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# A Regional Study of Mobile Network Connectivity and Customer Satisfaction in Maharashtra

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**ABSTRACT :**

Mobile network connectivity plays a vital role in digital communication, influencing user satisfaction, accessibility, and service reliability. This study investigates the quality of network connectivity experienced by mobile SIM card users across five regions of Maharashtra — Marathwada, Western Maharashtra, Kokan, Khandesh, and Vidarbha. Based on primary data collected from 600 respondents during 2024–25, the research analyzes parameters such as coverage availability, service ratings, network problems, problem areas, time-specific connectivity issues, awareness of coverage, and satisfaction levels. Findings reveal that while 79.17% of respondents report easy coverage access, challenges like weak range (36.67%), voice issues (24.83%), and connectivity disruptions while traveling (54.83%) persist. Overall satisfaction stands at 64.17%, with Western Maharashtra showing better performance compared to Kokan and Vidarbha. The study concludes that although connectivity is generally satisfactory, significant improvements are required in signal strength, call stability, and rural coverage.

**Keywords**: Mobile network, communication, SIM card, connectivity, coverage.

## 1.1 Introduction

Mobile communication has become an indispensable part of modern life, reshaping the way individuals interact, access information, and conduct business. In India, the telecom industry has witnessed tremendous growth over the past two decades, driven by rapid digitalization, affordable tariffs, and the widespread availability of smartphones. Despite this progress, one of the most significant concerns faced by consumers continues to be the reliability and quality of mobile network connectivity.

The effectiveness of mobile connectivity is not merely determined by availability of SIM cards, but by the ability of users to access consistent coverage, stable call quality, and uninterrupted data services. In a geographically diverse state like Maharashtra, regional variations in terrain, population density, and infrastructure development contribute to significant disparities in network performance. While urban centers may enjoy relatively seamless connectivity, semi-urban and rural areas often continue to struggle with weak signal strength, call drops, and restricted coverage.

Customer satisfaction with mobile services is directly linked to the quality of network connectivity. Dissatisfaction caused by problems such as poor signal range, frequent disconnections, and low awareness of network coverage not only hampers communication but also affects consumer trust in service providers. In such a competitive telecom market, where multiple companies offer similar pricing, the quality of connectivity becomes a major differentiating factor.

This study focuses on understanding network connectivity issues and customer satisfaction levels across five key regions of Maharashtra — Marathwada, Western Maharashtra, Kokan, Khandesh, and Vidarbha. Using primary data collected from 600 respondents, the research explores availability of network coverage, service quality ratings, common problems faced by users, problem-prone areas, time-specific connectivity disruptions, and awareness of company network coverage.

By providing a comparative regional analysis, this paper highlights the strengths and weaknesses of network service delivery in Maharashtra. The findings aim to assist telecom providers in identifying areas for improvement while also contributing to academic discussions on digital infrastructure and consumer behavior.

## 1.2 Literature Review

The growth of mobile communication has attracted significant scholarly and policy attention in recent decades. Research has consistently highlighted the role of network connectivity as a determinant of customer satisfaction and adoption of telecom services.

According to **Gupta & Jain (2015)**, mobile users consider network availability and reliability as the most important factors in choosing a service provider, even above tariff structures. Similarly, Singh (2017) emphasizes that poor coverage, frequent call drops, and weak voice quality remain the top complaints among rural and semi-urban users in India.

The Telecom Regulatory Authority of India **(TRAI, 2018)** has repeatedly reported disparities in network quality across regions, particularly between metropolitan areas and interior districts. Their findings suggest that while 4G expansion has improved data accessibility, call quality and range-related issues persist in less developed regions.

International studies also shed light on similar patterns. The **GSMA (2018)** Mobile Connectivity Index found that infrastructure gaps in developing countries significantly affect digital inclusion, particularly in areas with low population density. This reinforces the argument that telecom providers must balance commercial interests with equitable service distribution.

Customer satisfaction research further indicates that service quality dimensions — such as coverage, call clarity, internet speed, and problem resolution — strongly influence consumer loyalty **(Kotler & Keller, 2016)**. Studies by **Deshmukh (2019)** and **Pawar (2020)** focusing on Maharashtra show that despite overall satisfaction with affordability, customers frequently express dissatisfaction with network reliability in Kokan and Vidarbha regions, mirroring the findings of the present study.

In summary, existing literature consistently demonstrates that while mobile penetration has reached impressive levels, network connectivity and service quality remain critical challenges. However, there is limited region-specific empirical research on Maharashtra. This study seeks to bridge that gap by providing a comprehensive regional analysis of connectivity, awareness, and satisfaction levels among mobile SIM users.

## 2. Objectives of the Study

1. To evaluate the availability of mobile network coverage across different regions of Maharashtra.
2. To assess customer ratings regarding the quality of network services.
3. To identify the major network-related problems faced by users.
4. To examine the connectivity problem areas and time-specific issues reported by customers.
5. To study the level of customer awareness about their company's network coverage.
6. To measure the overall satisfaction level of respondents towards mobile network connectivity services.

## 3. Research Methodology

The study is based on *primary data* collected from *600 respondents* across five major regions of Maharashtra: Marathwada, Western Maharashtra, Konkan, Khandesh, and Vidarbha during *2024–25*. A structured questionnaire was administered to collect data, which was analyzed using descriptive statistics, percentages, and tabular presentations.

