HOW DO CUSTOMERS REACT TO DYNAMIC PRICE VARIANCES? AN EMPIRICAL STUDY ON THE IMPACT OF PRICE VARIANCE CHARACTERISTICS AND THE MODERATING ROLE OF ECONOMIC BENEFIT ON CUSTOMER BEHAVIOURAL INTENTION.

Hang Thi Minh VU

PhD candidate, Aix Marseille Université, CERGAM, IAE d'Aix-en-Provence, France Email: minh-hang.vu-thi@iae-aix.com

Sylvie LLOSA

Professor, Aix Marseille Université, CERGAM, IAE d'Aix-en-Provence, France Email: sylvie.llosa@iae-aix.com

Lionel NICOD

Lecturer, Aix-Marseille Université, CERGAM, IUT d'Aix-Marseille, France Email : lionel.nicod@univ-amu.fr

Abstract:

Nowadays, most service firms around the world apply Revenue Management to maximize revenue, causing price differentiation. Given the price variance for the same customer over time, this study investigated how three price variance characteristics, including intensity, speed, and regularity, influence a particular customer reaction which is switching intention. Additionally, the moderating effect of customers' economic interest- type of price variance (a price increase or a price decrease) on switching intention was first revealed in this study. The research findings indicated that intensity has a positive impact, regularity has a negative impact while speed has no significant effect on switching intention. Among the three effects of intensity, speed, and regularity on switching intention, only the positive effect of intensity is significantly moderated by type of price variance and is stronger in the case of price increases. Relying on the direct effects of price variance characteristics on customers' switching intention, this study gives some managerial implications about effective pricing for sustainable financial development.

Keywords: Revenue Management; price increases; price decreases; price variance characteristics; switching intention

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1. Introduction

With the support of information technology, Revenue management (RM) has been an extremely prevalent pricing strategy in the service industry around the world. Most service firms such as airlines, hotels, restaurants, tourism apply RM to maximize revenue and profit. Despite the popularity of RM, there is no definition of RM adopted commonly, definitions vary according to a particular service sector perspective instead (Wang & Bowie, 2009). Based on previous definitions (e.g. Yeoman et al., 1999; Kimes & Wirtz, 2015), in this paper, we define RM as "the strategy to maximize revenue by variable pricing and allocating perishable and limited capacity according to customer, time, location and distribution channel". The term RM has some similar concepts such as Yield Management, Dynamic pricing, Personalised or Customised pricing (Desiraju & Shugan, 1999; Armstrong & Kotler, 2000; Wirtz, 2018, p. 47).

To maximize revenue with a relatively fixed capacity, RM applies the variable pricing which causes price differentiation. Most existing literature about RM deeply studied the price differentiation between different customers when one customer pays a different price compared with other customers (e.g., Kimes, 1994; Hanks et al., 2002; Ashworth & Mcshane, 2012), while the price differentiation for the same customer less draws attention of researchers. To enrich the knowledge of RM, this study especially looked into the price differences for the same customer. When prices vary over time due to the impact of market demand, one certain customer is often charged different prices for exactly the same service at different times. This price differentiation is quite commonplace for RM practices in which price changes dramatically, such as the airline, restaurant, hotel, or tourism industries. For example, one person works far from home and often purchases the same flight ticket to visit his family, but he is charged different prices on different days or at different times of a day. The research context in this study is that one customer already purchased a service, then repurchased the same service at a different price and encountered a price variance. The price he last paid could be used as a reference point to judge the current price (see Figure 1).

As investigating how customers react to price differentiation, the current study focused on a particular customer reaction which is switching intention. When price changes over time, we assume that customers seem not to be loyal to a certain service provider. Instead, they intend to switch among the available providers to get the most suitable price in the market. Switching intention is very likely a popular mechanism to cope with dynamic price variances, especially for price-sensitive customers.

Price

A price increase

P₂

A price decrease

P₁

A reference price

T₁

T₂

Time

Figure 1: Type of a price variance

A price differentiation could be either disadvantageous or advantageous to a customer. Most of the RM research centred on the disadvantageous price difference which is a higher price one customer must pay (e.g., Grewal et al., 2004; Weisstein et al; 2013; Ferguson & Ellen, 2013). This may be due to the fact that disadvantageous price differences appear to

cause more negative perception and responses for customers than advantageous differences do. As investigating the price differentiation for the same customer, this study took into account both disadvantageous differences- price increases and advantageous differences- price decreases (see Figure 1) in order to give a more comprehensive analysis of the effect of price variances resulting from the RM practice on customers' switching intention.

