



# Service Bundling as Pricing Strategy for Mobile Services: Scandinavian Perspective

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## Abstract

At the moment one of the most potential and interesting pricing method for mobile services business is a bundle pricing strategy. According to prior studies the service bundling is preferred especially by customers of mobile and electronic services. This study is exploratory and it has provided an empirical market specific evidence and support for mobile service providers to apply the service bundling strategy in Finnish and Scandinavian markets. According to our findings, customers<sup>[1]</sup> in Finland preferred to acquire mobile services in bundles rather than separately. It was also discovered that customers who were most experienced mobile Internet users or Internet users through mobile phone as modem, were the most anxious to acquire mobile services in bundles. While customers with less experience from these service channels were more often better off in acquiring mobile services separately; even though it wouldn't be economically justified. It was also found that a mobile service provider should provide service bundles of three to five services (depending on the customer segment).

**Key words:** pricing strategy, mobile services, service bundling

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<sup>[1]</sup> customer=subscriber

## Introduction

At the moment, mobile services business is in turning point, basic low data and low speed services are going to be replaced by data intensive and high speed new generation services. Revenue and pricing models are however lagging behind as no pricing method supporting adoption and usage of these new generation services exist. New innovative pricing methods are therefore highly needed. And main incentive for studying the bundle pricing strategy and its applicability for mobile services business is customers' clear preference for paying

from bundles of services rather than from multiple separate services. In the latter kind of micro-payments strategy the strategic role of pricing as a competitive tool would be also restricted. Thus, to enhance usage of pricing as a strategic tool for introducing new mobile services we have conducted an empirical study on how customers of mobile services perceive bundling of mobile services.

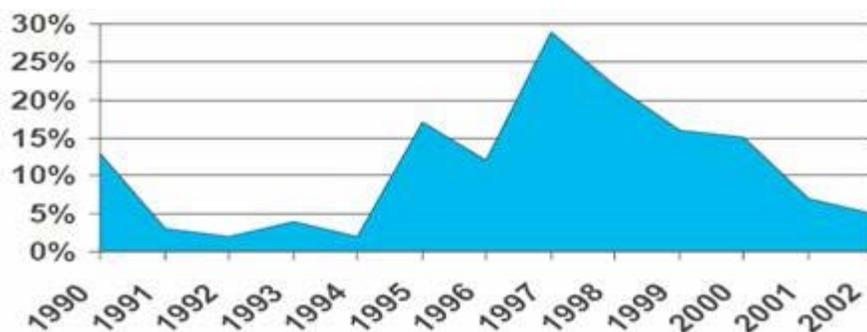
We concentrated on studying Finnish mobile service markets in order to provide market specific knowledge on mobile service customers and their perceptions towards different pricing strategies. Justification for this market specific study is the fact that Scandinavian and Finnish mobile service markets differ clearly from other market areas in technological, business infrastructural aspects, and in a phase of adoption of mobile services. Therefore, it is expected that revenue and pricing models must be tailored market specifically depending on the phase of a market's mobile service business.

In mobile services industry pricing practices are thus yet to be defined (Fishburn & Odlyzko 1997). Pricing is open to debate and no established pricing practices exist in the field. But one thing is certain; the price plays an uppermost role in the success of new mobile services. For example Kollmann (2000) found that customers of telecommunication, who are willing to swap providers, will make their decision on price first. Innovation management of telecommunication products is thus said to be a question of pricing. Features and development of the wireless business makes it necessary to develop pricing methods that best support the usage and diffusion of new services.

On a common marketing tactic, bundling is defined by Guiltinan (1987) as "the practice of marketing in which two or more products or services are offered in a single package for a special price" (Yadav & Monroe 1993). Studies of bundling have examined the intent to purchase through determining what to bundle together and when bundling is a prudent business strategy (e.g. Ansari et al. 1996; Venkatesh & Mahajan 1993). The literature has also addressed optimal pricing and framing of consumer preferences for bundles (Fishburn & Odlyzko 1997; Strouse 1999).