- *Sample Size:* 600 respondents (120 per region)
- *Sampling Method:* Stratified random sampling
- *Analysis Tools:* Descriptive statistics, percentages, and tabular presentations

## 4. About Network Connectivity in Mobile Sim Card.

**Data Analysis and Findings**

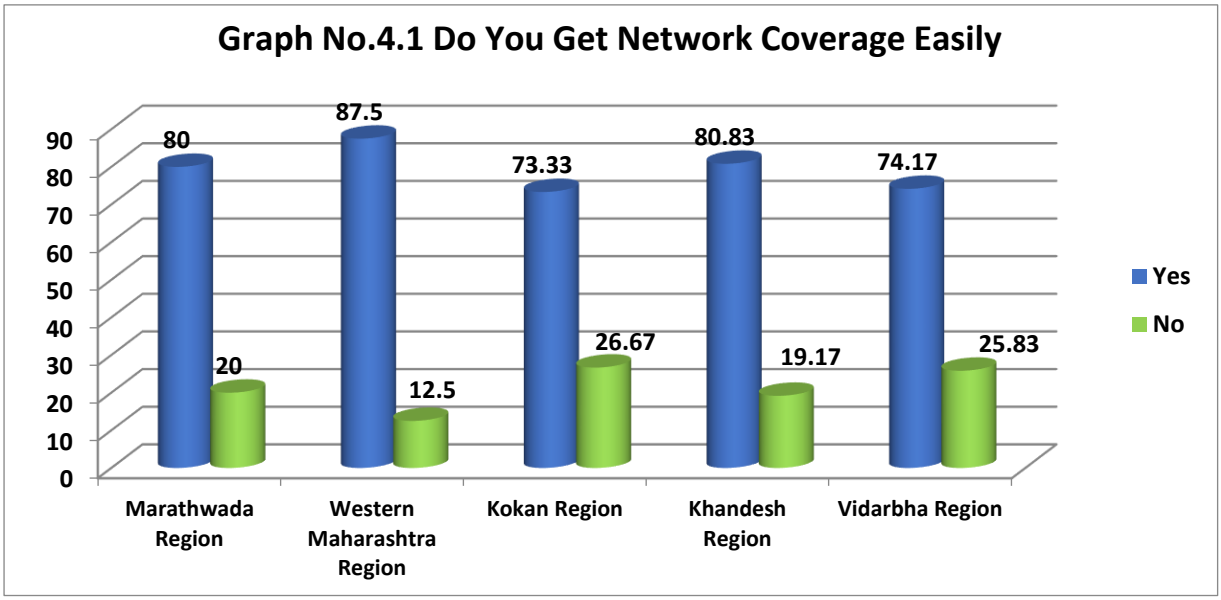
***4.1 Do You Get Network Coverage Easily?***

**Table No.4.1**

**Do You Get Network Coverage Easily**

| Network Coverage Easily | Marathwada Region | | Western Maharashtra Region | | Kokan Region | | Khandesh Region | | Vidarbha Region | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % | No. | % | **No.** | **%** |
| **Yes** | 96 | 80.00 | 105 | 87.50 | 88 | 73.33 | 97 | 80.83 | 89 | 74.17 | **475** | **79.17** |
| **No** | 24 | 20.00 | 15 | 12.50 | 32 | 26.67 | 23 | 19.17 | 31 | 25.83 | **125** | **20.83** |
| **Total** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **600** | **100.00** |

**Source**:- Primary Data. (2024-25)




The analysis of collected data as indicated in table 4.1 shows that 475 (79.17%) respondents out of 600 were yes getting network coverage easily which included maximum 87.50% respondents in the Western Maharashtra region and minimum of 73.33% in the Kokan region. While 125 (20.83%) respondents were no getting network coverage easily which included maximum 26.67% respondents in the Kokan region and minimum 12.50% in the Western Maharashtra region.

It is concluded that most of the respondents 79.14% say that they are getting network coverage easily.

