

# Analysis Positioning Mobile Banking According to Community Perception in Indonesia Based on Perceived Usefulness, Perceived Ease of Use, Security and Trust (Case Study on Mobile Banking BCA, BRI, BNI, Mandiri)

Bela Puspita Dewi<sup>1</sup>, Ama Suyanto<sup>2</sup>

<sup>1,2</sup>Universitas Telkom, Bandung, Indonesia

[belapdewi@student.telkomuniversity.ac.id](mailto:belapdewi@student.telkomuniversity.ac.id), [amasuyanto@telkomuniversity.ac.id](mailto:amasuyanto@telkomuniversity.ac.id)

## Abstract

*At this time technology continues to develop to be more sophisticated with the presence of the internet. One of the technologies in mobile banking services. Along with the increasing number of mobile banking transactions in Indonesia, on the other hand, there is competitive competition between BCA Mobile, BRI Mobile, BNI Mobile Banking and Livin' by Mandiri which presents features that are not much different. The purpose of this study is to describe the positioning of the four mobile banking services and to find out which mobile banking is the most superior based on perceived usefulness, perceived ease of use, security and trust. The research method used is a quantitative method with descriptive analysis techniques and Multidimensional Scaling (MDS). This research uses non-probability sampling technique. The data used is primary data by distributing questionnaires with a total of 385 respondents. The results showed that BCA Mobile was ranked first in terms of perceived usefulness, perceived ease of use, security and trust. Then Livin' by Mandiri was ranked second, after that the third place was BRI Mobile and in fourth place was BNI Mobile Banking.*

## Keywords

multidimensional scaling;  
mobile banking; perception;  
positioning



## I. Introduction

The growth of internet and technology users is increasing rapidly nowadays, apart from people's daily lives which cannot be separated from the activities that exist in technology and the internet to make it easier for people to access what they want in a convenient way. easy. Based on the results of a survey conducted by We Are Social in January 2021, it shows that internet users in Indonesia in early 2021 reached 202.6 million people. The total population of Indonesia itself is currently 274.9 million people. It can be concluded that internet users in Indonesia in early 2021 reached 73.7 percent. Internet users in Indonesia increased by 15.5 percent or around 27 million people compared to January 2020 (Reportal Data, 2021).

With the growth of internet usage in line with the development of the internet, it is followed by the presence of internet-based business applications. One of the industries that presents internet-based business applications is the banking industry. Advances in technology make it easier for customers to make transactions anytime and anywhere. The banking industry develops mobile banking as a form of strategy to utilize advances in information technology (Khalifah et al., 2021). From the results of the We Are Social in the 3rd quarter of

---

2020 in Indonesia, users of banking via mobile apps using the internet are 39.2% (Statista, 2021).

In choosing mobile banking there are four reasons used in this study to choose mobile banking which will be the object of research: namely top brand index, number of transactions, best performance and service advantages of each mobile banking. Here is a more detailed explanation.

Top Brand Index results data regarding mobile banking in phase one in 2021. The results conclude that the 4 banks are the best e-channel according to top brand from the survey results where is the position of mobile banking is in the first position with the highest number of results at 47.5%, the second position is BRI Mobile at 17%, the third position is BNI Mobile at 14%, the fourth position is Livin' by Mandiri at 12.9% and the last position is fifth, there is CIMB Niaga Mobile. by 4.1% (Top Brand Award, 2021).

Mobile banking BCA, BRI and BNI and CIMB Niaga experienced an increase in the number of transactions over the last 3 years based on the annual reports of each bank. Different results come from mobile banking , which has decreased continuously over the last three years regarding the number of transactions via mobile banking. The object used in this study is mobile banking from BCA, BRI, BNI and Mandiri banks. Mobile banking from CIMB Niaga are not used as research objects because they are based on the results of the Top Brand Index and the number of mobile banking at CIMB Niaga is far from the four mobiles banking .

There are 10 banks with the best performance on mobile banking in 2020-2021, the four banks ranked one to four on the Top Brand Index remain in the top four for best performance on mobile banking. Bank BNI was ranked first for the best performance in the BNI mobile banking application (Fin, 2021). The data is concluded through the results of a survey by Bank Service Monitor (BSEM) in 2021. BSEM concludes that mobile banking has superior features compared to others (Fin, 2021).

