

The adoption of mobile telephony among Norwegian teens, May 2000¹

By

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Abstract

This paper is an examination of the ownership and use of mobile telephones among teens in Norway. The analysis provides several interesting dimensions to the use of the mobile telephone among teens. The data indicates that the majority of mid and older teens have already adopted a mobile telephone and that the adoption rates are increasing among the younger teens. It also shows that young girls are quicker to own mobile telephones than young boys but that the boys have multiple subscriptions – and probably handsets – significantly more often than the girls. Finally, the data shows that the teens use about 6 – 8% of their monthly “income” on mobile telephony. The analysis is based on a telephone survey of 1014 teens carried out in May of 2000. The respondents were between 13 and 20 years old.

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1 Introduction

This report examines teens' use of mobile telephony. It is one in a series of analyses done by Telenor R&D on the social impacts of mobile telephones. There has been a particular focus on teens and their use of these devices. Since it is a portion of society, in which there has been rapid changes in the access to and use of the technology. Thus, one is afforded insight into the mechanisms associated with the adoption of technology. In addition, the very adoption of the technology focuses attention on social institutions and the adaptations forced on them by the new technologies.

In general, the data shows that the golden age of mobile telephone adoption appears to have been between 1998 and 1999. It was during this period that the vast majority of teens adopted the device. Since that time, the trend has spread downward towards lower age groups. The material here also indicates that it is the young girls that are somewhat quicker in their adoption of the device, while it is the boys that adopt multiple subscriptions. Finally, I will examine several economic aspects of mobile telephony.

The data was collected in May of 2000. The sample contains 1014 persons who were interviewed via the telephone.² The respondents were those who were between 13 and 20 years old. The age distribution shows that the oldest teens were somewhat under-represented in the analysis. This group is the most difficult to reach since many of them have moved away from the home of their parents and are not as easily available via the telephone.

There was a near 50/50 gender distribution in the sample. Not unexpectedly, the majority of the interviewees were students. Slightly more than 90% said that they were currently in school. About 8% indicated that they worked either full time or part time. About 41% of the students indicated that they had some type of part time job. The data shows that 45% of the interviewees lived in the larger cities, 31% lived in the smaller cities and the remaining 24% lived in rural areas.

² Interviewees were not called via their mobile telephones. The cost of interviewing persons via mobile telephones is prohibitive in this case.

2 Ownership

2.1 General ownership

The data shows that 74,3% of the teens in aged 13 to 20 years, owned a mobile telephone. An additional 9,2 % indicated that they could borrow a mobile telephone on either a regular or an irregular basis. Finally, 16,5% of the teens said that they had no access to a mobile telephone.

Looking further at the ownership material distributed by age, one can see in table 1 that about half of the 13 year olds reported that they owned a mobile telephone. This rate of penetration rose to over 63% of the 14 year olds and about 80% of the 16 to 19 year olds. Similarly, about one third of the 13 year olds said that they had no access. This fell to about 25% of the 14 year olds and finally approximately 8 to 12% of those who were over 15 years of age. The ability to loan a mobile telephone is at its highest for the youngest respondents and falls as the respondents move into their mid-teen years.

| Age | Own | Borrow regularly | Borrow on occasion | No access |
|-----|------|------------------|--------------------|-----------|
| 13 | 51,7 | 2,6 | 11,3 | 34,4 |
| 14 | 62,6 | 4,7 | 7,0 | 25,7 |
| 15 | 80,5 | 4,3 | 3,0 | 12,2 |
| 16 | 80,2 | 2,3 | 3,8 | 13,7 |
| 17 | 86,6 | 3,0 | 2,2 | 8,2 |
| 18 | 79,1 | 8,5 | 3,9 | 8,5 |
| 19 | 81,8 | 2,3 | 5,7 | 10,2 |
| 20 | 89,1 | 2,2 | 2,2 | 6,5 |

Table 1: Percent distribution of mobile telephone ownership by age, n = 1014

An analysis of this material indicates that the penetration of mobile telephony reaches a type of plateau early in the mid-teen years. In addition, the percent of persons who can borrow a mobile telephone is quite low. This points to the idea that the device is increasingly seen as personal rather than as something owned collectively by, for example a family.

