

# COMPETITION OR ENTRY DETERRENCE: THE CASE OF POLAND'S FIRST MVNO

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## Abstract

Mobile telecommunications market in Poland is divided equally between three operators. Somewhat unexpectedly a MVNO called “Heyah” began operating this March of 2004, offering pre-paid services only. Heyah’s aggressive marketing campaign targets teenagers but discourages other age groups. It stresses the negative conduct of incumbent operators towards consumers and independence of the entrant. The truth is that Heyah is owned by the incumbent who most actively lobbied against opening the market for MVNOs. In our paper we discuss two potential explanations of the above phenomenon. The first one is that the entry is a symptom of price war among incumbents. The second one is that it was preemptive move, designed to deter the entry of independent operator.

## 1. Introduction

Mobile telecommunications market in Poland is divided almost equally between three operators. It is characterized by relatively high tariffs, growing customer base, low penetration rate and growing profits of all three operators. This picture was recently disturbed. An apparent MVNO called „Heyah” began operating in March 2004, offering basic pre-paid service. Heyah’s entry was supported with aggressive marketing campaign targeted at young people with slang language and “cool” graffiti graphics and logo. It also attacked incumbent mobile operators, pointing out high prices, complicated tariff schedules, hidden charges and untruthful advertising. Heyah was distancing itself from the incumbents, making it look like an independent mobile operator or MVNO. The fact was that the owner of Heyah was PTC, one of the incumbent operators.

We will provide a detailed discussion of several questions relating to Heyah entry. What determined the timing: what factors determined the launch date? Why was Heyah launched as a new division of an incumbent operator PTC, competitive towards its existing pre-paid service “Tak-Tak”? Why has the marketing campaign targeted young people? What was the reaction of the other incumbent operators? Answering these questions will put us in a position to reach the main goal: explain the reason for the sudden change in the market structure.

We propose two alternative hypothesis. The first answer is the *competitive* hypothesis: the emergence of Heyah marks the beginning of a price war between the incumbent operators. The second explanation is *anti-competitive*: Heyah was created to deter entry of an independent MVNO or a new GSM operator. Both hypotheses will be discussed in detail in Section 3. Section 2 prepares ground for our analysis through the description of Poland’s mobile telecom market history, structure, conduct and performance. We conclude in Section 4.

## 2. Mobile Market in Poland

### 2.1. History and Ownership

There are three GSM operators in Poland. The same number of companies operates in the Czech Republic, Hungary, Lithuania and Estonia: countries much smaller than Poland but with similar GDP per capita. At the end of 2003 the penetration rate in Poland was 42%, much lower than the 90% rate in the Czech market or Hungary’s rate of over 70%<sup>1</sup>.

The first mobile company “Centertel” began to operate in 1992 by offering analogue services. It was set up as a joint venture between Polish Telekom (TP SA), which owned 66% shares and France Telekom Mobiles International with 34% share. In 2000 France Telekom together with Kulczyk Holding bought 35% shares of TP SA (this stake was increased to 47.5% in 2001 with 33,9 % belonging to France Telecom and 15,5% owned by Kulczyk Holding). These changes led to the creation of TP Group, which included Centertel.

Until 1996 Centertel was the only mobile operator in Poland. At that point, two licensees for GSM900MHz were awarded through a “beauty contest”. Centertel was excluded from participating but at the same time was awarded a DCS1800MHz licensee. “Polska Telefonía Cyfrowa” (PTC) and Polkomtel won the contest. The main shareholders of PTC are Deutsche Telekom, who directly and indirectly owns 49% of the shares, and Elektrim Telekomunikacja having almost 48% of the shares. 51% of Elektrim Telekomunikacja is owned by Polish

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<sup>1</sup> From “Cannibal Sector” at The Economist, 21.08.2003

company Elektrim 49% by Vivendi Universal. The remaining PTC shares are owned indirectly by Elektrim. This ownership structure with 3 large shareholders (Deutsche Telekom, Elektrim and Vivendi) without majority stake creates some tensions among them. Polkomtel's ownership structure is less concentrated but with a high stake of the Polish state. Polish companies KGHM<sup>2</sup> and PKN Orlen<sup>3</sup> own 19.61% shares each, PSE SA (100% Polish Treasury) has 16.05% shares, Węglokoks (100% Polish Treasury) owns 4% and Tele-energo<sup>4</sup> that is controlled by the state-owned PSE holds 1,01% of shares. In total, about 60% of shares are potentially controlled by the state Treasury. Remaining shares are split equally between Vodafone Americas Asia and TeleDanmark, each holding 19,61% of shares.