## Structure and supply of mobile services in Scandinavia

During the last few years, the hype around telecommunications industry has vanished. The huge fees paid for 3G licences in Europe have brought carriers into trouble as the launching new-generation 3G services has been delayed. Also many content providers, once highly overvalued in the market, are having hard times when fighting for survival. The whole ICT-industry can now be studied in a realistic way, as the market again has its "feet on the ground". The industry is also facing new challenges as the old technologies and old technology using services are to be replaced with new generation 2.5G or 3G services. But the new services have only recently started to obtain more popularity and revenues have started to increase with higher phase. Therefore, it is expected that mobile communication business will face new spur in the near future, at least in Asia and Scandinavia.





**Figure 1. Market growth of mobile communication in Finland (Televiestintätilasto 2003)**

In Scandinavia, Finland, and in other market areas, the main characteristic of mobile services business is a need of close co-operation of different parties to produce high quality services (Nordström 2001). In mobile environment the providers of content and applications contribute value to services, but rely on the network carriers to charge the end-user (Jonason 2002). Thus, carriers are to be more or less service integrators in mobile commerce as seen in Figure below in which the content providers bring the richness while the carriers bring the reach (Jonason&Eliasson 2001). By providing technical capabilities and environment for the use of service and content providers, the carriers play important roles but are not the value providers perceived by customers (Mylonopoulos et al. 2002).



**Figure 2. Carrier as a service integrator in Mobile Environment (Mylonopoulos et al. 2002)**

The Finnish mobile cluster is characterized by the dominance of Nokia. The role of the world's largest mobile phone manufacturer can naturally not be bypassed. Still, we try to focus on other factors in the cluster development than the presence of a single dominant firm. This aims at creating a balanced mobile cluster, including strong international manufacturers, carriers, as well as application developers. Growth of the mobile cluster in Finland has slowed down after the intense growth at the end of 90's. But the slowing is not faced by shrinking business but rather by technological evolution in which mobile services business is moving to a new level: from services using 2G technologies to 3G services (Figure 3). This evolution in mobile service environment means that new services will contain significantly more data, which is also needed to transmit to customers' mobile devices. Thus also pricing is faced with new challenges as pricing methods in use at the moment are not applicable for data intensive new generation mobile services.



### **Figure 3. Evolution of mobile networks (Helin & MediaLab 2003)**

Even though total growth of mobile business has slowed in Finland during the past few years, the business is showing high potentiality for new growth phase in the near future. Especially new generation value-added content services have started to receive increasing growth rates (Figure 4). It is forecasted that the 2.5G content services are going to reach and overtake the basic SMS-content revenues by 2005. To reach the forecasted growths in these new data intensive service businesses carriers are forced to launch new pricing models to enable and support the usage of these services.



\* Content service = content-to-person (not person-to-person) service excluding GPRS data charges.

### **Figure 4. Mobile content market in Finland (Helin & MediaLab 2003)**

Asian markets are forerunners in content services markets and are much ahead of rest of the world in mobile content services productions, market penetration, and revenue models. Europe and Scandinavia are coming just after Asia but are still lacking marketing and business models that would more efficiently support the adoption of these new content services. Business models from Asian, Northern American or Central European markets cannot be adopted to Scandinavian or Finnish mobile content services markets as business environment, structure, and technology are different. Especially notable is the fact that in Finland carriers are not subsidizing the sale of mobile devices (e.g. mobile phones) like in the USA or rest of the Europe. Therefore carriers are able to provide mobile services with lower margins and are not that closely connected with hard-ware producers.

To enhance the adoption of the new-generation mobile services it is of high necessity to provide pricing models to suite specifically Scandinavian markets. And one of the most interesting and proposed pricing model for mobile services is the service bundling. In this study we have thus concentrated on examining how customers of mobile services perceive this pricing model and for which customer segments this method would be most suitable. We

have constructed the following framework for this study (Figure 5) which includes four hypotheses:

- H1: Customers preferences towards acquiring mobile services in bundles differ significantly between the fixed-line, combined and mobile customer segments.
- H2: Interest in service bundles is associated significantly with perceived cheapness of mobile services.
- H3a: Customer's preference to service bundles is significantly associated with customer's usage experience of mobile services.
- H3b: of fixed-line Internet services.
- H3c: of Internet through mobile phone as modem.
- H4a: Customer's preferred bundle size is significantly associated with customer's usage frequencies of mobile services.
- H4b: with customer's usage frequency of fixed-line Internet services.
- H4c: with customer's usage frequency of Internet through mobile phone as modem.