Looking at penetration of mobile telephony in an historical context, albeit a short one, one can see in table two that in the period from 1998 to 1999 was a type of golden age when considering the adoption of the mobile telephone by teens. In 1988, the adoption curve seemed to indicate that adoption rose as the teens moved into the mid teen years and temporarily stagnated there. After the teens began to have more of their own income and as they moved away from home, the adoption rate grew rapidly to about 70% of the teens.

By November of 1999, the data showed a different profile of adoption. By this time, the adoption rate for the 20 year olds was about the same as that shown in the previous analysis. However, in the mean time, there had been a general transition in the mid-teen years. Rather than having about half the penetration of the 20 year olds, as in 1998, this group was about equal to the 20 year olds in this adoption rates. The picture in May of 2000 was roughly the same as in the previous winter. The profile of the curve was quite similar. The major difference was that penetration had risen

from about $\frac{2}{3}$ of the teens in November 1999 to about $\frac{3}{4}$ in May the following spring. The major increase in owners comes among the youngest group.

| Age | Oct. 1998 | Nov. 1999 | May 2000 |
|-----|-----------|-----------|----------|
| 13 | 4,8 | 38,9 | 51,7 |
| 14 | 10,6 | 54,1 | 62,6 |
| 15 | 23,6 | 68,3 | 80,5 |
| 16 | 32,5 | 75,5 | 80,2 |
| 17 | 32,5 | 72,5 | 86,6 |
| 18 | 38,3 | 73,1 | 79,1 |
| 19 | 57,8 | 82,1 | 81,8 |
| 20 | 71,2 | 82,5 | 89,1 |

Table 2: Percent distribution of 13 – 15 year old teens who own a mobile telephone, 1998 – 2000. n = 4000

2.2 Gender and the ownership of mobile telephones

Perhaps one of the most interesting findings in the data comes from the analysis of ownership by gender. Up to the time of this analysis, material had shown that the adoption rates of mobile telephones had generally been higher for the boys than those for the girls. In the material from November 1999 there were, for the first time, no statistically significant differences between the genders. In the current analysis, there is again a statistically significant difference between the males and the females. However, this time the analysis shows that it is the girls who have higher adoption rates. The data in table three shows that while slightly more than 70% of the boys report owning a mobile telephone more than 78% of the girls report the same thing. Among those without a mobile telephone one finds the opposite, i.e. almost 20% of the boys report no access while only 13,3% of the girls say the same thing.³

| | Own | Borrow regularly | Borrow on occasion | No access |
|-------|------|------------------|--------------------|-----------|
| Boys | 70,5 | 4,1 | 5,6 | 19,8 |
| Girls | 78,1 | 3,8 | 4,8 | 13,3 |

Table 3: Percent distribution of mobile telephone ownership by gender for Norwegian teens, n = 1014

Looking further, the material indicates that it is particularly among the younger teens that differences between the genders are the most obvious. Looking at the material presented in table four, one can see that while 56,3 percent of the 14-year-old boys say that they own a mobile telephone, just under 70% of the girls reported owning one. This is a 13% difference. The same general situation can be found among the 17 year olds. The boys seem to come into their own only among the oldest groups. It is only among the 19 and 20 year olds that there is a higher adoption rate among the boys.

³ This is a significant difference $f(1,1012) = 8,80$, sig. = 0,003.

| Age | Boys | Girls |
|-----|------|-------|
| 13 | 48,1 | 55,6 |
| 14 | 56,3 | 69,0 |
| 15 | 75,3 | 85,5 |
| 16 | 77,5 | 83,3 |
| 17 | 80,3 | 93,7 |
| 18 | 76,9 | 81,3 |
| 19 | 83,3 | 80,8 |
| 20 | 92,3 | 85,0 |

Table 4: Percent ownership of mobile telephones by age and gender, n = 1014.

2.3 Ownership of multiple devices

The material discussed up to this point looks at ownership of mobile telephony with the sense that each individual has only one device/subscription. Focus group material however, indicates that some teens have more than one mobile telephone/subscription. In order to investigate this we included a question in the current questionnaire asking how many mobile telephone subscriptions the individual currently had.