PTC and Polkomtel started to offer mobile services in 1996. Polkomtel operates under the brand "PLUS" and PTC's brand name is "ERA". From 1996 until 1998 consumers had a choice of two GSM and one analog operator (Centertel). Two years after the launch of GSM services by PTC and Polkomtel, Centertel began offering digital mobile services under the name "IDEA" using DCS1800. One year after that, in 1999, PTC and Polkomtel were awarded DCS licenses and Centertel received a GSM license. After this there were three operators, each holding symmetric licenses that allowed offering dual-band digital mobile services<sup>5</sup>. PTC and Polkomtel received a 2-year head start in digital services. Centertel, on the other hand, belongs to TP Group, which includes TPSA, the dominant PSTN operator with 85% share fixed telephony.

## 2.2. Market Structure

Mobile services market in Poland is growing rapidly: from 10 million costumers in 2001 to 18.7 million at the end of 2003. It is divided fairly equally between the three players (see Table 1). In terms of users, IDEA's market share is now 32.8% (up from 27.8% in 2001), while ERA's share dropped from 37.7% to 35.7% during that time. PLUS has a 31.5% market share (2.9% drop). During the first 3 months of 2004 ERA has increased the share to 36.9%, at the expense of both competitors. The share of post-paid costumers has decreased by 9% from 55.2% in 2001 to 46.1% in 2003, as illustrated in Table 2. This trend was continued in the first quarter of 2004. The post-paid segment accounted for 44.6% at the end of March (see Table 3). The number of pre-paid customers increased from 4,441,972 at the end of 2001 to 10,304,700 at the end of March 2004. Since the launch of the dual-band GSM/DCS network in 2000, Centertel's market share had been increasing steadily until 2003. It was happening mostly at the expense of PTC, since Polkomtel was concerned more with "quality" customers (in terms of ARPU) than with quantity.

## 2.3 Segmentation

ERA experienced the biggest growth in the pre-paid segment: 135% increase from 2001 to the first quarter of 2004. At the same time IDEA increased its pool of pre-paid users by "only" 101% and PLUS by 98% (see Table 3). This has led to an increase in ERA's share in this segment from 31.9% to 35.6% in the 2001-2003 period. At the same time IDEA and PLUS were losing their market share in the pre-paid segment. This tendency was continued in the first quarter of 2004,

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<sup>2</sup> Treasury: 44,28%; PKO BP S.A.: 5,38%; Deutsche Bank Trust Company Americas 5,06%; others: 45,28%

<sup>3</sup> Nafta Polska: 17,32% (100% Treasury), Treasury: 10,20%; The Bank of New York: 10,91%; Kulczyk Holding: 5,59%; Commercial Union OFE: 5,03%. Others: 50,95%.

<sup>4</sup> PSE S.A.: 84, 875%; ENEA S.A. 7,05%; TP S.A.: 2,48%

<sup>5</sup> At the end of 2000 year all incumbent GSM operators were awarded UMTS licensees

when Era increased the share in the segment by 2.6% while IDEA and PLUS lost almost 1.6% and 1.1%. In last five quarters IDEA's share decreased by 5.4% from its highest level of 37% at the end of 2002 while ERA's has risen by 6.3%. These numbers cover only the first two weeks after Heyah's entry.

At the same time IDEA strengthened its position in the post-paid segment. In the 2001-2003 period, IDEA's share in that segment increased from 21.8% to 32.4% while ERA's share decreased by from 42.7% to 35.8% and PLUS's position dropped from 35.5% to 31.8% (see Table 2). PLUS does not seem to be concerned with ERA's expansion in the pre-paid segment. PLUS is currently concentrated on the post-paid business customers segment. As the CEO says that:

“Our company's dominant position is in the business services market. According to Polkomtel's estimates, 50% of the largest, 42% of the medium, and 39% of the small businesses are our customers. In total, they generate 60% of the company's revenue. [...] 18% of the users are post-paid business customers.”