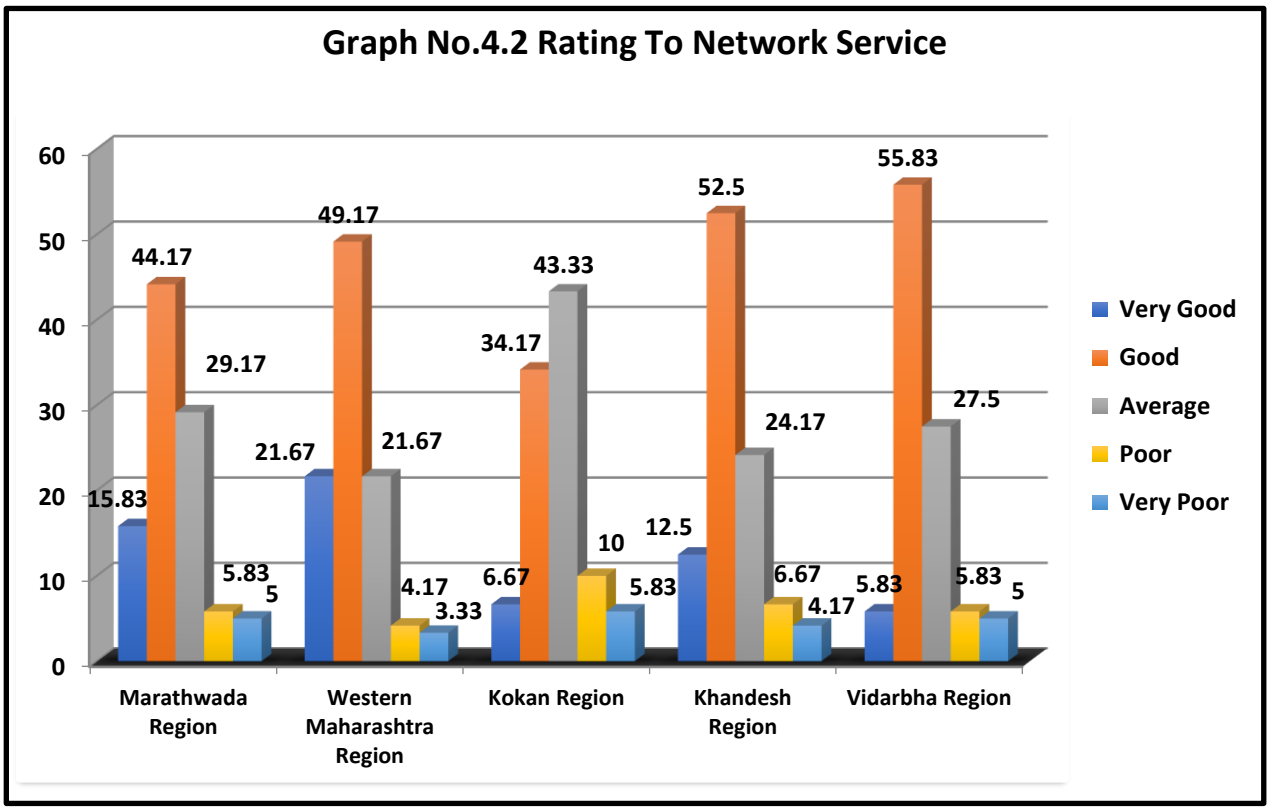
***4.2 Rating To Network Service***

**Table No.4.2**

**Rating To Network Service**

| Network Service | Marathwada Region | | Western Maharashtra Region | | Kokan Region | | Khandesh Region | | Vidarbha Region | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % | No. | % | **No.** | **%** |
| **Very Good** | 19 | 15.83 | 26 | 21.67 | 8 | 6.67 | 15 | 12.50 | 7 | 5.83 | **75** | **12.50** |
| **Good** | 53 | 44.17 | 59 | 49.17 | 41 | 34.17 | 63 | 52.50 | 67 | 55.83 | **283** | **47.17** |
| **Average** | 35 | 29.17 | 26 | 21.67 | 52 | 43.33 | 29 | 24.17 | 33 | 27.50 | **175** | **29.17** |
| **Poor** | 7 | 5.83 | 5 | 4.17 | 12 | 10.00 | 8 | 6.67 | 7 | 5.83 | **39** | **6.50** |
| **Very Poor** | 6 | 5.00 | 4 | 3.33 | 7 | 5.83 | 5 | 4.17 | 6 | 5.00 | **28** | **4.67** |
| **Total** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **600** | **100.00** |

**Source**:- Primary Data. (2024-25)




It is observed from the above table 4.2 that out of 600 sample the number of customer respondents were rating to network service as good respondents 283 (47.17%) which include maximum 52.50% of the Khandesh region and minimum 34.17% in the Kokan region. While 175 (29.17%) respondents were rating to network service as average which include maximum 43.33% in the Kokan region and minimum 21.67% in the Western Maharashtra region. While 75 (12.50%) respondents were rating to network service as very good which include maximum 21.67% in the Western Maharashtra region and minimum 5.83% in the Vidarbha region. Only 39 (6.50%) respondents were rating to network service as poor and 28 (4.67%) respondents were rating to network service as very poor.

It is concluded that customer respondent's satisfaction on rating of network services is 47.17% are good.

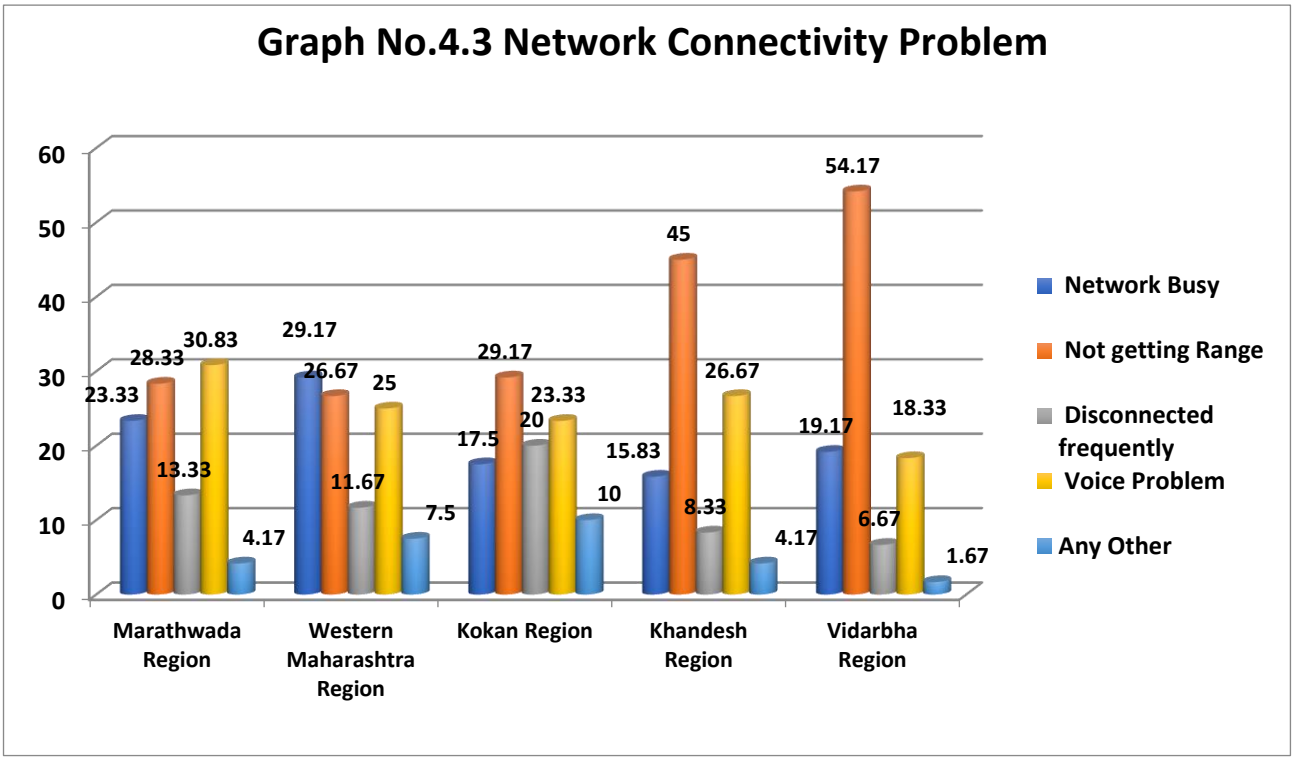
### *4.3 Network Problem*

**Table No.4.3**

**Network Connectivity Problem**

| Network Problem | Marathwada Region | | Western Maharashtra Region | | Kokan Region | | Khandesh Region | | Vidarbha Region | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % | No. | % | **No.** | **%** |
| **Network Busy** | 28 | 23.33 | 35 | 29.17 | 21 | 17.50 | 19 | 15.83 | 23 | 19.17 | **126** | **21.00** |
| **Not getting Range** | 34 | 28.33 | 32 | 26.67 | 35 | 29.17 | 54 | 45.00 | 65 | 54.17 | **220** | **36.67** |
| **Disconnected frequently** | 16 | 13.33 | 14 | 11.67 | 24 | 20.00 | 10 | 8.33 | 8 | 6.67 | **72** | **12.00** |
| **Voice Problem** | 37 | 30.83 | 30 | 25.00 | 28 | 23.33 | 32 | 26.67 | 22 | 18.33 | **149** | **24.83** |
| **Any Other** | 5 | 4.17 | 9 | 7.50 | 12 | 10.00 | 5 | 4.17 | 2 | 1.67 | **33** | **5.50** |
| **Total** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **600** | **100.00** |