**Figure 5. The framework of the study**

## **Methodology and data collection**

For this study sample data was collected from data base of Finnish mobile service customers. The sample was collected from three different customer segments according to customer's usage levels of mobile services (mobile segment, combined segment and fixed-line segment [11]). There was taken equal sample sizes from the each customer segment. Empirical data was collected through a mail questionnaire survey method in which there was sent 3000 questionnaires (1000 questionnaires for each customer segment) to the mobile service customers during the spring 2003. Respondents were asked to complete questions or propositions indicating its importance in defining their beliefs, attitudes, and intentions toward mobile services and pricing of mobile services. Three types of questionnaires were prepared and sent. Response rate after three mailing rounds was 25.9% (778).

[1] Characteristics of the segments: **Mobile segment** - the highest volume of mobile data transfers (GPRS, high-speed data) during the last six months. They represented in every way the most active mobile Internet users the database had; **Combined segment** - a private fixed-line Internet connection, active usage of mobile Internet connection and services during the last six months; **Fixed-line segment** - owned a mobile phone and were using regular mobile phone services such as SMS. No sign of mobile Internet related activities during the last six months. They had a private fixed-line Internet connection (mainly ADSL) in use.

## Results

For examining the customers' preferences for acquiring mobile services in bundles and testing the three other hypotheses, two different statistical methods were applied. For testing the differences of service bundle preferences between the three segments analysis of variance was applied, and for the second hypothesis correlation analyses were conducted. After testing of the hypotheses 1 and 2, the investigation concentrated on detecting the factors explaining the differences between the segments in hypotheses 3 and 4. For this purpose correlation analyses were applied (Spearman's rho).

### Preferences of acquiring mobile services in bundles

In testing the first hypothesis, we have investigated customers' basic preferences towards mobile service bundles, and how these preferences differ between the three segments. Observing the Figure 6, the first notion is the striking characteristic of the fixed-line segment in which a high proportion of respondents did not have any opinion to this issue. In the mobile segment preferences towards acquiring mobile services in bundles were in general quite positive. Mean preference value in the mobile segment was 3.89 (std. 1.645) and was thus clearly positive. Also in the combined segment mean preference was clearly positive though a bit lower 3.58. The fixed-line segment obtained the lowest value 3.410 (std. 1.997). In comparing the segments through analysis of variance, there was found that only fixed-line and combined segments had significantly different mean preferences to service bundles ( $F=2.078$ , mean square 11.091,  $p<.05$ ). Most probably fixed-line customers differed from combined segment customers as they had very limited experience from usage of mobile services, and they were thus unable to evaluate the "goodness" of mobile service bundles on same criterion than combined segment customers.



### Figure 6. Customers' preferences to acquiring mobile service in bundles.

Based on the preference measures we can assume that in general customers of mobile services possess positive images towards mobile service bundles. And there seems to be a clear relationship with usage experience of mobile services and the preference; the mobile segment obtained the most positive values and the fixed-line segment least positive values. Though, must be stated that the differences between the segments were small.

## Effect of the bundle strategy to customers' price perceptions

After tracking down the overall preference to mobile service bundles in the each customer segment, next important issue concerned how the bundle strategy influences on customers' price perceptions. For testing the hypothesis 2 correlation analysis (Pearson  $r$ ) was applied. And it was discovered that in the mobile segment significant and positive relationship existed ( $r = .290^{**}$ ), and the relationship was thus confirmed. When comparing the mobile segment correlation analysis result with combined and fixed-line segments, the mobile segment obtained best results. Though, also the correlation coefficient in the combined segment obtained significant and sufficient results. The direction of the relationship in the combined segment was also positive and adequate as the Pearson  $r$  was  $.245^{**}$ . In the case of the fixed-line segment the correlation analyses provided also positive results for the relationship, though a clearly weaker ( $r = .145^*$ ).