The objective of this study was to investigate how characteristics of price variances impact switching intention of customers. Three price variance characteristics investigated were intensity, speed, and regularity. Intensity is the size or magnitude of a price variance (for example, a price increase of 30%), speed refers to the temporal distance between two successive different prices (for example, 1 hour, 1 day, or 3 months) and regularity is the recurrence at the same point of time within a price cycle (for example, a regular price decrease happens every Monday, or every June, or every summer). Furthermore, whether these three impacts on switching intention are moderated by type of price variance, the representation of customers' economic interest, was first considered in this study.

2. Literature review

2.1 Customer reactions to price differences

As investigating customer reactions to price differences, previous studies specified that price fairness perception of customers is a key driver of their consequent behaviours and responses. Some researchers indicated that perceived price fairness has a positive effect on customers' willingness to buy (Homburg, Totzek, & Krämer, 2014), shopping intention (Campbell, 1999), and repurchase intention (Dai & Forsythe, 2010). In addition, perceived price fairness was proved to positively influence customer satisfaction and loyalty (Gumussoy & Koseoglu, 2016; Asadi et al., 2014). Other scholars revealed that perceived price unfairness leads to various negative reactions harmful for service suppliers. The type and level of severity of negative reactions depend on how unfair customers perceive their prices. It can be classified such negative reactions into three categories: 1-No action (when perceived price unfairness is less severe), 2-Self-protection intention (buying fewer products, asking for a refund, complaining to managers about prices); 3-Revenge intention (negative words of mouth, complaint to other customers, leaving the seller) (Dai & Forsythe, 2010; Malc et al., 2016). Altogether, the previous research specified various customer responses to price differences which are either direct outcomes or indirect outcomes of price fairness perception through customer satisfaction and loyalty.

In the current study, we proposed that when conducting a business transaction, since price is one of the greatest concerns of price-sensitive customers, price variance over time is very likely to dampen customer loyalty, trigger customers' switching intention to get the most suitable price in the market. Therefore, this study investigated the direct impact of price variances resulting from RM on customers' switching intention instead of considering indirect effects through price fairness perception or customer satisfaction.

2.2 Concept of switching intention

According to Wirtz et al. (2014), switching intent "represents the customer's self-reported likelihood of terminating a current service relationship". This is different from actual switching behaviour which is the "objectively observed act of switching to another provider" (Wirtz et al., 2014). In this paper, we examined switching intention rather than actual switching behaviour, and defined switching intention as: "customers' intent to temporarily or permanently switch to another alternative supplier after encountering price variances".

Different from the concept by Wirtz et al. (2014), switching intention proposed here is not

necessarily permanent, it could be temporary. This is because, in RM practices, customer perception and their reactions to price variances may be not stable and very likely to alter according to such price variances. A customer intends to switch to another supplier, however, in the future, he could come back and repurchase the service if detecting any suitable price from the current supplier. We suggest that whether switching intention is permanent or temporal depends on how unacceptable the price variance a customer encountered is.

2.3 Motive of switching intention

The customer reaction to price variances, switching intention, is proposed to be inspired by two motives: 1-to protect economic interest, 2-to solve psychological problems. When customers experience an unreasonable and unfair price variance, they may have the intention to switch the supplier in order to protect their financial interest, prevent the risk of suffering the potential losses from later disadvantageous price variances established by the current supplier. On the other hand, when customers perceive a price variance as unreasonable and unfair, price unfairness perception generates dissatisfaction (Oliver & Swan, 1989), or negative emotions which differ in magnitude and type such as guilt, disappointment, or anger (Xia, Monroe, & Cox, 2004). Consequently, customers probably switch to another supplier so as to reduce or eliminate the price unfairness, restore the fairness status or punish the supplier who causes the negative emotions for them, thereby addressing their psychological problems.

