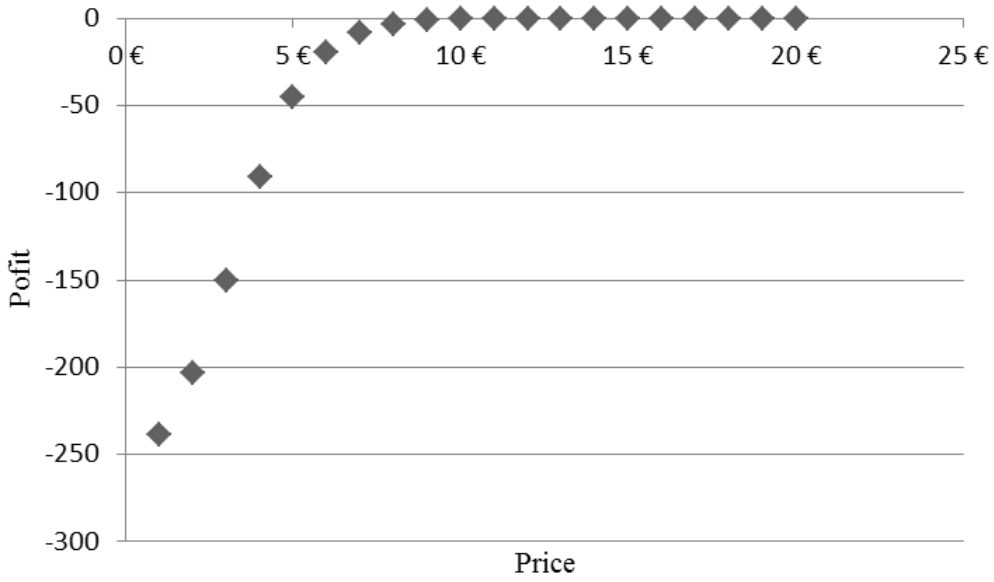

Figure 35: The predicted profit for NAU´s 75cl bottle | Source: Survey Data

The introduction of the distribution channels would increase the optimal prices to charge for both bottle´s size and reduce the predicted consumer´s willingness to pay, which would decrease the NAU´s maximum profit. According to the previous analysis, it is possible

to state that these prices are infeasible. In fact, it would not be viable to charge 20€ for the 75cl bottle and more than 20€ for the 33cl bottle of NAU.

In order to decrease the optimal prices to charge to the final consumer, NAU could decrease the variable costs of its production. This decrease will be due to manufacturing economies of scale. Taking this into account, NAU may find more profitable to add more capacity that they expected to use in the intermediate future. It seems important to highlight, that there is expected higher economies of scale for the 33cl bottle, since it has a higher demand, as confirmed by the WTP curves. NAU could also decrease bottle´s unit costs due to a change on the bottle physical image to a cheaper one. Additionally, NAU could increase the bargaining power with the distribution channels, which would allow them to negotiate their profit margins. According to the interview´s results, it is expected a higher desirable distribution channels´ profit margin for the 33cl bottle.

On the following figures, it is presented a sensitivity analysis for both bottle´s size, in order to come up with the set of variable costs and distribution channels´ margin which would minimize prices to charge and maximize profit.

Concerning the sensitivity analysis´ results for the 75cl bottle, represented on figure 36 and 37, a reduction on the distribution channel´s (DC) margin from 67% to 30% and a reduction on variable costs (VC) from 3,5€ to 2€ seems to be the optimal scenario. It would increase the profit from 2.78€/per 100 customers to 71.93€/per 100 customers, as shown on figure 37. However, it is unrealistic to consider that NAU would achieve the sufficient bargaining power to set a distribution channels' margin equal to 30%.

A more realistic approach would be negotiate a decrease on the distribution channel´s margin from 67% to 50% for a variable cost between 2€ and 3€. Taking this into account, the chargeable price would be between 9€ and 11€, as represented on figure 36, which would lead to a 75cl bottle´s profit between 20,02€ and 37,10€, as shown on figure 37.

		VC			
		2	**2,5**	**3**	**3,5**
DC margin	**0,3**	8 €	9 €	9 €	10 €
	0,35	8 €	9 €	10 €	11 €
	0,5	9 €	10 €	11 €	12 €
	0,67	11 €	13 €	15 €	20 €

Figure 36: Sensitivity analysis for NAU´s 75cl bottle price | Source: Survey Data

		VC			
		2	**2,5**	**3**	**3,5**
DC margin	**0,3**	71,93 €	58,64 €	47,46 €	38,41 €
	0,35	62,77 €	50,46 €	40,05 €	31,46 €
	0,5	37,10 €	27,44 €	20,02 €	14,42 €
	0,67	12,94 €	7,90 €	4,72 €	2,78 €

Figure 37: Sensitivity analysis for NAU´s 75cl bottle profit | Source: Survey Data

Regarding the sensitivity analysis´ results for the 33cl bottle, illustrated on figures 38 and 39, a reduction on the distribution channel´s margin from 90% to 30% and a reduction on variable costs from 2.2€ to 0,5€ would be the optimal scenario. It would generate a profit equal to 90,30€/per 100 customers, as shown on figure 39. Although, it is unrealistic to consider that NAU would achieve the sufficient bargaining power to set a distribution channels' margin equal to 30%.

It would be more realistic to negotiate a decrease on the distribution channel´s (DC) margin from 90% to 50% for a variable costs (VC) between 0,5€ and 1€. It would be charge a price between 3€ and 4€, as represented on figure 38, which would lead to a 75cl bottle´s profit between 53,81€ and 29,32€, as shown on figure 39. As explained before, this significant reduction on the variable costs would be possible since it was predicted a higher demand for the 33cl bottle of NAU, which would create higher manufacturing economies of scale.