The impact of competition from the service advantages of each mobile banking is increasingly felt. Currently mobile banking is not so different from each other by looking at some of the features offered by the company with the aim of making it easier for customers to adopt banking services via mobile banking.

On all four mobiles banking there are slight differences because each bank has a different target market according to their respective characteristics and the advantages highlighted by the four banks on mobile banking are different. However, this difference is not an item that is significantly the main service needed by customers in using mobile banking. Significant differences in the four mobile banking, namely the difference in the transfer limit per day. Fourth, mobile Banking has different transfer limits per day according to the type of card owned by the customer and based on the policies of each bank.

The competition faced on all four mobile Banking banking (BCA Mobile, BRI Mobile, BNI Mobile Banking, Livin' by Mandiri) is getting tighter. In addition, the competition for the four mobiles banking services (BCA Mobile, BRI Mobile, BNI Mobile, Livin' by Mandiri) through data obtained in the annual reports of the four banks regarding the percentage increase in the number of transactions on each mobile banking. On mobile banking BCA there is an increase in the number of mobile banking in 2019 to 2020, which is an increase of 64.3% (BCA, 2021). On mobile banking BRI there is an increase in the number of mobile banking in 2019 to 2020, which increased by 660.48% (BRI, 2021). On mobile banking BNI mobile banking in 2019 to 2020, which is an increase of 49.86% (BNI, 2021). The last one is mobile banking Mandiri, namely an increase in the number of mobile banking in 2019 to 2020, which is an increase of 57.49% (Mandiri, 2021).

The advantages and competition that have been discussed in the paragraph above, there has been no discussion regarding the positioning of each mobile banking. The banking world is inseparable from human life, because all human activities involve finance and require banking facilities (Tarigan, 2020). Bank is a company engaged in the financial sector, meaning that the banking business is always related to financial matters (Rosmika, 2019). The bank is simply defined as a financial institution whose business activities are collecting funds from the public and channeling these funds back to the community and providing other bank services (Dianto, 2020). Therefore, the company's products must get more in-depth attention to win the market (Sari and Suyanto, 2021). Researchers will do positioning as a way to see people's perceptions through several variables to see the position of mobile banking in the minds of consumers which will be the company's strategy to focus more on marketing in the future. Therefore, the author has an interest in conducting research with the title " Positioning Mobile Banking According to Public Perception in Indonesia Based on Perceived Usefulness, Perceived Ease of Use, Security and Trust".

## **II. Review of Literature**

### **2.1 Marketing**

Management Marketing management is the art and science of targeting the market and then getting customers to develop by creating maximum customer value (Kotler and Keller, 2016). Then explained by Musfar (2020) marketing management is the key to the continuity of an organization's business with its function as the process of implementing and determining all aspects of the product before it is disseminated to the public.

### **2.2 Positioning**

Positioning is done to occupy a different place in the minds of the target market by designing the company's image and offerings (Kotler and Keller, 2016: 297). Furthermore, positioning is setting a product to occupy a different position from competing products in the minds of consumers (Kotler and Armstrong, 2018: 75).

### **2.3 Mobile Banking**

Mobile Banking is a system that can help bank customers to access bank services through their cell phones or tablets (Aljawarneh, 2017: 238). Mobile banking can also be referred to as m-banking, sms banking which can be used for several banking transactions such as account transactions, payments, balance checks, credit applications and other banking services (Sikdar and Pereira, 2019:102).

### **2.4 Perception**

Perception is a person's process of selecting, organizing and interpreting information to be concluded as a picture (Setiadi, 2019:12). Then explained by Jusuf (2018: 18-19) perception is how a person gets meaning from existing information by going through a process of selecting, compiling and interpreting. Each individual has a different perception of one object (Setiadi, 2019:12). Perception is divided into three processes, namely attention, distraction and recall (Setiadi, 2019:12).

### **2.5 Perceived Usefulness**

Perceived usefulness is a person's belief in using a particular system to improve his work performance (Davis, 1989). Perceived usefulness can also be interpreted through the word useful which means being able to be used profitably (Davis, 1989). A system will be used by someone if the system fosters a person's belief that the system can be useful and vice

versa if the system is less useful then someone does not feel confident in the system (Jogiyanto, 2007).