**Source:- Primary Data. (2024-25)**




From the above table 4.3 it is observed that out of 600 sample highest number of customer respondents as not-getting range network connectivity problem as were 220 (36.67%) respondents which include maximum 54.17% in the Vidarbha region and minimum 26.67% in the Western Maharashtra region. While 149 (24.83%) respondents were voice problem which include maximum 30.83% in the Marathwada region and minimum 18.33% in the Vidarbha region. While 126 (21%) respondents were network busy problem which include maximum 29.17% in the Western Maharashtra region and minimum 15.83% the in Khandesh region. While72 (12%) respondents were disconnected frequently network problem which include maximum 20% in the Kokan region and minimum 6.67 % the in Vidarbha region and 33 (5.50%) respondents were any other network connectivity problem

It is concluded that customer respondents network connectivity problem as not getting range is 36.67%.

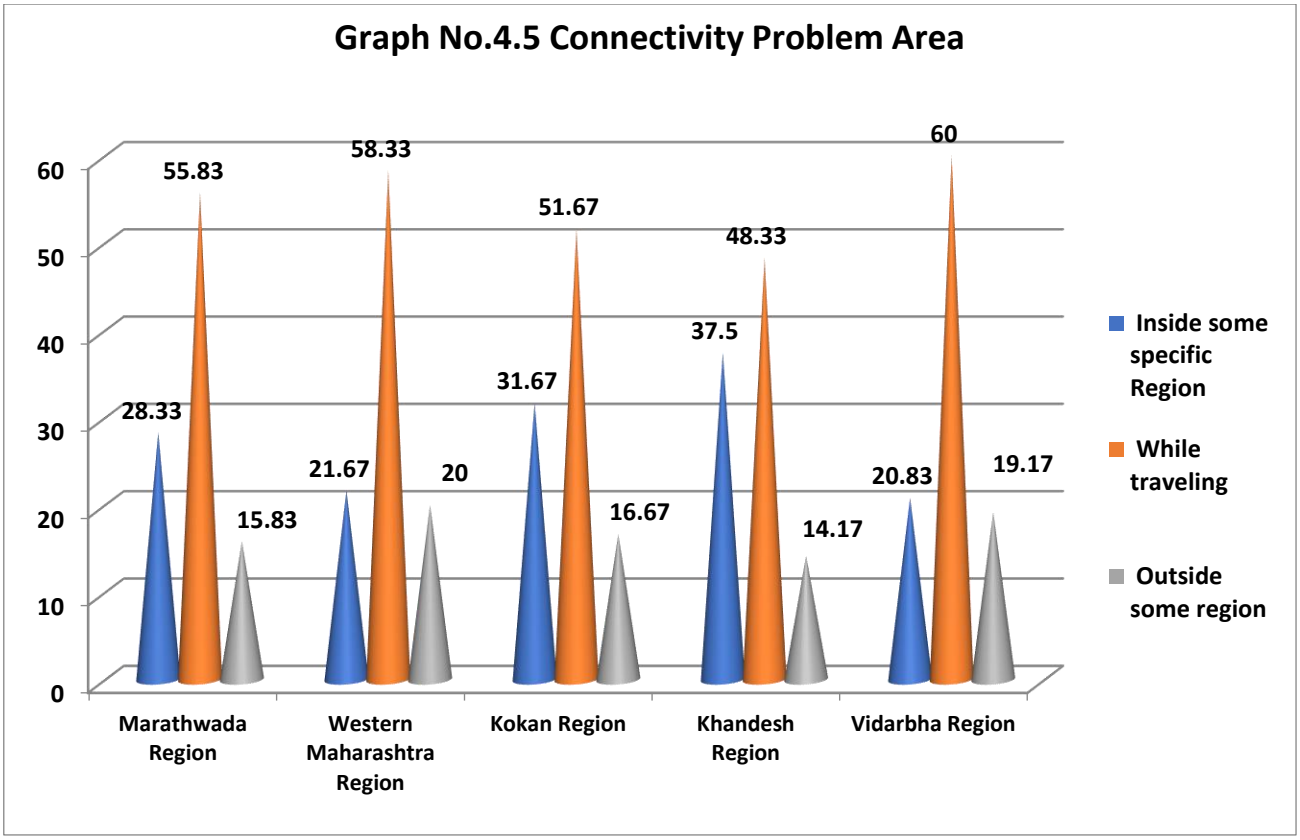
***4.4 Connectivity Problem Area***

**Table No.4.4**

**Connectivity Problem Area**

| **Problem Area** | **Marathwada Region** | | **Western Maharashtra Region** | | **Kokan Region** | | **Khandesh Region** | | **Vidarbha Region** | | **Total** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % | No. | % | **No.** | **%** |
| **Inside some specific region** | 34 | 28.33 | 26 | 21.67 | 38 | 31.67 | 45 | 37.50 | 25 | 20.83 | **168** | **28.00** |
| **While traveling** | 67 | 55.83 | 70 | 58.33 | 62 | 51.67 | 58 | 48.33 | 72 | 60.00 | **329** | **54.83** |
| **Outside some region** | 19 | 15.83 | 24 | 20.00 | 20 | 16.67 | 17 | 14.17 | 23 | 19.17 | **103** | **17.17** |
| **Total** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **600** | **100.00** |

**Source**:- Primary Data. (2024-25)




From the above table 4.4 it is observed that out of 600 sample highest number of customer respondents while traveling connectivity problem areas were 329 (54.83%) respondents which include maximum 60% in the Vidarbha region and minimum 48.33% in the Khandesh region. While 168 (28%) respondents were Inside some specific region connectivity problem areas which include maximum 37.50% in the Khandesh region and minimum 20.83% in the Vidarbha region. While 103 (17.17%) respondents were outside some region connectivity problem which include maximum 20% in the Western Maharashtra region and minimum 14.17% in Khandesh region.