According to the analyses, the more positive are customers' preferences to mobile service bundles the less expensive customers perceive the mobile services. Thus, hypothesis 2 is accepted as there seems to exist a statistically significant relationship between customers' preference to mobile service bundles and their price perception of mobile services.

## Predictors for customers' preferences

The third research questions concentrated on exploring, how customers' usage frequencies of mobile and fixed-line Internet services affect to the customers' preferences to acquire mobile services in bundles. For analysing the relationships we applied Spearman's rho correlation analysis.

In observing the influences of customers' usage experiences of three service channels (mobile Internet, fixed-line Internet, and Internet through mobile phone as modem) to customers' preferences for acquiring mobile services in bundles, the results were left to rather weak. In the mobile segment only one of the three service channel experiences provided statistically significant relationship values, fixed-line Internet ( $r_s = -.146^*$ ). According to the correlation coefficient, customers seem to be the less attracted by service bundles the more usage experience of fixed-line Internet they have.

Similarly with the mobile segment, in the combined segment, customers' usage experiences of the service channels affected significantly and negatively to customers willingness to acquire mobile services in bundles. There was found that customers with higher usage experience of fixed-line Internet services were more causes about the service bundles ( $r_s = -.184$ ). One explanation for the negative relationship might be the fact that customers who are more experienced users of fixed-line Internet; and thus they have also better understanding on their service needs, usage levels, and different pricing methods available. They perceive service bundles as an attempt to include services and costs from which they would not obtain any additional benefit. Thus, customers of intense usage of fixed-line Internet seem to prefer pricing and service offerings which do not possess any fixed elements.

As well as in the cases of the mobile and combined segments, in the fixed-line segment customers' usage frequencies of mobile Internet, fixed-line Internet, and Internet through mobile phone as modem were found to influence significantly on their willingness to acquire mobile services in bundles. Significant relationships were found in the cases of mobile and fixed-line Internet usages. According to results, customers who use mobile ( $r_s = -.131^*$ ) or fixed-line Internet ( $r_s = -.137^*$ ) services only occasionally seemed to prefer mobile service bundles more than other customers.

## Size of the mobile service bundle

The final issue that needs to be explored is the determination of best size of mobile service bundle for the three customer segments; i.e. how many services should be included into mobile service bundles and are there differences between the segments. Also in this case clear and notable differences between the customer segments existed (Figure 7). Customers in the each segment perceived their mobile service needs to be rather different. The direction of the differences were however clear. Customers in the mobile segment perceived to need the largest mobile service bundles, while customers of the fixed-line segment perceived to survive with clearly fewer services.



**Figure 7. Preferred number of mobile services included into service bundles.**

In the mobile segment the mean bundle size was 4.5 services (std. 2.234), though there was much deviation in the responses. Especially problematic was the high amount of respondents who preferred the bundle sizes larger than 7 services. To observe the reasons for the differences in customers' preferred bundle sizes, usage experiences of three service channels were analysed: mobile Internet, fixed-line Internet services, and Internet services through mobile phone as modem. In this case, it was discovered that usage experiences of mobile Internet ( $r_s = .199^{**}$ ) and Internet through mobile phone ( $r_s = .182^*$ ) obtained significant and positive relationships in the mobile segment. While, usage experience of fixed-line Internet was left without significant relationship. The analysis result is well in line with common sense as customers with more intense usage frequency perceives to need higher variety of services.

The combined segment differed only slightly from the mobile segment. The main difference was the finding that distinctively larger amount of customers perceived that they would not need more than one or two mobile services, while the same option in the mobile segment obtained only minimal popularity. Thus the mean bundle size remained on a lower level than in the mobile segment 4.06 (std. 2.368). Though slight differences existed in preferred bundle sizes testing the hypothesis 4 provided highly similar results with the mobile segment. The preferred bundle sizes were influenced significantly by customers' usage experiences of mobile services ( $r_s = .156^*$ ) and Internet services through mobile phone as modem ( $r_s = .198^{**}$ ). The fixed-line Internet was left without significant values as was the case in the mobile segment. Customers in combined segment behaved similarly with the mobile segment customers - intense users of the two service channels perceived to need higher variety of mobile services.