The above finds confirmation in the financial data. During the last two years Polkomtel has succeeded in achieving the highest ARPU in the market and at the same time it has been steadily losing their market share in terms of users. Polkomtel's ARPU in 2001 in the post-paid segment was 169 PLN, almost 22% higher than for ERA and 19% higher than for IDEA. The owner of PLUS brand also had the largest ARPU at the end of 2003 among Polish mobile operators, but the differences between operators have decreased. At the end of 2003 PLUS's ARPU was 145 PLN, almost 10% higher than for ERA and IDEA. In 2003 PLUS's revenue from sales was 8% lower than for ERA but the net profit was 22% higher (see Table 5).

Interestingly, the ARPU in the pre-paid segment has virtually equalized during the two-year period 2002-2003. In 2001 ERA had the highest ARPU of 38 PLN: 3% higher than for PLUS and almost 20% higher than for IDEA. At the end of 2003 the highest ARPU was 30 PLN (only 1 zł less than in 2001) for IDEA and 28.5 PLN for PLUS and ERA.

We are therefore observing an increasing specialization by the three incumbents. PLUS is solidifying its base customer group: post-paid business. This is reflected in the highest ARPU and the lowest number of customers in the industry. PTC is focusing on pre-paid services, with a recent spectacular introduction of a new brand “Heyah”. Although still lagging behind the two competitors, Centertel seems to be located in the center, with a balanced pool of pre-paid and post-paid non-business customers. Due to TP Group dominant position in PSTN market and possible convergence between mobile and fixed telecommunications, Centertel might be vitally interested in reaching young customers to whom it might offer integrated services in the near future. This creates a conflict, mostly with PTC's Heyah. The increased segmentation of the market between the firms may be a reflection of cost advantages. It may also be a strategic choice: product differentiation may help soften price competition in the future.

#### **2.4. Pre-paid Tariffs and the Introduction of Heyah**

We will now briefly describe prices offers available to customers before Heyah as well as new offers that appeared after it was launched. To become a pre-paid services user, one has to buy a

“starter kit”. These may include a handset. Buying a starter kit without a phone was equivalent to paying around 20 PLN for a SIM card activation<sup>6</sup>. After that the card has to be re-charged. There are various re-charge options, but in general a pre-paid user would have to pay between 18 and 30 PLN per month **at the minimum** to be able to make outgoing calls. The number would typically be disabled 6 months after the last re-charge. The per-minute and per-SMS tariffs, on the other hand, determine how quickly the card is “discharged”. Judging by the data on ARPU, majority of pre-paid customers re-charged their cards minimally, generating the ARPU of about 30 PLN (including call termination revenues). So even before Heyah was introduced, unit tariffs might have played a secondary role: the factor that had a larger impact on ARPU was the price of the minimal re-charge. The lowest tariff offers were “Dla każdego” by IDEA and “ERA Love” by ERA. PLUS offer “TEAM” was a bit more expensive but it included more added services (see Table 6).

PTC launched Heyah on March 13. The tariffs were set on competitive level especially for calls and SMS’s within Heyah network. Calls to Era, PTC’s main network, were treated as outside connection. Heyah did not sell starter kits with handsets; it was addressed to those who already had a mobile phone. The key advantage over the competitors’ tariffs, however, was 1 second billing from the first second, and a low price of the starter kit (20 PLN, all of which could be used for calls). The marketing campaign highlighted these features, but it went further. As mentioned in the Introduction, it targeted teenagers and alleged that all three existing service providers lacked good will and that their complicated tariffs were full of hidden charges. The campaign did not indicate that Heyah was a subsidiary of PTC. To the contrary: separate numbering, lower charges for connections within Heyah’s network and aggressive campaign created an impression that an independent company has entered the market. According to some press releases, Heyah was a huge success: within 3 months around 1 million people have tried it.