2.4 The impact of price differences on switching intention

Although Switching intention is one of the main constructs in the field of marketing and has received considerable attention of researchers, the number of studies on price-related determinants of Switching intention is still limited. Some researchers revealed that customers' Switching intention is influenced by prices such as high or low prices (Abdel Hamid Saleh et al., 2015; Zakiy, 2019; Goh et al., 2020), and price perception such as price fairness, pricingpolicy fairness (Keaveney, 1995; Antón et al., 2007a,b; dos Santos & Basso, 2012; Tiamiyu et al., 2020). Regarding price differences, there is only one study by dos Santos & Basso (2012) which examined the impact of a price difference on Switching intention through Trust and Negative emotion. Dos Santos & Basso (2012) took into consideration of a disadvantageous price difference between different customers when one is charged a higher price in comparison with the others. From the literature review, it is found out that how price variances for the same customer over time impact customers' switching intention has not been explored yet and remains unanswered. To fill this research gap, when looking into the price variance over time, this study investigated the direct impact of three price variance characteristics on switching intention, including intensity, speed, regularity of price variances.

Given the research context in this study, when a customer already purchased a service, then repurchased it at a different price, the price he last paid could be used as a reference point to judge the current price. A price variance (increase or decrease) is inherently a deviation from a reference price. The larger the price variance, the bigger the deviation from the reference price, according to Dual Entitlement Theory (Kahneman, Knetsch, & Thaler, 1986), the more unfair that price variance is perceived. It could be said that the size of a price is the main element constituting the reasonability and fairness of that price. A major price variance possibly destroys the fairness of the new price, consequently, strengthens switching intention of customers to find a more reasonable price. Hence, the first hypothesis stated that:

H1: Intensity of price variances has a positive effect on switching intention.

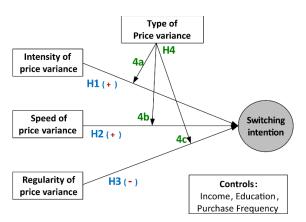


Figure 2: Research model

The second characteristic, speed of price variance may inhibit customers' adaptability to price fluctuation. Within an RM practice, the faster prices vary, the harder for customers to adapt to that RM practice. Additionally, when prices vary fast, the frequency of price variances is high, customers have to find the suitable price more often and their switching intention is likely to increase correspondingly. Previous studies by Haws & Bearden (2006) and Dai & Forsythe (2010) revealed that price differences within short periods are perceived as less fair than price differences after long periods. According to this finding, fast price variances, in other words, a rise in speed of price variances will reduce perceived price fairness, as a result, probably intensify switching intention. We therefore postulated that:

H2: Speed of price variances positively impacts switching intention.

When a price variance is regular, customers are able to predict it and decide in advance when to purchase so as to avoid losses from price increases or take advantage of price decreases. Thus, since customers are financially beneficial from regular price variances, regularity of price variances may lower their switching intention. Furthermore, if a price variance is regular, it is recurrent, occurs often, then gradually becomes a more normal event and customers are increasingly familiar with such price variance. Wirtz & Kimes (2007) proved that customers' familiarity with an RM practice helps improve their perceived price fairness toward that RM practice. The increase in price fairness perception could be the second reason why regularity lessens switching intention of customers. The next hypothesis, hence, proposed that:

H3: Regularity of price variances negatively impacts switching intention.

On the side of customers, a price increase is obviously a loss while a price decrease is a gain. According to Prospect Theory (Kahneman & Tversky, 1979), customers are more sensitive to losses than to gains with the same amount. This raises the question of whether customer reaction to price variances, switching intention, is moderated by Type of price variance, economic benefit of customers or not. Based on Prospect Theory, we proposed to test the following hypothesis:

H4: Type of price variance moderates **a**) the positive impact of intensity, **b**) the positive impact of speed, **c**) the negative impact of regularity on switching intention.

(**H4a**: The positive effect of Intensity on Switching intention is stronger in the case of price increases and weaker in the case of price decreases; **H4b**: the positive impact of speed on switching intention is stronger in the case of price increases than in the case of price decreases; **H4c**: the negative impact of regularity on switching intention is strengthened in the case of price decreases.)

3. Methodology

Research design. This study employed a between-subject experimental design which was 2(intensity) x 2(speed) x 2(regularity) x 2(type) design.