In the fixed-line segment the same trend continued as the mean bundle size decreased from the level of the combined segment to 3.45 services (std. 2.327). Customers in the fixed-line segment perceived to need fewer mobile services than customers in the other two segments. There was also found a high proportion of respondents who perceived that they would get sufficiently along with only one or two mobile services. In analysing the hypothesis 4 the differences between customers' preferred bundle sizes, two experience-based variables

were found. It was discovered that customers in the fixed-line segment who uses most mobile Internet services ( $r_s = .174^{**}$ ) and Internet services through mobile phone ( $r_s = .203^{**}$ ) tend to have higher needs for mobile service bundles compared to customers who have less experience from these service channels.

Thus, based on testing the hypothesis 4a,b,c the three segments were found to be highly similar. Customers in the each segment perceived to need the larger mobile service bundles the broader was their usage experience of mobile Internet services and Internet services used through mobile phone as modem. Fixed-line Internet service experience was not found to have significant influence on customers' preferred sizes of service bundles.

## Discussion

As bundling of services was found to be very potential strategy for mobile services according to Strouse (1999) and Starlinger (1995), this paper concentrated on exploring this strategy and how customers' perceptions towards acquiring mobile services in bundles differ between the three customer segments. The analyses concentrated therefore on studying: how mobile service bundles are perceived by customers, what is the association of preference to service bundles and price perception, what is the association of usage experiences of different service channels affect and customers' service bundle preferences, and does customers' usage frequencies of the service channels influence to their perceived mobile service needs.

**Table I Result table of the tested hypotheses in the three segments.**

Hypotheses	Mobile segment	Combined segment	Fixed-line segment
<i>H1: Customers' preferences to mobile service bundles differ significantly between the three segments.</i>	rejected	accepted	accepted
<i>H2: Interest in service bundles is associated significantly with perceived cheapness of mobile services.</i>	accepted	accepted	accepted
<i>H3a-c: Customer's preference to service bundles is significantly associated with customer's usage experience of different service channels.</i>	accepted H3b	accepted H3b	accepted H3a and H3b
<i>H4a-c: Customer's preferred bundle size is significantly associated with customer's usage frequencies of different service channels</i>	accepted H4a and H4c	accepted H4a and H4c	accepted H4a and H4c

Customers in the each segment perceived mobile service bundles rather attractive as the mean values ranged from 3.41 to 3.89 (0=not preferred, 6=preferred). In the mobile segment customers' preferences were most positive while in the fixed-line segment they were least positive. Though differences in mean preference values were rather small the significant differences between two customer segments were found. The combined and fixed-line segments were found to differ significantly in their preferences to mobile service bundles. The mobile segment did not differ towards combined or fixed-line segment. The hypothesis 1 was therefore accepted in the combined and fixed-line segments.

The second hypothesis concentrated on exploring the relationship of customers'

preferences to mobile service bundles and the customers' price perceptions as it is important to know if customers that prefer some certain pricing method perceive prices differently than other customers. The analyses provided positive results for the each segment; significant and positive relationship exists between customers' preference to mobile service bundles and their price perception. In general, it seems that the more customers prefer the service bundling strategy the more positive is their price perception. Thus, if a mobile service provider could offer to those customers mobile service in bundles that most prefer the method, the customers' price perception could be further improved. The bundling strategy was found to be most useful for customers in the mobile segment and least useful for the fixed-line segment customers. But in the each segment differences between the customers were found.