In the May 2000 analysis, teens were asked how many subscriptions they owned. In general, slightly more than 13% noted that they had more than one subscription. Looking at this by the gender of the respondent, one finds that 17,5% of the boys had two or more subscriptions while only 9,5% of the girls reported the same thing. Indeed, 3,3% of the boys reported have three or more subscriptions while only 1,5% of the girls reported the same thing. This is a significant difference⁴

⁴ $f(1,808) = 10,2$, sig. < 0,001

3 Economic aspects of mobile telephone use

Now I turn to the economic aspects of mobile telephony. There are three aspects considered here. The first is the type of payment system used, the second is who pays for the teen's use of the mobile telephone and finally I examine the portion of a teen's "income" that goes to mobile telephony.

3.1 Type of payment

In general, there are two payment types available to the teens, prepaid and the more traditional payment for services already rendered. In general, almost 79% of the respondents indicated that they use prepaid cards. The remaining 19% of the teens indicated that they use the "traditional" for of payment.

Looking at this according to one's age, the vast majority of those who are in their young and mid teen years used prepaid subscriptions. As they moved into the end of the teen-aged years, they were more prone to use the "traditional" forms of payment. Among the youngest teens only 14,1% had traditional subscriptions where almost 83% had prepaid (see table 5). When one looks at the other end of the age scale it approaches a 50/50 split between the two forms of payment.

The high percent of prepaid subscriptions is a reflection of the teens' and their parents' concern with the potential economic consequences of unrestricted use. Thus, prepaid subscriptions are seen as a way to guard against this problem. This type of subscription is, however, expensive when compared to traditional subscriptions. Thus, as the teens gain their own income – generally as they move into their late teen years – and move into more active social life, there is an economic motive for them to move form prepaid subscriptions to traditional subscriptions.

| Age | Prepaid | Traditional | Don't know |
|-----|---------|-------------|------------|
| 13 | 82,8 | 14,1 | 2,0 |
| 14 | 84,8 | 12,8 | 2,4 |
| 15 | 88,1 | 11,2 | 0,7 |
| 16 | 81,3 | 16,1 | 2,7 |
| 17 | 80,3 | 18,0 | 1,6 |
| 18 | 73,5 | 24,8 | 0,9 |
| 19 | 63,3 | 34,2 | 2,5 |
| 20 | 52,4 | 45,2 | 2,4 |

Table 5: Percent distribution of subscription type by age, n = 1014

The data also shows that a larger percentage of girls report using prepaid subscriptions when compared to the boys. Where 74% of the boys report using prepaid subscriptions, more than 83% of the mobile telephone using girls said the same.

3.2 Who pays

The data shows that it is only among the youngest teens that there are significant numbers of individuals who receive money for their telephone use. Among the 13 year olds in this analysis, 37,4% indicated that others (most likely parents) paid for all of the respondent's mobile telephone use (see table six). In addition, almost 20% of the 13 year olds said that they had a form of shared payment. By way of contrast,

the distribution among the oldest teens shows that more than 85% indicate that they pay for all of their use.

| Age | Pay all | Pay most | Pay a little | Others pay |
|------|---------|----------|--------------|------------|
| 13,0 | 43,4 | 6,1 | 13,1 | 37,4 |
| 14,0 | 40,2 | 17,3 | 13,4 | 29,1 |
| 15,0 | 63,9 | 6,9 | 10,4 | 18,8 |
| 16,0 | 67,3 | 4,4 | 8,0 | 19,5 |
| 17,0 | 61,8 | 8,9 | 8,1 | 19,5 |
| 18,0 | 76,3 | 3,4 | 1,7 | 16,1 |
| 19,0 | 84,8 | 1,3 | 1,3 | 12,7 |
| 20,0 | 88,4 | 2,3 | 2,3 | 4,7 |

Table 6: Percent distribution of teens reporting various types of payment for their use of mobile telephones by age, n = 1014.

The data indicates that systems of sharing payment are the least common approach to payment. Rather, it shows that either the teens receive “full coverage” from others or they pay for all of their use.