## 2.6 Perceived Ease of Use

Perceived ease of use as a determination of belief that using a certain system a person can be free from effort (Davis, 1989). Jogiyanto (2007) said that individuals will feel confident if the system is easy to use. If the system is not easy to use then the individual does not feel confident and does not use the system.

## 2.7 Security

Security is the process of preventing risks that come from making acceptable use (Kumala et al., 2020: 22). Security is also protection from various unknown accesses to data usage (Vemuri and Chen, 2021:8).

## 2.8 Trust

Trust is a process that is expected to generate profits for its users (Vemuri and Chen, 2021:8). Trust is an important element in the business world. In a risky situation, trust can help support it (Paliszkievicz and Chen, 2021).

## 2.9 Thinking Framework

For the framework of the variables used for the positioning of this study is perceived usefulness, perceived ease of use, security, trust. These variables are four adoption variables from previous research, namely the research of Kumala et al. (2020). Variables that are not used in the study of Kumala et al. (2020) in this study, namely interest in use. Because in this study the researcher wanted to examine positioning. This study explains that the perceived ease of use, security and trust variables are related to the positioning through people's perceptions of electronic payments (Teoh et al., 2013). The four mobile banking objects used as research objects are BCA Mobile, BRI Mobile, BNI Mobile Banking and Livin' by Mandiri.

## III. Research Methods

The research method used in this study is a quantitative method with descriptive research purposes. Then using data analysis techniques in the form of descriptive analysis and *Multidimensional Scaling* (MDS). For the descriptive analysis carried out in explaining the characteristics of the respondents in this study, it was processed using a *cross tabulation* in order to get a picture of the combination between each respondent's profile. The population and sample in this study are people in Indonesia who have used or are currently using *mobile phones banking* (BCA Mobile, BRI Mobile, BNI Mobile Banking and Livin' by Mandiri). Then the sample in this study was determined using a *non-probability sampling is purposive sampling*. The sample size can be determined using the *Bernoulli* described by Zikmund (2010:436) as follows:

$$n = \frac{(z \frac{\alpha}{2})^2 pq}{e^2}$$

This study uses an accuracy level of = 5% with a 95% confidence level so that the value of  $z = 1.96$ . The error rate is = 5%. Meanwhile, the probability that is accepted is 0.5 and the probability that is rejected is 0.5. From the calculation results show that the minimum sample size obtained is 384.16 which is rounded up to 385.

Primary data is obtained through an *online on google form* which is then distributed to respondents through social media such as Whatsapp, Line, Instagram, Twitter and Telegram. While secondary data were obtained from books, previous journals, previous research, bank annual reports, *websites* and articles on the internet which were considered relevant to this research.

After the researchers collected data from the questionnaire results, the next stage was to process the data and analyzed using *SPSS analysis techniques multidimensional scaling* to find out *positioning* of the four *mobiles banking* , namely BCA Mobile, BRI Mobile, BNI Mobile Banking, Livin' by Mandiri based on public perception based on *perceived usefulness, perceived ease of use, security and trust*.

*Multidimensional scaling* is an exploratory statistical technique that can position objects in a graph based on their similarity to determine which components are important in people's perceptions of objects (McCormick *et al al.*, 2017). *Multidimensional scaling* is also related to mapping techniques and is referred to as data visual techniques (Ding, 2018). Next *multidimensional scaling* is one of the procedures used to visually map respondents' perceptions and preferences in a geometric map (Simamora, 2005).

If the perceptual *map* is not clearly visible where the difference is visually, it can calculate the *Euclidean* for each brand. In principle, the smaller the *Euclidean*, the closer each object is, the higher the level of competition (Simamora, 2005). The closer the *Euclidean* to an attribute or variable, the more superior the object to that attribute. To calculate the *Euclidean*, it is necessary to first know the coordinates of each object then the *Euclidean* can be calculated by the formula:

$$Ed = \sqrt{(xi - xm)^2 + (yi - ym)^2}$$

Description:

Ed      distance *Euclidean (Euclidean distance)*  
xi      = Position of the i-th brand on dimension 1  
yi      = Position of the i-th brand on dimension 2  
xm      = Abscess or position of attributes on dimension 1  
ym      = ordinate or position of attributes on dimension 2

## IV. Discussion

### 4.1 Characteristics of Respondents

Based on the results of the characteristics of respondents who obtained from 385 respondents, it can be concluded that the characteristics of the respondents in this study are mostly male, aged 21-25 years who live in the capital city of DKI Jakarta. With this age range, the last education they took was elementary-high school. This explains that the respondents in this study are students who are currently studying. Then the majority of the income is > IDR 5,000,000.