Measurement. Intensity of price variances was measured at two levels: minor-20% and major-70%. Speed also had 2 levels: slow-3 months and fast-1 day. Regularity of price variances, a categorical variable, comprised 2 items: irregularity (coded as 0) and regularity (coded as 1). Type of price variance refers to either a price increase (coded as 0) or a price decrease (coded as 1). The dependent variable, switching intention, was measured by a 4-item, 7-point scale with three items originating from the scale of Antón et al., (2007) and one item added by the authors (see Appendix A: Scale of Switching intention).

Control variables. Customers are different from each other in terms of Price sensitivity and Price consciousness, two factors which potentially confound the effect of price variances. Hence, Personal income (associated with price sensitivity) and Education level, Purchase frequency (associated with Price consciousness, e.g., the higher purchase frequency, the higher price consciousness) were controlled by integrating them into the regression model to isolate the effect of these customers' characteristics. Furthermore, according to Hanks et al. (2002), leisure passengers have to pay for their flight tickets, so they are more sensitive to prices than business customers. Thus, this survey was targeted on leisure passengers.

Data collection. This study conducted a scenario-based survey at an international airport in Vietnam, using 16 questionnaires corresponding to 16 scenarios of price variances. Each participant was randomly given a questionnaire which consists of a scenario and questions relating to the scenario to answer.

Surveyed scenarios. 16 hypothetical scenarios in the questionnaires described the hedonic consumption by a leisure customer. Information about the type of service remained stable in all scenarios to show that the price variance was due to purchasing at different times. Intensity, Speed, Regularity, and Type of the price variance were manipulated across scenarios to assess the effect on Switching intention of customers.

Research process and data analysis. Before running the main experiment, a manipulation check was carried out to test if the manipulation of independent variables (IVs) was successful or not. The total numbers of valid responses in the manipulation check and the main experiment were 100 and 1586, respectively. Regarding the manipulation check, there were 2 questionnaires designed to test the differences between 2 scenarios: scenario 1 described a major, fast, regular price increase; scenario 2 described a minor, slow, irregular price decrease. The research model was tested by SEM (Structural Equation Model), and the moderation effect of type of price variance was tested by using interaction terms between Type and other IVs. All IVs were standardized before calculating product terms in order to reduce multicollinearity among predictor variables. In addition to interaction terms, the model including 3 IVs (Intensity, Speed, Regularity) and the dependent variable- Switching intention was run across two groups (price increases and price decreases) to give further results about the moderation of Type of price variance.

4. Data analysis

Data collected from the manipulation check was analysed using 4 One-way ANOVAs. The 4 One-way ANOVAs were all significant, indicating that 2 levels of each IV were significantly different as perceived by respondents, and the 4 IVs thus were successfully manipulated (for more details, see Appendix B). Confirmatory Factor analysis (CFA) was

run, pointed out that the measurement model of switching intention reached very good model fit as evidenced by Normed $\chi^2=1.201$, p value = .273, GFI = 1.000, AGFI = 996, TLI = 1.000, CFI = 1.000, RMSEA = .011, SRMR = .0028 (1 covariance between 2 measurement errors, SI1 and SI3, was allowed to improve the model fit). According to Hair et al. (2010), the measurement model of switching intention met all absolute and relative fit indices. The reliability and convergent validity of scale of Switching intention were also confirmed by standardized factor loadings >.7 (SI1= .709; SI2= .886; SI3= .977; SI4= .895); Cronbach's α >.7 (α = .918); Composite Reliability > .7 (CR = .926); Average Variances Extracted > .5 (AVE = .761). Results from testing Structural Model in figure 3 showed that hypotheses H1, H3 and H4a were supported while H2, H3b, H3c were rejected (P values > .1). Squared Multiple Correlations R² = .235, specifying that the structural model explained 23.5% variance of switching intention. The structural model met all absolute and relative fit indices (Normed χ^2 = 1.295, p value = .093, GFI = .994, AGFI = .991, TLI = .997, CFI = .998, RMSEA = .014, SRMR = .0102). Results from the multigroup analysis was presented in Table 1.