		VC				
		0,5	**1**	**1,5**	**2**	**2,2**
DC margin	**0,3**	3 €	4 €	4 €	5 €	5 €
	0,35	3 €	4 €	4 €	5 €	5 €
	0,5	3 €	4 €	5 €	6 €	7 €
	0,9	7 €	13 €	20 €	>20€	>20€

Figure 38: Sensitivity analysis for NAU´s 33cl bottle price | Source: Survey Data

		VC				
		0,5	**1**	**1,5**	**2**	**2,2**
DC margin	**0,3**	90,30 €	59,77 €	36,36 €	20,37 €	15,55 €
	0,35	81,18 €	52,16 €	28,74 €	15,48 €	10,66 €
	0,5	53,81 €	29,32 €	12,83 €	4,75 €	2,93 €
	0,9	0,31 €	0 €	0 €	<0€	<0€

Figure 39: Sensitivity analysis for NAU's 33cl bottle profit | Source: Survey Data

6. Conclusions & Recommendations

According to the previous analysis it is possible to conclude that the 33cl bottle of NAU would be a valuable asset for the success of the company. In fact, people would be seen it as a good opportunity to taste the product for the first time. Consequently, it will promote the NAU beer and maximizes the brand awareness. The 33cl bottle´s demand is reflected on the WTP curve presented on section 5.2.5.

Comparing the WTP curves for both bottle´s sizes, it is possible to conclude that exist a higher demand for the 33cl bottle rather than for the 75cl bottle of NAU. Indeed, the percentage of survey respondents who stated that would not be interested to purchase NAU irrespective of the price was higher for the 75cl bottle (25%) than for the 33cl bottle (3,9%).

Regarding the prices that should be charged for each bottle´s size, there are two possible scenarios. On one hand, considering the NAU´s current variable costs and distribution channels' margin rate, the chargeable prices for both bottles would be set too high which makes them impracticable. Taking this into consideration, the online channel would be the only viable distribution channel of NAU. It would generate a profit equal to 70,8€/per 100 customers for a 33cl bottle´s price equal to 5€ and a 75cl bottle´s price equal to 10€.

On the other hand, assuming that the manufacturing variable costs and the distribution channel´s margin rate could be traded, it would be possible to maintain indirect sales. Concerning the sensitivity analysis done on section 5.2.5., it seems possible to charge a price between 9€ and 11€ for the 75cl bottle of NAU and a price between 3€ and 4€ for the 33cl bottle. This scenario presents a lower set of prices compared with the current average price of the 75cl bottle (12€) and the predicted average price for the 33cl bottle (4,76€), mentioned on the interviews.

However, the increasing on demand is the necessary condition to reduce variable costs through manufacturing economies of scale and consequently reduce the consumer´s final price. NAU is perceived as a high quality product by the distribution channels, however they emphasized that no one will buy a product that nobody knows. Taking this into account, it seems important to highlight that NAU should probably invest on advertising, in order to promote the brand. It would be interesting to transform NAU´s consumption in something trendy and popular among consumers, which would be expected to originate a boom on NAU´s sales and consequently on its profit. Additionally, NAU could also opt for cheaper packages, which may reduce NAU´s variable costs.

The distribution channels choice would be different between the original and the new bottle´s size of NAU. Concerning the 75cl bottle of NAU, the most suitable distribution channels are the gourmet stores and restaurants. In comparison, bars and restaurants are the most convenient distribution channels for the 33cl bottle of NAU. Based on the results collected during the dissertation, it is possible to state that the 33cl bottle of NAU presupposes an immediate consumption. Contrary, the 75cl bottle of NAU is associated to a shared or posterior consumption. Strategically, NAU should primarily focus its sales on the most suitable distribution channels for each bottle´s size and depending on the results obtained, the company could expand or not the NAU´s sales to other distribution channels. Doing this, the brand would be able to provide a more specific and personalised follow-up for each distribution channel. In addition, the introduction of the supermarkets as a new distribution channel could be a strategic decision, since it would reach more people in less time. It would be possible to maintain NAU´s concept, since nowadays many supermarkets have a gourmet area, where exist NAU´s similar products on sale.

It is expected an inversely relationship between both bottle´s sizes until the sales stabilization. The figure 19 on section 5.2.4. portrays the interconnection of the predicted consumption between the 75cl and the 33cl bottles of NAU over the time. Assuming that NAU will restructure its business strategy and therefore will make a new release, it is possible to state the following sales´ forecast. Regarding the initial moment when the brand is created and launched both bottle´s size of NAU, it is expected higher sales of NAU´s 33cl bottle rather than the 75cl bottle. The smaller version of the product would encourage NAU´s consumption since it potentiates impulse purchases and it would be an important opportunity to promote brand awareness. Assuming that as time progresses the knowledge of the product increases, it would be expected a slight increase on the demand for the 75cl bottle. Contrary, it would be expected a slight decrease on the demand for the 33cl bottle. Until the stabilization of the sales values, as the popularity of NAU increases it would be expected an increase on the demand for the 75cl bottle of NAU over the demand of the 33cl bottle of NAU. In fact, during the long run is expected a higher consumption of the 75cl bottle by loyal customers, since they would prefer the original version of NAU to share and the 33cl to enjoy the beer alone.

Taking in consideration the different aspects addressed to this dissertation, besides the clear importance of the new bottle for the company expansion in the market; it has also an

important role on stimulating the sales of the 75cl bottle of NAU in the medium and long run, consequently strengthening the NAU´s position in the Portuguese crafted beer market.

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