It is concluded that customer respondents connectivity problem areas while traveling is 54.83%.

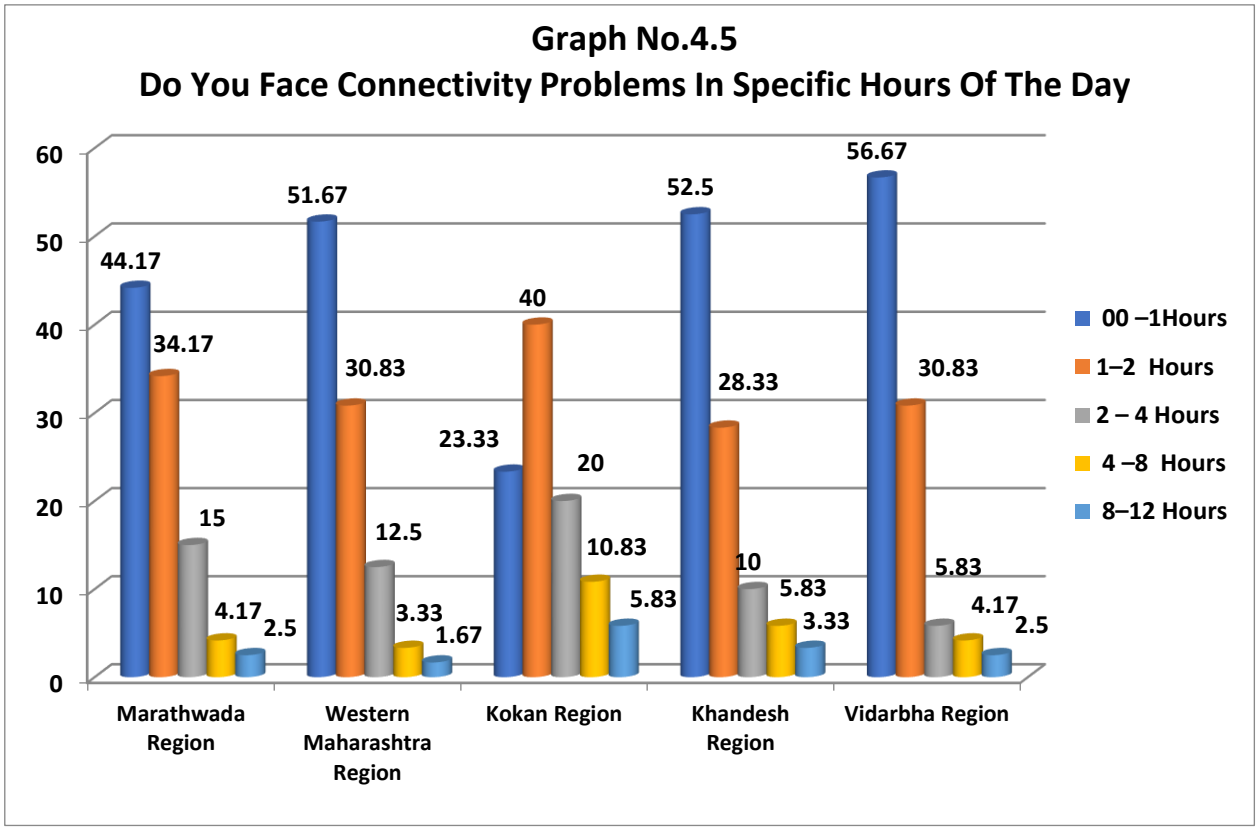
***4.5 Do You Face Connectivity Problems In Specific Hours Of The Day***

**Table No.4.5**

**Do You Face Connectivity Problems In Specific Hours Of The Day**

| Connectivity Problems | Marathwada Region | | Western Maharashtra Region | | Kokan Region | | Khandesh Region | | Vidarbha Region | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % | No. | % | **No.** | **%** |
| **00 –1Hours** | 53 | 44.17 | 62 | 51.67 | 28 | 23.33 | 63 | 52.50 | 68 | 56.67 | **274** | **45.67** |
| **1–2 Hours** | 41 | 34.17 | 37 | 30.83 | 48 | 40.00 | 34 | 28.33 | 37 | 30.83 | **197** | **32.83** |
| **2 – 4 Hours** | 18 | 15.00 | 15 | 12.50 | 24 | 20.00 | 12 | 10.00 | 7 | 5.83 | **76** | **12.67** |
| **4 –8 Hours** | 5 | 4.17 | 4 | 3.33 | 13 | 10.83 | 7 | 5.83 | 5 | 4.17 | **34** | **5.67** |
| **8–12 Hours** | 3 | 2.50 | 2 | 1.67 | 7 | 5.83 | 4 | 3.33 | 3 | 2.50 | **19** | **3.17** |
| **Total** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **600** | **100.00** |

**Source**:- Primary Data. (2024-25)




From the above table 4.5, it is observed that out of 600 sample the number of customer respondents facing connectivity problems in specific hours of the day in 00-1 Hours were 274 (45.67%) respondents which include maximum 56.67% in the Vidarbha region and minimum 23.33% in the Kokan region. While 197 (32.83%) respondents face problems in 1-2 hours which include maximum from 40% in the Kokan region and minimum 28.33% in the Khandesh region. While 76 (12.67%) respondents face problems in 2-4 hours which include maximum 20% in the Kokan region and minimum 5.83% in Vidarbha region. While 34 (5.67%) respondents face problems in 4-8 hours which include maximum 10.83% in the Kokan region and minimum 3.33% in the Western Maharashtra region. Only 8-12 hours face connectivity problems in specific hours of the day is 19 (3.17%) respondents.

It is concluded that respondents faced more connectivity problems in 0-1 hours of the day with 45.67%.