Figure 3: Structural Model

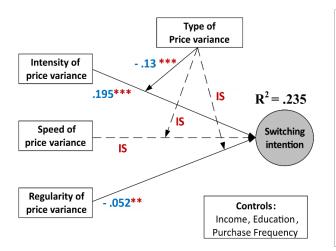


Figure 4: The moderation of Type on the impact of Intensity on switching intention

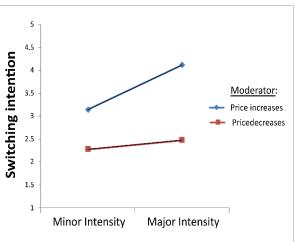


Table 1: Multigroup analysis

Path	β in group of Price increases	β in group of Price decreases
Intensity → Switching intention	.37 ***	.068 *
Speed → Switching intention	.009 IS	.038 IS
Regularity→ Switching intention	021 IS	091 **

(**Note**: * = p value < 0.1; ** = p value < 0.05; *** = p value < 0.001; IS= insignificant)

5. Research results and discussion

5.1 Research results

The impact of Intensity and moderating role of Type of price variance.

The first hypothesis H1 about the positive impact of intensity was supported (β = .195, p < .001), indicating that an increase in intensity of price variances will enhance switching intention of customers. Consider the moderation of Type of price variance on the impact of intensity. For price decreases, customers are very likely to favour larger price decreases over

smaller ones, major price decreases therefore may reduce switching intention. It is possible that intensity of price increases has a positive impact while intensity of price decreases negatively impacts switching intention. However, results from the multigroup analysis revealed that intensity of both price increases and decreases all has a positive influence on switching intention (see Table 1). Since the interaction Intensity*Type was significant (β = -.13, p < .001), hypothesis H4a was approved. Type moderates the positive effect of Intensity on Switching intention, this positive influence is weaker in the case of price decreases. This is probably because major price variances damage the fairness of a new price, strengthen switching intention, but economic interest from price decreases makes witching intention less severe and weaker.

The impact of Speed and moderating role of Type of price variance.

Speed of price variances was postulated to have a positive effect on switching intention, fast price variances possibly increase switching intention. Nevertheless, the insignificant hypothesis H2 (β = .022, p = .315) refuted this assumption. Besides, the interaction between speed and type of price variances was assumed to affect customers' economic benefit, then switching intention afterwards (for example, a price goes up rapidly then goes down slowly after a long period, this fact makes customers suffer a high price within such a long time before reaching the low price). Surprisingly, the interaction Speed*Type was also insignificant (β = .013, p = .557), hypothesis H4b was rejected. As indicated in Table 1, neither speed of price increases nor speed of price decreases has a direct effect on switching intention, but could feasibly have an indirect effect on this customer reaction, for example, through price fairness perception.

The impact of Regularity and moderating role of Type of price variance.

The third characteristic, regularity of price variances was proved to negatively impact switching intention (β = -.052, p < .05). Compared with intensity, regularity has a weaker impact on switching intention. We suggested that the negative impact of regularity on switching intention is strengthened in the case of price decreases since regular price decreases are possibly preferred to regular price increases, thereby reducing customers' switching intention more than regular price increases do. However, the negative impact of regularity is not moderated by type of price variances, hypothesis H4c was rejected as evidenced by the insignificant interaction Regularity*Type (β = -.034, p = .13). Furthermore, according to the multigroup analysis, the negative impact of Regularity on Switching intention is only significant in the case of price decreases.

5.2 Theoretical contributions

The review of existing pricing literature exposes the gap about the effect of price variances for the same customer over time on switching intention of customers. Hence, as taking into account the price variance for the same customer, the current study contributes to the pricing literature by providing some new insights about the impact of three price variance characteristics on Switching intention. In a study about the price difference between different customers, Grewal et al. (2004) specified that the size of a disadvantageous price difference has a negative impact on Repurchase intention. The current study supplies a more extensive finding, proving that Intensity of price variances, including both price increases and decreases, positively impacts Switching intention. Besides, the current study first shows that Speed of Price variances has no effect on Switching intention, while Regularity of price decreases helps reduce Switching intention. To enrich the RM literature, this study also contributes a new finding about the moderating role of Type of price variance, customers' economic benefit, on the influences of Intensity, Speed, and Regularity of price variances on Switching intention.