The introduction of Heyah was followed by a series of adjustments by the two competitors of PT, but it was also preceded by changes in the tariff structure (see Table 7). Polkomtel and Centertel both introduced new competitive pre-paid offers in end of January 2003. IDEA offered low prices but kept 1 minute billing. PLUS offer involved higher prices but offered more extra services and 1 second billing after the second minute. Events that followed Heyah suggest that Polkomtel and Centertel were caught by surprise. The surprise might not have been the new brand itself, but its initial success. There are some signs that even PTC was surprised by the popularity of Heyah: soon after the launch there was a shortage of starter kits. Expected or not, the introduction of Heyah forced adjustments in the competitors’ offers. Polkomtel answered in 10 days by introducing new plan named “Team 2”. Centertel answered 3 weeks after Heyah’s inception by introducing a starter kit with bonus re-charges (“Na Okrągło”). 10 days later Centertel lowered some tariffs but **not** the one with the structure closest to Heyah (“Dla Każdego”). A next wave of adjustments came at the end of June. At that time Polkomtel lowered the price for SMS and Centertel introduced an aggressive new tariff “Nowy POP”, which replaced all previous IDEA tariffs. This tariff not only followed Heyah’s 1-second billing, but was even simpler than Heyah (same flat rate to all networks). The last move so far was by Polkomtel, who lowered the tariffs temporarily (until August, 31) in a holiday promotion.

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<sup>6</sup> Such starter would normally cost about 40-50 PLN, including 20-30 PLN to be used for calling.

Undoubtedly, pre-paid offers have become more attractive in 2004. The most significant change, from the viewpoint of the user, was the switch to 1-second billing and the decrease in the price of a starter kit. This could indeed expand the customer base in that segment, especially for PTC and Centertel. The lowering of per-minute tariffs, however, should not be overemphasized. Even before the reductions, pre-paid customers were making very few outgoing calls: it seems that most of them re-charged their cards minimally. The new customers' demand will probably be even lower. In the short run, the ARPU on pre-paid customers is protected (should not decrease) as none of the operators has lowered the price of the minimal re-charge. In the long run, however, low pre-paid tariff may jeopardize the sales of post-paid services and have an adverse effect on overall ARPU.

### **3. Why Did PTC launch Heyah?**

#### **3.1. The Competitive Hypothesis**

Was Heyah simply one of the steps in the ongoing price war in the pre-paid segment? The facts that speak for this hypothesis are:

- Attractiveness of Heyah: best in the market billing cycle (1-second), cheapest starter kits, low per-minute charges
- Aggressive marketing campaign: negative towards other products available in the market.
- Reported poor pre-paid sales by competitors following the entry of Heyah
- Eventual aggressive copy-cat response by competitors: especially the introduction of Nowy Pop by IDEA
- Previous tariff adjustments by competitors: PLUS's 1-second billing after first minute, IDEA's simple tariff "Dla Każdego"

#### **3.2. The Anti-competitive Hypothesis**

Was Heyah established in order to discourage entry of a new operator, virtual or real? The arguments in favor of this hypothesis are also strong, but somewhat less obvious and they require a detailed presentation.

One of the key arguments in support of this hypothesis is **the timing of launch**. Heyah was introduced in March of 2004. As argued in the previous section, it is possible that Heyah was supposed to be the last move in a process of lowering prices for pre-paid services that had started in January 2004. This opens a possibility that this process started because of entry threat that was caused by uncertainty about changes in the Telecommunication Law that were supposed to occur in 2004. In September of 2003 the Ministry of Infrastructure announced that it would like to solve the problem of national roaming, which is prohibited in Poland. If roaming were allowed, then it would be possible to sell mobile services as a MVNO. 19 companies have already obtained licenses to operate as a virtual operator, but as long as national roaming is prohibited, they could not offer country-wide services. Also in March of 2004 OTRP (Office for Telecommunication and Post Regulation) opened a discussion on possible allocation of available frequencies in GSM 1800MHz band and UMTS frequencies. Available frequencies may be used in order to create new fourth operator or they may be divided between existing operators.

Entering market by an MVNO or a new GSM operator could adversely affect the performance of incumbent operators. All of them were declared to have Significant Market Power (SME) in the Poland's mobile market (December 2002) and the national market for interconnection. An SME



operator is obliged to grant interconnection to its network to any legally operating telecommunication operator in Poland, if the necessary technical conditions are fulfilled. Existing operators are aware of the threat of new entry. The following statement appears in PTC annual report:

“So far “national roaming” is prohibited by the terms of GSM licensees. However it is possible that in the future the scope of obligation of SMP operators will increase, which may include obligation to grant access to the network to MVNO’s. Such aggressive approach undertaken by the Regulator may be justified by weak competition among the existing operators”.

Another key argument is that Heyah was **launched as a new division** (or brand) of PTC, and according to the CEO, was supposed to compete with “Tak-Tak”, the existing pre-paid service of that company. If the purpose of Heyah was increased competition, it should have been introduced as a new tariff within Tak-Tak. The more expensive option of creating a new brand and divisionalization must have been chosen for a specific strategic purpose.