Furthermore, based on the results of the characteristics of the respondents based on the *cross tabulation* of 385 respondents, it can be concluded that the respondents as a whole are as follows:

1. *cross tabulation* of gender, age and occupation is dominated by the majority of those aged 21-25 years who have jobs as students.
2. *Cross tabulation* of gender, age and income is dominated by 21-25 year olds who have a monthly income of < Rp 1,000,000.
3. *Cross tabulation* of gender, age and domicile is dominated by 21-25 year olds who live in DKI Jakarta.



4. *Cross tabulation* of gender, occupation and income is dominated by students who have a monthly income of < Rp 1,000,000.
5. *Cross tabulation* of gender, occupation and domicile is dominated by students who live in DKI Jakarta.
6. *Cross tabulation* of gender, income and domicile is dominated by respondents with a monthly income of < Rp 1,000,000.

## 4.2 Multidimensional Scaling (MDS)

The data processing process that has been obtained through 385 respondents will then be processed using the *multidimensional scaling* (MDS) method using the IBM SPSS 25 application. After being analyzed using the *multidimensional scaling* (MDS) method, the results obtained are in the form of *perceptual mapping* which will provide an overview How do Indonesian people perceive the four *mobiles*? *Banking* (BCA Mobile, BRI Mobile, BNI Mobile Banking and Livin' by Mandiri) based on *perceived usefulness*, *perceived ease of use*, *security* and *trust*. To be able to clarify a *perceptual map* that does not look detailed, the difference in location visually is used for *Euclidean distance*. Based on *euclidean distance* i.e. the closer the *Euclidean mobile banking* with attributes or variables, the better or superior *mobile banking* on these attributes or variables.

In *multidimensional scaling* (MDS) reliability and validity *perceptual map* The resulting *R-Square* (RSQ) value and the *stress*. The model can be accepted if the RSQ value 0.6 (Malhotra, 2020). As for the *stress*, the lower the *stress*, the better the MDS model is generated.

Based on the results of data processing through *multidimensional scaling* (MDS) that has been done, the *RSquare* obtained is 0.99838 that is greater than 0.6 which means it is acceptable. As for the *stress* of 0.04059, that number is small, which means that the resulting MDS model is good.

Description:

PU1 : useful in transactions	SC1 : trusted identity verification
PU2 : faster transactions	SC2 : technical capacity to protect
PU3 : more effective transactions	SC3 : security measures protect
PU4 : facilitate transactions	SC4 : guaranteed security system
PU5 : increase productivity	TR1 : legally trusted
PEU1 : easy to learn	TR2 : reliable transaction
PEU2 : easy to understand	TR3 : fulfill promise
PEU3 : concise operation	TR4 : <i>customer service</i> ready to help
PEU4 : easy to use	

In Figure 2. shows the position of each *mobile banking* on the quadrant location based on the overall indicators of the *perceived usefulness*, *perceived ease of use*, *security* and *trust*. It can be seen in Figure 2. that the position of BCA Mobile is in quadrant III. BNI Mobile Banking and Livin' by Mandiri are located in the same quadrant, namely quadrant IV and are close to each other. The closer the distance of each object, the higher the level of competition (Simamora, 2005). BNI Mobile Banking's closest competitor is Livin' by Mandiri because the two positions are close to each other and vice versa. Meanwhile, BRI Mobile is located farthest from the three *mobiles banking* services as well as in quadrant I. It can be interpreted that the level of competition between BRI Mobile and the three *mobiles banking* is not high.

Furthermore, it can be studied in Table 2. based on the results of the *Euclidean* BCA Mobile is close to the overall indicators of the *perceived usefulness*, *perceived ease of use*, *security* and *trust*. Livin' by Mandiri is in second place for the overall *perceived usefulness*,

indicators PEU4, SC1, SC3, SC4, TR1, TR2 and TR4. Then BRI Mobile is ranked second for the PEU1, PEU2, PEU3, SC2 and TR3 indicators and occupies a weak position for the overall *perceived usefulness*, indicators SC1 and TR1. Lastly, BNI Mobile Banking is in a weak position for all *perceived ease of use*, indicators SC2, SC3, SC4, TR2, TR3 and TR4.