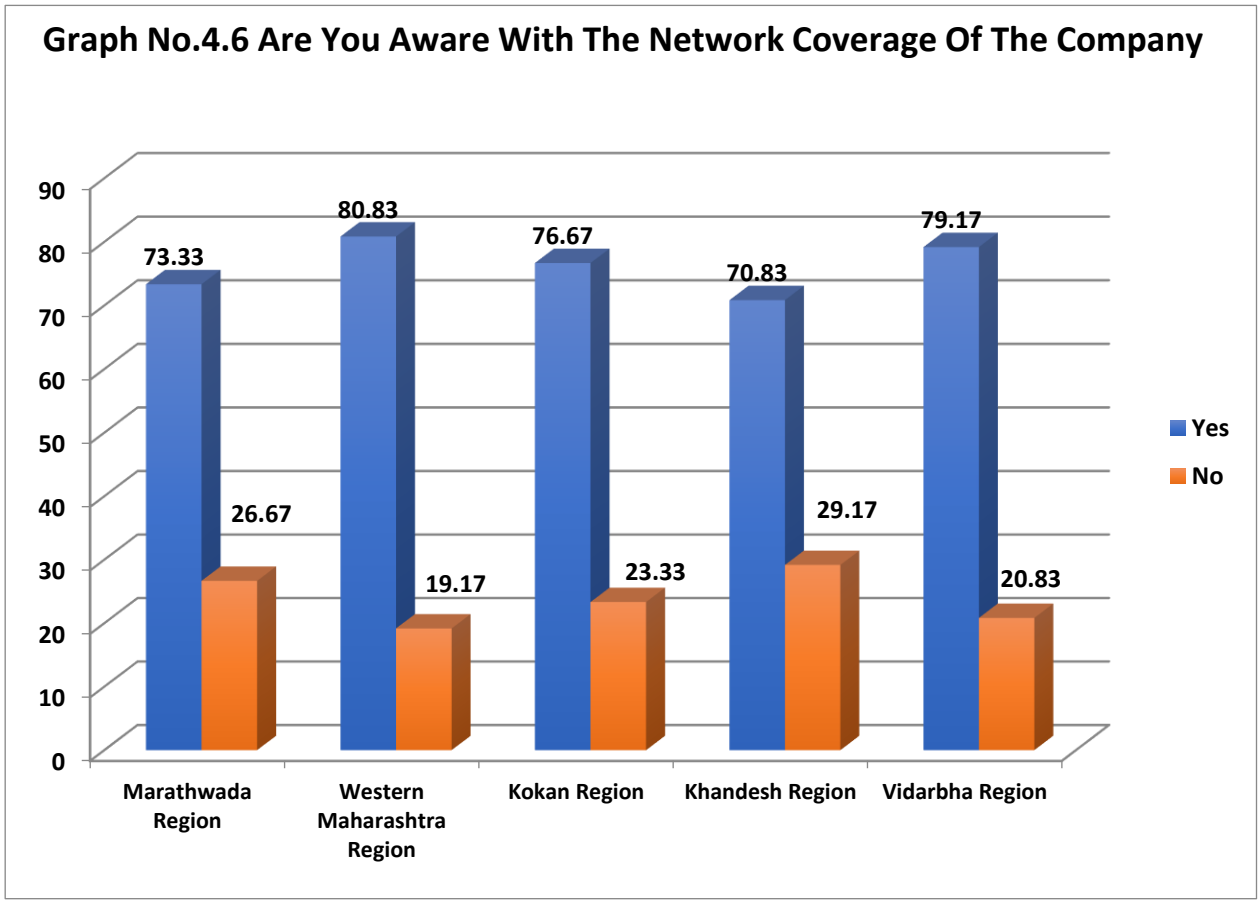
### *4.6 Company Network Coverage aware*

**Table No.4.6**

**Are You Aware With The Network Coverage Of The Company**

| Company Network Aware | Marathwada Region | | Western Maharashtra Region | | Kokan Region | | Khandesh Region | | Vidarbha Region | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % | No. | % | **No.** | **%** |
| **Yes** | 88 | 73.33 | 97 | 80.83 | 92 | 76.67 | 85 | 70.83 | 95 | 79.17 | **457** | **76.17** |
| **No** | 32 | 26.67 | 23 | 19.17 | 28 | 23.33 | 35 | 29.17 | 25 | 20.83 | **143** | **23.83** |
| **Total** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **600** | **100.00** |

**Source**:- Primary Data. (2024-25)




The analysis of collected data as indicated in table 4.6 shows that 457 (76.17%) respondents out of 600 were yes company network coverage awareness which included maximum 80.83% respondents in the Western Maharashtra region and minimum of 73.33% in the Marathwada region. While in case 143 (23.83%) respondents were no company network coverage awareness which included maximum 29.17% respondents in the Khandesh region and minimum of 19.17% in the Western Maharashtra region.

It is concluded that most of the respondents 76.17 say that they are company network coverage aware.