We will present a simple Example to illustrate that. We will use the Cournot model of oligopoly to show that even in a simple model with undifferentiated products, divisionalization can be used to deter entry. Interestingly, whenever it is profitable for an incumbent to create a new division in reaction to the threat of entry, such a move cannot be profitable when the threat does not exist.

### Example

Detering entry is possible even in the market where products are undifferentiated. Consider Cournot model with marginal cost  $c = 0$  and a linear demand function  $P(Q) = a - bQ$  and  $f$ - the fixed cost of operating a division. In the equilibrium with  $N$  firms (or competing divisions) each firm produces  $q_i = \frac{a}{b(N+1)}$  and the market price is  $P = \frac{a}{(N+1)}$

Single firm's profits are therefore  $\Pi_i^N = \frac{1}{b} \left( \frac{a}{N+1} \right)^2 - f$ .

Let us start with 3 incumbent firms that are not under the threat of entry (there are only three operator licenses). The firms can divisionalize if they find it profitable. In this situation none of the 3 firms has an incentive to divisionalize if:

$\Pi_i^3 > 2\Pi_i^4$ , i.e. if 2 divisions would make less profit in market with 4 divisions than a single division would in a market with 3 divisions.

This holds if:  $\frac{1}{b} \left( \frac{a}{4} \right)^2 - f > \frac{2}{b} \left( \frac{a}{5} \right)^2 - 2f$

or  $\frac{bf}{a^2} > \frac{7}{400}$

Suppose now that there is a threat of entry, but incumbents have a first-mover advantage. They can pre-empt new entry through divisionalization. A single incumbent firm would find such pre-emptive divisionalizing profitable if:

$$[E1] \quad \Pi_i^4 > 0$$

the entrant can make positive profit by entering if nobody divisionalizes (the threat of entry is real)

$$[E2] \quad \Pi_i^5 < 0$$

the entrant can make no profit by entering after one of the firms has divisionalized (divisionalization would deter entry)

$$[I1] \quad \Pi_i^4 < 2\Pi_i^5$$

divisionalizing which deters entry is profitable (detering entry is better than accommodating entry)

First, notice that the first and the last condition are equivalent. We are therefore left with only 2:

$$[E1] \equiv [I1] \quad \Pi_i^4 > 0 \quad \frac{bf}{a^2} < \frac{1}{25}$$

$$[E2] \quad \Pi_i^5 < 0 \quad \frac{bf}{a^2} > \frac{1}{36}$$

Therefore divisionalizing is profitable in this situation if  $\frac{1}{36} < \frac{bf}{a^2} < \frac{1}{25}$

which actually guarantees that divisionalization was not profitable when there was no threat of entry as  $\frac{1}{36} < \frac{bf}{a^2} < \frac{1}{25}$  implies  $\frac{bf}{a^2} > \frac{7}{400}$ .

In an industry, where parameters fall in the described region, we would observe 3 firms with single divisions, until the threat of entry becomes real. Then one of the firms would divisionalize.

□

In the above Example incumbent firms are identical. This implies that each of them has the same incentive to deter entry. The firms in the Polish mobile market, however, were not identical. Among other things, they differed with respect to the market share in the pre-paid segment. In order to see which firm had the highest incentive to deter entry, we have to look at a differentiated-product model. We will illustrate the situation in the market using a Hotelling type location model. This model allows firms to choose different ‘locations’ and concentrate on one of the segments. In this model entry deterrence occurs through “brand proliferation”: locating new products in free market niches, i.e. points of potential entry (see [1] for a discussion of this business strategy).

Figure 1 is a simple description of the situation in the Poland’s mobile telecommunications market before Heyah’s entry. Each firm is concentrated on one of the segments, which reflects the findings from the previous section: Polcomtel (PLUS) is focused on business services, PTC (ERA) leans towards pre-paid services, while Centertel (IDEA) is in the center with a balanced basket of customers. There is a market segment that is not fully covered: the lowest-volume callers. In this model firms compete in prices, but earn positive profits due to two facts. First, new entry is not allowed. Second, each consumer’s valuation is the highest for the product located closest to him, suited to his needs, and decreases with the distance between consumer and product location. As a result, price competition is less severe than in the Bertrand model.