From the results of the perceptual *map* in Figure 2. and Table 2. It can be concluded that the overall conclusions obtained in the ranking summary are the mobile *banking* system with the highest ranking was BCA Mobile with a total score of 17. The second leading ranking was Livin' by Mandiri with a total score of 39. The third leading ranking was BRI Mobile with a total score of 53. The last rank was BNI Mobile Banking with a total score of 53. The total score is 61.

## V. Conclusion

Based on the results of the analysis and discussion that has been presented in this study, it can be concluded that the research is as follows:

1. Overall, mobile banking with the perceived usefulness, perceived ease of use, security and trust which occupies the first position, namely BCA Mobile, then in the second rank is occupied by Living' by Mandiri, after that the third rank is BRI Mobile, then BNI Mobile Banking gets the last rank on mobile banking under study.
2. BCA Mobile ranks first by excelling in all indicators on perceived usefulness, perceived ease of use, security and trust variables. Then Livin' by Mandiri ranked second best by getting the second superior rank on all indicators of perceived usefulness as well as indicators of "easy to use", "trusted identity verification", "safety measures protect", "legally trusted", "trustworthy transactions", and "customer service is ready to help." Furthermore, BRI Mobile was ranked third by getting the second superior rating on the indicators of "easy to learn", "easy to understand", and "concise operations"; "technical capacity to protect" and "fulfill promises. Meanwhile, BNI Mobile Banking is ranked fourth by getting less superior scores in all indicators on the variables perceived usefulness, perceived ease of use, security and trust.

## References

- Aljawarneh, S. (2016). Online Banking Security Measures and Data Protection. In Google Books. IGI Global.
- BCA. (2021). Tentang BCA - Laporan-Tahunan. Retrieved November 15, 2021, from [www.bca.co.id website: https://www.bca.co.id/en/tentang-bca/hubungan-investor/laporan-presentasi/laporan-tahunan](https://www.bca.co.id/en/tentang-bca/hubungan-investor/laporan-presentasi/laporan-tahunan)
- BNI. (2021). Laporan & Presentasi. Retrieved November 15, 2021, from [www.bni.co.id website: https://www.bni.co.id/id-id/perusahaan/hubunganinvestor/laporanpresentasi](https://www.bni.co.id/id-id/perusahaan/hubunganinvestor/laporanpresentasi)
- BRI. (2021). Laporan - Bank BRI. Retrieved November 15, 2021, from [bri.co.id website: https://bri.co.id/report](https://bri.co.id/report)
- Data Reportal. (2021, February 11). Digital in Indonesia: All the Statistics You Need in 2021. Retrieved from [datareportal.com website: https://datareportal.com/reports/digital-2021-indonesia](https://datareportal.com/reports/digital-2021-indonesia)
- Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- Dianto, E., et.al. (2020). BNI Marketing Strategy for Credit Cards in Dealing Global Competition in State Bank Indonesia (Persero) Tbk Banda Aceh Branch Office.