Third hypothesis concentrated on investigating how customers' usage experiences of mobile Internet services, fixed-line Internet services, and Internet services through mobile phone as modem would be associated with the customers' preferences to mobile service bundles. For predicting customers' preferences towards acquiring mobile services in bundles in the fixed-line segment, the best indicators were found to be usage experiences of mobile and fixed-line Internet services. In the combined and mobile segments the best indicator was the customers' usage frequency of fixed-line Internet services. Therefore, according to analyse results, customers who were most intensive users of the service channels were found to perceive the most positively mobile service bundles. A service provider should therefore offer mobile service bundles to customers who are intensive users of fixed-line Internet services.

The fourth hypothesis postulated that customers differ in their perceived mobile service needs (i.e. service bundle size) according to their usage experiences of the three service channels (mobile Internet, fixed-line Internet services, and Internet services used through mobile phone as modem). There was discovered a significant and positive associations in the each segments. Customers' usage experiences of mobile services and services through mobile phone as modem were significantly and positively associated with the customers' perceived service needs in the each segment. Customers with broader usage experiences of the service channels were found to need wider variety of services. The hypothesis H4a and H4c were accepted in the mobile, combined and fixed-line segments.

To conclude, a mobile service provider could obtain significant benefits by providing mobile services in bundles to customers that possess the most positive preferences towards service bundles. Customers' service bundle preferences were found to differ significantly according to their usage experiences of the service channels. Thus, a service provider could segment potential customers for service bundles according to their usage experiences of the three service channels (depending on the segment). In addition, the mobile service bundles would be most optimal if they were offered in bundles of three to five services.

## References

- Ansari, A, Siddarth, S. & Weinberg, C.B. 1996. Pricing a bundle of products or services: The case of nonprofits. *Journal of Marketing Research*, 33(1), 86-96.
- Fishburn, P.C. & Odlyzko, A.M. 1997. Fixed fee versus unit pricing for information goods: competition, equilibrium, and price wars. AT&T Labs, Princeton University.
- Guiltinan, J. 1987. The Price Bundling of Services: A Normative Framework, *Journal of Marketing*, April, 74-85.
- Helin, J. & MediaLab 2003. Challenges for the Future Mobile Operator Consumer Business,

mBusiness 2003 conference ([www.mBusiness2003.org](http://www.mBusiness2003.org))

Jonason, A. & Eliasson, G. 2001. Mobile Internet revenues: an empirical study of the I-mode portal. *Internet Research: Electronic Networking Applications and Policy*, 11(4), 341-348.

Jonason, A. 2002. Innovative pricing effects: theory and practice in mobile Internet networks. *European Journal of Innovation Management*, 5(4), 185-193.

Kollmann, T. 2000. "The price/acceptance function: perspectives of a pricing policy in European telecommunication markets" *European Journal of Innovation Management*, 3(1), 7-14.

Mylonopoulos N., A., Sideris, I., Fouskas, K., & Pateli, A. 2002. Emerging Market Dynamics in the Mobile Services Industry – white paper. The Mobicom project.

Nordström, B. 2001. Value, Content, Partnerships and Revenues in the Mobile-Internet Era. *Advanced Internet Applications, Mobile commerce*. Available online from: [www.wmrc.com/businessbriefing/pdf/mcommerce2001/reference/MobileInternet5.pdf](http://www.wmrc.com/businessbriefing/pdf/mcommerce2001/reference/MobileInternet5.pdf), last accessed 15 May 2003.

Salinger, S.A. 1995. A Graphical Analysis of Bundling. *Journal of Business*, 68(1), 85-98.

Strouse, K.G. 1999. *Marketing Telecommunication Services: New approaches for a changing environment*. London.

Televiestintätilasto, 2003, EITO. Available online from: [www.mintc.fi/www/sivut/suomi/tele/tilastot/teletilasto.html](http://www.mintc.fi/www/sivut/suomi/tele/tilastot/teletilasto.html).

Venkatesh, R. & Mahajan, V. 1993. A Probabilistic Approach to Pricing a Bundle of Services. *Journal of Marketing Research*, 30(4), 508-526.

Yadav, M.S. & Monroe, K.B. 1993. How Buyers Perceive Savings in a Bundle Price: An Examination of a Bundle's Transaction Value. *Journal of Marketing Research*, 30(4), 350-358.