Suppose that the new division of an incumbent firm would behave like an independent new entrant. Then the incentive to enter at a new location is the same for each of the incumbents as well as for the potential new entrant. A more realistic assumption, however, is that the competition within a firm (between two divisions) should be less severe than the competition between different firms. Then the incentive is the highest for the incumbent firm located closest to the point of potential new entry. In a differentiated-product model, the new entrant competes directly only with the neighboring firms. As Figure 1 indicates, the new entrant would face direct competition from only one brand: ERA. The other brand's prices and market shares are not affected directly, unless new entrant's offer is competitive enough to drive ERA out of the market. Otherwise, competition with other firms is only indirect: i.e. only through ERA's response (see [2] and [1], pp. 191-193, for a discussion of the price chain-linking effect). We can conclude that **ERA had the greatest incentive to enter** with a new brand: not only does it avoid harsh direct competition, but also softens the indirect competition with the neighboring IDEA.

Other arguments against the competitive hypothesis are:

- Lower tariffs should not have an adverse effect on ARPU in the pre-paid segment: as mentioned in the previous section, the price of minimal re-charge has not changed
- All players seemed surprised by Heyah's success: Initial weak response followed by chaotic moves by competition, shortage of Heyah starters
- Targeted campaign: Heyah was supposed to enter a niche, not to attract all pre-paid customers

#### 4. Conclusions

Our exercise does not allow to find a clear answer to the question: what was the true intention of PTC when Heyah was created? The arguments for both our hypotheses are strong. On the one hand, the threat of entry was real, ERA had the strongest incentive to deter it and probably did act upon it. On the other hand, Heyah stole business from IDEA, which resulted in their eventual strong reaction. One should remember, however, that we face an identification problem here. Entry deterrence through divisionalization may involve lowering tariffs in equilibrium: in the Cournot model it actually happens with certainty. We think that the true intention of PTC was entry deterrence. However, the incumbent operators probably overestimated the switching cost for pre-paid users. After IDEA realized that too many customers are switching to Heyah, they had to react. However, the adjustments in the tariff structure cannot be called a "price war" with a straight face. Pre-paid customers have benefited, but industry's ARPU is not likely to decrease. In fact, according to PTC's latest press release, the overall ARPU has increased in the second quarter of 2004 (details have not been revealed yet).

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## Figures and Tables

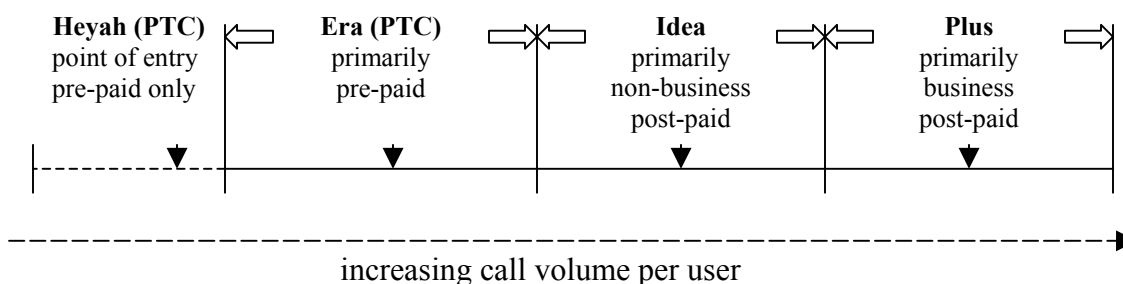


Figure 1. Locations in the product space.

Table 1. Poland's mobile telecommunications service users.

TOTAL USERS (in thousands)	2001		2002		2003		1Q2004	
plus	3,443	34,4%	4,550	32,7%	5,488	31,5%	5,740	30,9%
era	3,776	37,7%	4,868	35,0%	6,211	35,7%	6,857	36,9%
idea	2,785	27,8%	4,480	32,2%	5,700	32,8%	6,004	32,3%
total	10,004		13,898		17,399		18,601	

Table 2. Post-paid users and market shares.

POST-PAID USERS (in thousands)	2001		2002		2003		1Q2004	
plus	1,961	35,5%	2,241	34,4%	2 546 000	31,8%	2 630 200	31,7%
era	2,356	42,7%	2,530	38,9%	2 867 208	35,8%	2 916 000	35,1%
idea	1,203	21,8%	1,740	26,7%	2 600 002	32,4%	2 750 000	33,1%
total post-paid	5,520		6,512		8 013 210		8 296 200	
% of total users	55,2%		46,9%		46,1%		44,6%	

Table 3. Pre-paid users and market shares.