- Budapest International Research and Critics Institute-Journal (BIRCI-Journal) Vol 3 (2): 1134-1146.
- Ding, C. S. (2018). *Fundamentals of Applied Multidimensional Scaling for Educational and Psychological Research*. Cham: Springer International Publishing. <https://doi.org/10.1007/978-3-319-78172-3>
- Fin. (2021). BNI Mobile Banking Lampau Mobile Apps Bank Nasional. Retrieved November 15, 2021, from fin.co.id website: <https://fin.co.id/2021/05/04/bni-mobile-banking-lampau-mobile-apps-bank-nasional/>
- Jogiyanto. (2007). *Sistem informasi keperilakuan (edisi revisi)*. Yogyakarta: Andi.
- Jusuf, D. I. (2021). *Perilaku Konsumen di Masa Bisnis Online*. Penerbit Andi.
- Khalifah, A. R., Triwardhani, D., & Syarief, N. (2021). Keputusan Penggunaan BNI Mobile (Studi Kasus Pada Pengguna BNI Mobile di Jakarta). *Konferensi Riset Nasional Ekonomi, Manajemen, Dan Akuntansi*, 2, 962–980.
- Kotler, P., & Armstrong, G. (2018). *Principles of Marketing (17th ed.)*. Harlow: Pearson Education Limited.
- Kotler, P., & Keller, K. L. (2016). *Marketing Management (15th ed., Vol. 15)*. Boston: Pearson.
- Kumala, D. C., Pranata, J. W., & Thio, S. (2020). Pengaruh Perceived Usefulness, Perceived Ease of Use, Trust dan Security Terhadap Minat Penggunaan Gopay Pada Generasi X Di Surabaya. *Jurnal Manajemen Perhotelan*, 6(1), 19–29. <https://doi.org/10.9744/jmhot.6.1.19-29>
- Malhotra, N. K. (2020). *Marketing Research: An Applied Orientation (7th ed.)*. Pearson Education Limited.
- Mandiri. (2021). Annual Reports - IR. Retrieved November 15, 2021, from bankmandiri.co.id website: <https://bankmandiri.co.id/web/ir/annual-reports>
- McCormick, K., Salcedo, J., Peck, J., & Wheeler, A. (2017). *SPSS Statistics for Data Analysis and Visualization*. Indianapolis, In: John Wiley & Sons, Inc.
- Musfar, T. F. (2020). *Buku Ajar Manajemen Pemasaran: Bauran Pemasaran sebagai Materi Pokok dalam Manajemen Pemasaran*. In Google Books. Kota Bandung: Media Sains Indonesia.
- Paliszkievicz, J. O., & Chen, K. (2021). *Trust, organizations and the digital economy theory and practice*. New York: Routledge. Retrieved from <https://doi.org/10.4324/9781003165965>
- Rosmika, T.E., Mulia, A., and Chairy, P. (2019). The Role of BRI Bank Medan Perjuangan Unit for Customer's Households, Indonesia. *Budapest International Research and Critics Institute-Journal (BIRCI-Journal) Vol 2 (4)*: 363-374.
- Sari, O. F. D. P., & Suyanto, A. (2021). Analisis Pemetaan Empat Perguruan Tinggi Swasta Berdasarkan Brand Equity. *Jurnal Ilmiah Mahasiswa Ekonomi Manajemen*, 6(1), 194–209.
- Setiadi, N. J. (2019). *Perilaku Konsumen: Perspektif Kontemporer pada Motif, Tujuan, dan Keinginan Konsumen (3rd ed.)*. Prenada Media.
- Sikdar, A., & Pereira, V. (2018). *Business and Management Practices in South Asia: A Collection of Case Studies*. In Google Books. Springer Singapore.
- Simamora, B. (2005). *Analisis Multivariat Pemasaran (1st ed.)*. PT. Gramedia Pustaka Utama.
- Statista. (2021, March 11). *Indonesia: top mobile app categories 2020*. Retrieved November 15, 2021, from Statista.com website: <https://www.statista.com/statistics/1099559/indonesia-top-mobile-app-categories/>
- Tarigan, N.M., and Setiawan, H. (2020). The Effect of Employee Competence on Increasing Employee Motivation in Sumut Bank of Sharia Unit, North Sumatera. *Budapest*



International Research and Critics Institute-Journal (BIRCI-Journal) Vol 3 (2): 858-867.

Teoh, W. M., Chong, S. C., Lin, B., & Chua, J. W. (2013). Factors affecting consumers' perception of electronic payment: an empirical analysis. *Internet Research*, 23(4), 465–485. <https://doi.org/10.1108/intr-09-2012-0199>

Top Brand Award. (2021). Mobile Banking Fase 1 2021. Retrieved November 15, 2021, from [www.topbrand-award.com](http://www.topbrand-award.com) website: <https://www.topbrand-award.com/en/2021/02/mobile-banking-fase-1-2021/>

Vemuri, R., & Chen, S. (2021). *Split Manufacturing of Integrated Circuits for Hardware Security and Trust : Methods, Attacks and Defenses*. Springer.

Zikmund, W. G. (2010). *Business Research Methods* (8th ed.). Mason, Oh: South-Western Cengage Learning.