5.3 Managerial suggestions

From the findings on the direct impacts of price variance characteristics on switching intention in this study, it can be seen that price variances resulting from RM, on one side, help to maximize short term revenue of a firm, however, on the downside, cause a potential risk for the relationship with customers. Unreasonable price variances will stimulate switching intention of customers and dampen the relationship between suppliers and customers sensitive to prices. The RM practice where prices of goods or services vary over time has been quite commonplace around the world for many decades, and customers may have become familiar with this RM practice. However, according to the results of this study, the fact of whether customers accept price variances over time or switch suppliers depends on intensity and regularity of such price variances. Additionally, we further suggest that for the price-sensitive segment, dynamic price variances generate customer habit to check available prices in the market, then select the most suitable price rather than keep being loyal to a certain supplier whenever conducting a purchasing transaction.

In order to reduce switching intention and maintain relationships with customers, managers should pay special intention to intensity whenever setting up price variances. It is important for a supplier to keep prices vary within an acceptable and moderate range of prices. Additionally, since regular price decreases help lessen Switching intention, suppliers should provide regular price decreases instead of exceptional and unpredictable ones. If it is necessary to establish an unusual price decreases, service firms should announce information about the price decrease in advance and make this information transparent and accessible to everyone.

5.3 Limitations and future research

In the present study, we examined external switching intention which refers to the intent to switch to another supplier. This customer response to price variances could be prevalent when service firms have various competitors and low switching cost. In this case, customers have numerous options and additionally, their switching behaviour faces almost no barrier. Future research should explore more about internal switching intention/behaviour relating to the switch to another time or an alternative service of the same supplier. Such internal switching intention may be more common in the case of few providers available or high switching cost. Moreover, since each pricing strategy has its own upside and downside, future research should further investigate and contrast three pricing tactics: 1-fixed pricing, 2-RM with moderate price variances, and 3-RM with substantially dynamic price variances to figure out which pricing strategy is the most optimal and leads to greatest customer loyalty.

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Appendix A: Scale of Switching intention

Switching intention (adapted from the scale of Antón et al., (2007)	Four-item, seven-point scale (anchored by 1- completely disagree and 7- completely agree):
	SI1. Due to this price variance, you intend not to continue purchasing flight tickets from XYZ airline in next time.
	SI2. Due to this price variance, you consider switching to another airline in the next time.
	SI3. Due to this price variance, you intend to switch to another airline in the next time.
	SI4. Due to this price variance, it is highly likely that you will switch to another airline in the next time.

Appendix B: Results of four One-way ANOVA

	Analysis	Conclusion	
Type of price variance (a price increase VS. a price decrease)	ANOVA: p< .001, F(1, 98)= 956,49		
Intensity of price variance (20% VS. 70%)	Welch test: p<.001, F(1, 80.461)=114.975 Brown-Forsythe test: p<.001, F(1, 80.461)=114.975	There was a significant	
Speed of price variance (3 months VS. 1 day)	Welch test: p<.001, F(1,80.461)=152.569 Brown-Forsythe test: p<.001, F(1, 80.461)= 152.569	difference between 2 levels of each IV	
Regularity of price variance (Irregular VS. regular)	ANOVA: p< .001, F(1, 98)= 222,01		

Appendix C: Demographics of the main sample

Demographics		n	0/0
	Male	1011	63.7
Gender	Female	575	36.3
Guidei	TOTAL	1586	100.0
	17	3	.2
	18-23	246	15.5
	24-29	614	38.7
	30-35	412	26.0
Age	36-41	197	12.4
8-	42-47	74	4.7
	48-54	35	2.2
	55-60	5	.3
	TOTAL	1586	100.0
	1-2	359	22.6
	3-5	562	35.4
Purchase	6-10	392	24.7
frequency	11-19	97	6.1
requericy	≥ 20	176	11.1
	TOTAL	1586	100.0
	0-4.9	126	7.9
	5-9.9	402	25.3
Income	10-19.9	616	38.8
(million VNĐ)	20-49.9	309	19.5
(111111011 +1 (2)	≥ 50	133	8.4
	TOTAL	1586	100.0
	High school	104	6.6
	College	178	11.2
Education	Bachelor	1108	69.9
Education	Master	174	11.0
	Ph.D.	22	1.4
	TOTAL	1586	100.0
	Science and Technology	467	29.4
	Economic, business	642	40.5
	and management	042	40.3
	Social sciences, art and	85	5.4
	communication	0.5	
Speciality	Medical care, health	108	6.8
-	and sport		
	Education	97	6.1
	Another specialty	125	7.9
	Have no specialty yet	62	3.9
	TOTAL	1586	100.0