PRE-PAID USERS (in thousands)	2001		2002		2003		1Q2004	
Plus	1,483	33,4%	2,310	31,3%	2,942	31,3%	3,109	30,2%
Era	1,419	31,9%	2,337	31,7%	3,344	35,6%	3,941	38,2%
Idea	1,540	34,7%	2,728	37,0%	3,100	33,0%	3,254	31,6%
Total pre-paid	4,442		7,375		9,386		10,305	
% of total users	44,4%		53,1%		53,9%		55,4%	

Table 4. Changes in number of users

	2002/01	2003/02	1q2004/03
<b>Total</b>			
plus	32,1%	20,6%	4,6%
era	28,9%	27,6%	10,4%
idea	60,8%	27,2%	5,3%
total	38,9%	25,2%	6,9%
Post-paid			
plus	14,3%	13,6%	3,3%
era	7,4%	13,3%	1,7%
idea	44,7%	49,4%	5,8%
total	18,0%	23,1%	3,5%
Pre-paid users			
plus	55,8%	27,4%	5,7%
era	64,7%	43,1%	17,9%
idea	77,1%	13,6%	5,0%
total	66,0%	27,3%	9,8%

Table 5. ARPU in Polish Złoty (PLN).

blended	2001	2002	2003
plus	116,5	97,7	83,5
era	101,4	90,5	77,9
idea	86,0	73,0	71,0
post-paid	2001	2002	2003
plus	169,1	155,2	145,2
era	132,3	133,7	130,0
idea	140,0	138,0	130,0
pre-paid	2001	2002	2003
plus	36,9	32,9	28,4
era	38,0	34,1	28,6
idea	31,0	31,0	30,0

Table 6. Lowest pre-paid tariffs in March 2004.

	1 minute call		SMS		Billing (s)	Starter kits
	Inside	outside	inside	outside		
<b>Centertel</b>						
<i>Dla każdego</i>	0,8	1	0,34	0,34	60	25

<b>PTC</b>						
<i>Era Love</i>	1,21	1,21	0,48	0,48	60,30,...	25,60,80
(after 2 <sup>nd</sup> min)	0,84	0,84	0,29	0,29		
<i>Razem</i>	0,84	2,31	0,35	0,6		25,60,80
<b>Polkomtel</b>						
<i>Team</i>					60	
mon-fr (8-18)	1,91	1,91	0,55	0,55		
mon-thu (18-20)	0,96	0,96	0,55	0,55		
Others	0,48	0,96	0,55	0,55		
<i>1 sekunda</i>	1,20	1,20	0,48	0,48	60,1,1,...	
<b>Heyah (PTC)</b>	<b>0,68</b>	<b>0,98</b>	<b>0,18</b>	<b>0,28</b>	<b>1</b>	<b>20</b>

Table 7. Adjustments in the tariff structure.

When	Who	What	Prices	Billing
23.01.2004	Centertel	New : Dla każdego	Calls: 0,80 (in)/ 1 (out) SMS: 0,34	60
26.01.2004	Polkomtel	New: Simplus 1 sekunda	Calls: 1,20 (all) /0,80 (S) SMS: 0,48/0,29	60/1
<b>13.03.2004</b>	<b>PTC</b>	<b>Heyah</b>	<b>Calls: 0,68 (in)/ 0,98 (out)</b> <b>SMS: 0,18, 0,28</b>	<b>1</b>
23.03.2004	Polkomtel	New plan : Team 2	Calls: 1,50-0,90-0,60 (1,00-0,60-0,40) SMS: 0,29 18 (Mini zestaw)	60/1
05.04.2004	Centertel	Starter "na okragło"	20	
15.04.2004	Centertel	Change: Zrób to sam		1
20.06.2004	Polkomtel	Change : Team 2	SMS : 0,15	
21.06.2004	Centertel	New Plan : Nowy POP	Calls: 0,80 SMS: 0,20	1
05.07.2004	Polkomtel	Team2 Wakacje	Calls: 0,90-0,90-0,60 (0,60-0,60-0,40) SMS: 0,15 18 (Mini zestaw)	1