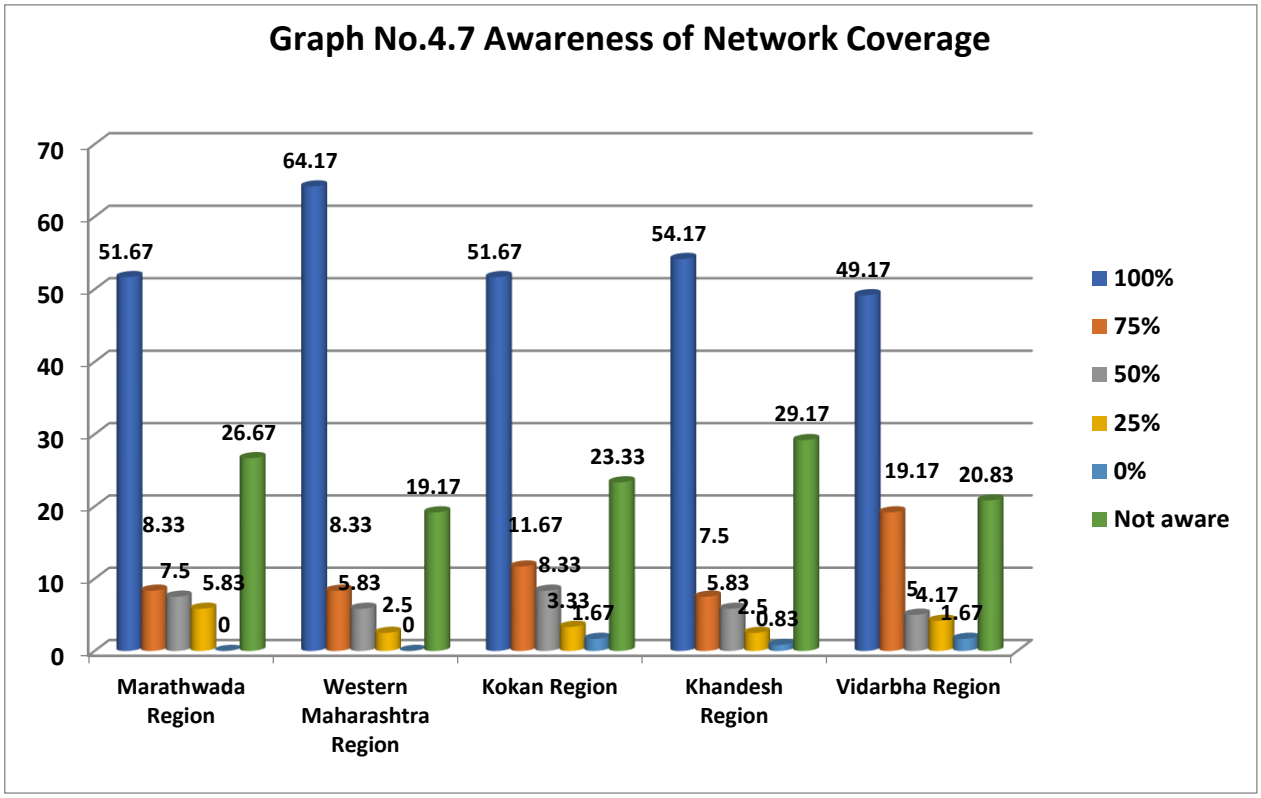
### *4.7 Awareness of Network Coverage*

**Table No.4.7**

**Awareness of Network Coverage**

| Network Coverage | Marathwada Region | | Western Maharashtra Region | | Kokan Region | | Khandesh Region | | Vidarbha Region | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % | No. | % | **No.** | **%** |
| **100%** | 62 | 51.67 | 77 | 64.17 | 62 | 51.67 | 65 | 54.17 | 59 | 49.17 | **325** | **54.17** |
| **75%** | 10 | 8.33 | 10 | 8.33 | 14 | 11.67 | 9 | 7.50 | 23 | 19.17 | **66** | **11.00** |
| **50%** | 9 | 7.50 | 7 | 5.83 | 10 | 8.33 | 7 | 5.83 | 6 | 5.00 | **39** | **6.50** |
| **25%** | 7 | 5.83 | 3 | 2.50 | 4 | 3.33 | 3 | 2.50 | 5 | 4.17 | **22** | **3.67** |
| **0%** | 0 | 0.00 | 0 | 0.00 | 2 | 1.67 | 1 | 0.83 | 2 | 1.67 | **5** | **0.83** |
| **Not aware** | 32 | 26.67 | 23 | 19.17 | 28 | 23.33 | 35 | 29.17 | 25 | 20.83 | **143** | **23.83** |
| **Total** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **600** | **100.00** |

**Source**:- Primary Data. (2024-25)




From the above table 4.53 it is observed that out of 600 sample highest number of customer respondents as awareness 100 percent of network coverage as respondents were 325 (54.17%) which include maximum 64.17% in the Western Maharashtra region and minimum 49.17% in the Vidarbha region. While 143 (23.83%) respondents were awareness not aware of network coverage which include maximum 29.17% in the Khandesh region and minimum 19.17% in the Western Maharashtra region. While 66 (11%) respondents are awareness 75 percent of network coverage which include maximum 19.17% in the Vidarbha region and minimum 7.50% in the Khandesh region. While 39 (6.50%) respondents are awareness of network coverage 50 percent which include maximum 8.33% in the Kokan region and minimum 5% in the Vidarbha region. Only 22 (3.67) respondents were awareness 25 percent of network coverage and 5 (0.83%) respondents are 0 percent awareness of network coverage

It is concluded that awareness of network coverage as 100 percent respondents are 54.17%. .