3.3 Teen’s use of money for mobile telephony

The final issue is the general use of money for mobile telephony. In general, the teens reported a median use of 150 kr per month.⁵ The data also indicates that the median “income” of the teens was 2501 kr per month.⁶

Both of these statistics are somewhat difficult to deal with so it is important that they be treated with care. The mobile telephone use statistic is based on the teen’s memory of consumption. Given the common use of prepaid subscriptions that come in metrics of 150, 200, 250 kr etc, the teens could probably remember about how many prepaid “cards” they had used during a typical month. Nonetheless, these are subjective estimates and they are subject to the keenness of one’s memory and also susceptible one making assertions with regard to their social activity. The “income” statistic also needs a certain amount of careful handling. Some teens work while others receive a stipend from their parents. In addition the stipend that comes from parents may, or may not, include the monies to be used for the purchase of clothing etc. Thus, the data shows a large standard deviation around the mean.

Given all of these caveats, the data shows that the median telephone use constitutes 6% of the median income.⁷ Thus, the teens indicated that a relative moderate portion

⁵ The mean was 231 kr. per month. In this case, however, it is perhaps better to rely on the median since there were about a dozen respondents that reported consumption of over 1500 kr per month. While these may be realistic assertions, this small group of about 1% of the population causes the mean to be skewed. Indeed the kurtosis statistic of 99,5 indicates that there is a strong clustering of around the mean but that there are abnormally long tails to the distribution. Looking further, the distribution also has a positive skew indicating that one would not expect to have the long “positive” tail in the distribution. Overall, this points to the benefits of using the median statistic that is more stable in such cases.

⁶ The median statistic here is 2738 and the standard deviation is 1426. The skewedness and kurtosis statistics are more stable for the income variable than for the mobile telephone use variable. This may indicate that there is less prestige associated in reporting high income than in reporting high mobile telephone use.

⁷ If the mean statistics are use, mobile telephone use constitutes about 8,5% of income.

of their monthly resources go to the use of the mobile telephone. When these data were examined by gender, there were no significant gender based differences.

4 Conclusion

In summary, there are several interesting things that have arisen from the analysis of this data. These points include shifts in the adoption rates, the adoption of the mobile telephone by girls, the adoption of multiple devices by boys and the moderate use of money.

The first point is that younger teens are adopting mobile telephones. Where data from the late 1990s shows that those in their mid-teens were moderate consumers of mobile telephony, the data indicates that there are no real differences in the rates of consumption for those in their mid and their late teens. In addition, the data indicates that there is a certain growth in adoption for the youngest teens. This, however, is not as pronounced as the earlier adoption by the mid-teens.

A somewhat surprising result is the degree to which the girls have embraced the technology. Through the late 1990s, it has been the boys who have been first to purchase mobile telephones. The data examined here, however indicates that the situation has changed. While a considerable number of boys are owners, it is the younger girls who seem to be the quickest to adopt the device. At the same time, there is also a gendered dimension to the ownership of multiple subscriptions. The data has revealed that there are a significant number of teens that have more than one subscription. Further, the data shows that boys are significantly more likely than girls to have two or more subscriptions.

The picture that emerges is that of girls becoming mobile telephone users at a relatively young age and boys having several subscriptions (with the accompanying terminals). Other research shows that women, and girls, often function as hubs in social networks while boys express interest for the economic aspects of telephony as well as the technologies in themselves have an attraction.⁸ In the context of the information presented here, one is prompted to suggest that the adoption of a single mobile telephone by girls points to the idea that it is a device used to maintain a social network. One can also suggest that the boys' interest in several – perhaps cutting edge – devices points to a type of fascination in the technology itself as well as a concern for the economic aspects of mobile telephone use.⁹ Thus, the justifications are not pointed towards direct social interaction as with the girls. From the perspective of the girls, the data seems to indicate that social definition of the mobile telephone is going over in a new phase. That is, at least in the eyes of the girls, the device is not measured in terms of its technical fascination so much as in terms of its potential for facilitating social interaction.

Looking again at the general findings, the data indicates that mobile telephony consumes only moderate portions of the teen's total resources. The analysis indicates that somewhere around 6 – 8% of the money available to a teen is used for mobile telephony.

⁸ See Ling and Helmersen 2000 for an examination of these issues.

⁹ They say, with justification, that it is cheaper to call from, for example, a Telenor subscription to another Telenor subscription.

5 References

Ling, R and Helmersen, P. 1999. *It must be necessary, it has to cover a need*: The adoption of mobile telephony among pre-adolescents and adolescents. Kjeller, Telenor FoU. (FoU R 9/2000).