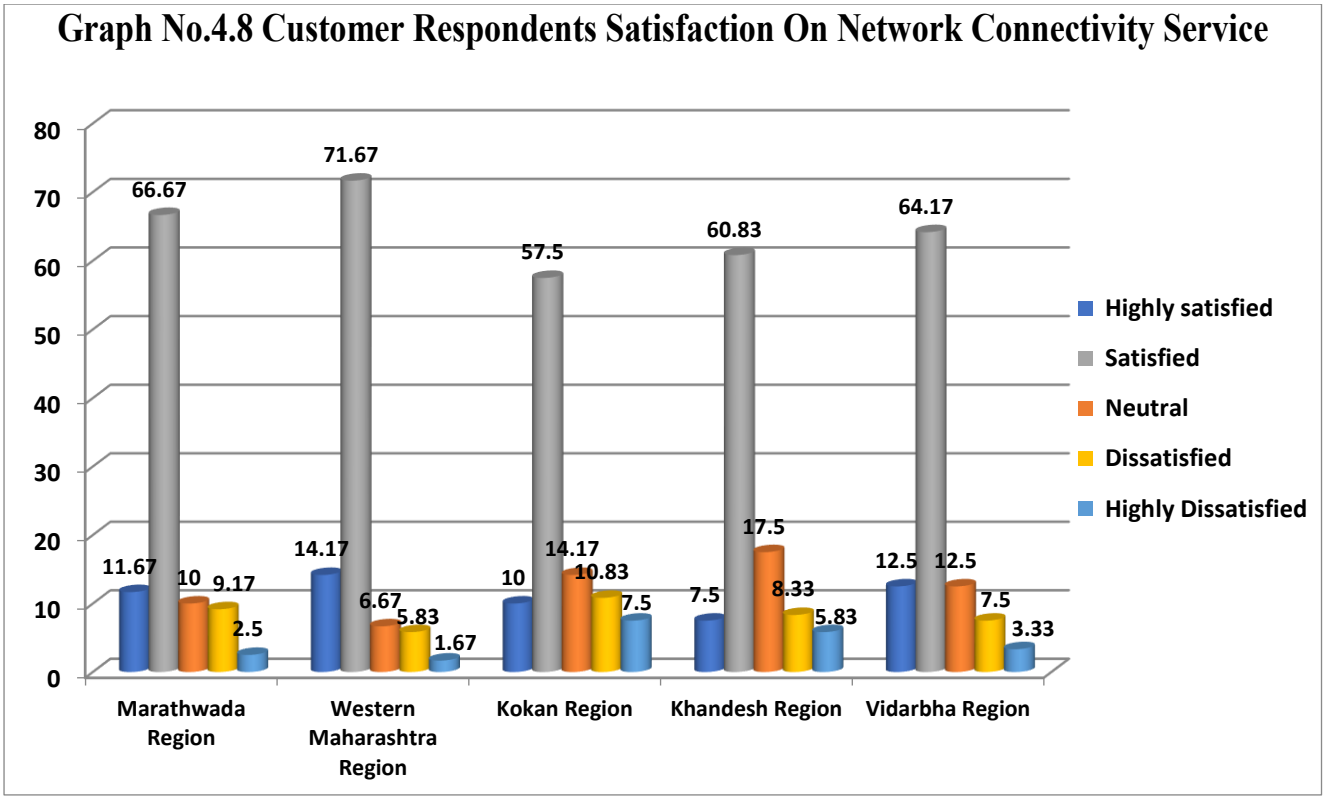
### *4.8 Customer Respondents Satisfaction On Network Connectivity Service*

**Table No.4.8**

**Graph No.4.8 Customer Respondents Satisfaction On Network Connectivity Service**

| Level of Satisfaction | Marathwada Region | | Western Maharashtra Region | | Kokan Region | | Khandesh Region | | Vidarbha Region | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % | No. | % | **No.** | **%** |
| **Highly satisfied** | 14 | 11.67 | 17 | 14.17 | 12 | 10.00 | 9 | 7.50 | 15 | 12.50 | **67** | **11.17** |
| **Satisfied** | 80 | 66.67 | 86 | 71.67 | 69 | 57.50 | 73 | 60.83 | 77 | 64.17 | **385** | **64.17** |
| **Neutral** | 12 | 10.00 | 8 | 6.67 | 17 | 14.17 | 21 | 17.50 | 15 | 12.50 | **73** | **12.17** |
| **Dissatisfied** | 11 | 9.17 | 7 | 5.83 | 13 | 10.83 | 10 | 8.33 | 9 | 7.50 | **50** | **8.33** |
| **Highly Dissatisfied** | 3 | 2.50 | 2 | 1.67 | 9 | 7.50 | 7 | 5.83 | 4 | 3.33 | **25** | **4.17** |
| **Total** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **120** | **100.00** | **600** | **100.00** |

**Source**:- Primary Data. (2024-25)




In the above table 4.8 customer satisfaction regarding network connectivity service is presented. The number of satisfied respondents out of 600 are 385 (64.17%) in which include maximum 71.67% in the Western Maharashtra region and minimum 57.50% in the Kokan region. While 73 (12.17%) respondents were neutral which include maximum 17.50% in the Khandesh region and minimum 6.67% in the Western Maharashtra region. While 67 (11.17%) respondents were highly satisfied which include maximum 14.17% in the Western Maharashtra region and minimum 7.50% in the Khandesh region. While 50 (8.33%) respondents were dissatisfied which include maximum 10.83% in the Kokan region and minimum 5.83% in the Western Maharashtra region. Only 25 (4.17%) respondents were highly dissatisfied.

It is concluded that customer satisfaction on network connectivity service is 64.17% are satisfied.

It is concluded that the hypotheses many customers are not fully satisfied with the network connectivity has been negatively proved as from the present table it is evident that customer satisfaction on network connectivity service is 64.17% & 11.17 for satisfied and highly satisfied respectively which is very high.

## 5. Conclusion

The study aimed to examine network connectivity and customer satisfaction among mobile SIM users across five regions of Maharashtra: Marathwada, Western Maharashtra, Kokan, Khandesh, and Vidarbha. Based on responses from 600 participants, several important insights were revealed.

Firstly, the majority of respondents (79.17%) reported that they could access network coverage easily, indicating that mobile connectivity infrastructure has improved significantly. However, regional disparities remain, with Western Maharashtra reporting the best coverage and Kokan facing comparatively weaker performance.

Secondly, customer ratings of network service highlighted that nearly half of the respondents (47.17%) considered it “good,” while a considerable proportion (29.17%) rated it “average.” This suggests that while overall service quality is satisfactory, there is still scope for improvement in regions like Kokan and Vidarbha.

Thirdly, the most pressing problem reported was “not getting range” (36.67%), followed by voice clarity issues (24.83%) and network congestion (21%). Connectivity problems were also reported more frequently while traveling (54.83%) and during specific hours, particularly between midnight and 1 a.m. (45.67%).

Fourthly, while most respondents (76.17%) were aware of their company’s network coverage, around one-fourth lacked such awareness, which reflects a need for better communication from service providers.

Finally, customer satisfaction analysis revealed that 64.17% were satisfied and 11.17% were highly satisfied, making a combined total of over 75% positive satisfaction. This disproves the hypothesis that “many customers are not satisfied with network connectivity.”

In conclusion, the study establishes that although mobile network connectivity in Maharashtra is largely satisfactory, significant challenges persist in terms of range, service consistency while traveling, and night-hour stability. Addressing these issues through infrastructure enhancement, better rural penetration, and improved customer communication can further boost satisfaction levels. Service providers must therefore focus not only on expanding coverage but also on ensuring consistency and reliability, which are crucial for sustaining customer trust and loyalty.

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