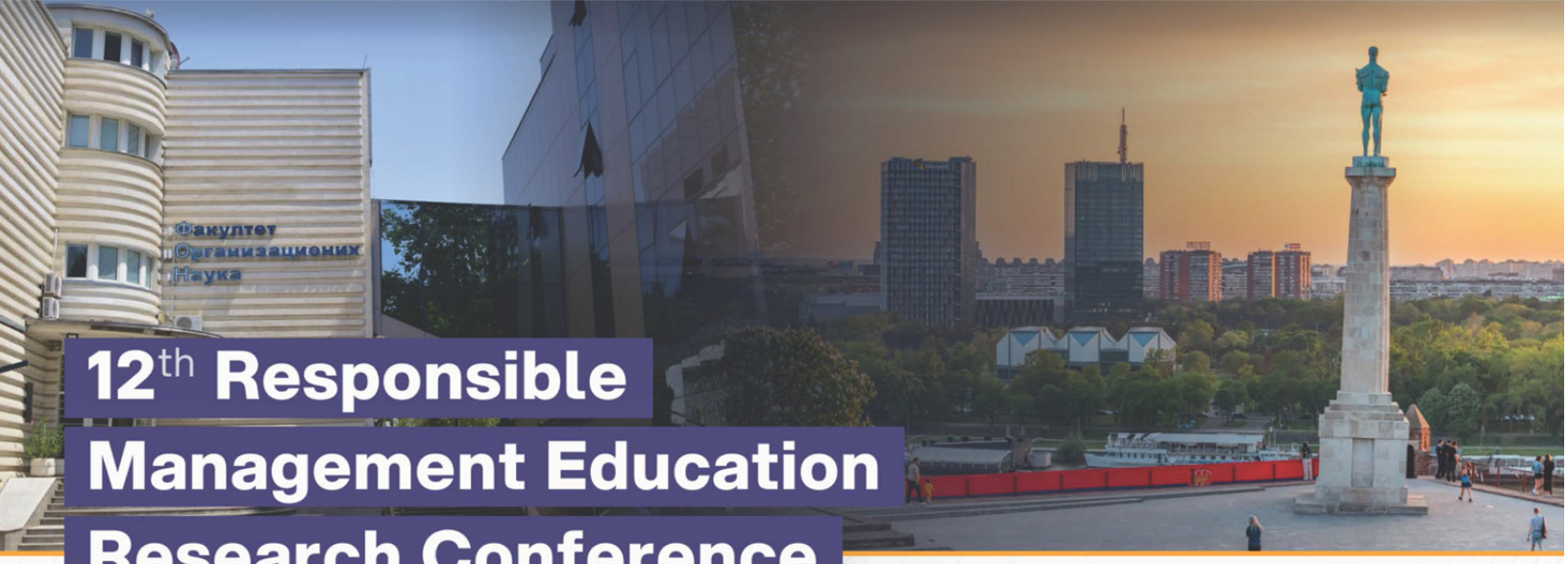

FROM CONNECTIVITY TO OPPORTUNITY: DRIVING TELCO BUSINESS TRANSFORMATION WITH IOT

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OBJECTIVE

During the past decades telco operators dominated in the world of information and communication technologies, mostly because of the infrastructure they have built over the years and deep technical expertise (Vaigandla, Bolla, & Karne, 2021). However, due to disruptive change in telco industry caused by rapid technological advancement, data traffic growth and reduction of traditional voice revenue, mobile operators nowadays are undergoing business transformation - from providing traditional connectivity services to developing novel, value-added services enabled by emerging technologies and new business models (Hosein & Pack, 2023, Mihailovic, Stosic, & Milutinovic, 2024). The internet of things (IoT) represents an opportunity for telco operators, firstly by exploiting infrastructure and their technical knowhow and secondly by expanding portfolio with IoT solutions (Banda, Mzyece, & Mekuria, 2022). The study aims to bridge theoretical perspectives with empirical evidence, in order to explore how telco operators can derive both technical and commercial value from IoT ecosystems, depending on end-user characteristics.

METHODOLOGY

This study was conducted in the multinational telecommunications organization based in Serbia, part of a larger international group that has 28 million customers around Europe. The research focused on three core domains related to IoT and mobile operators: (1) IoT connectivity, (2) IoT security, and (3) mobile operators as IoT solution providers. Each domain was analysed independently, with the overall research framework illustrated in Figure 1.

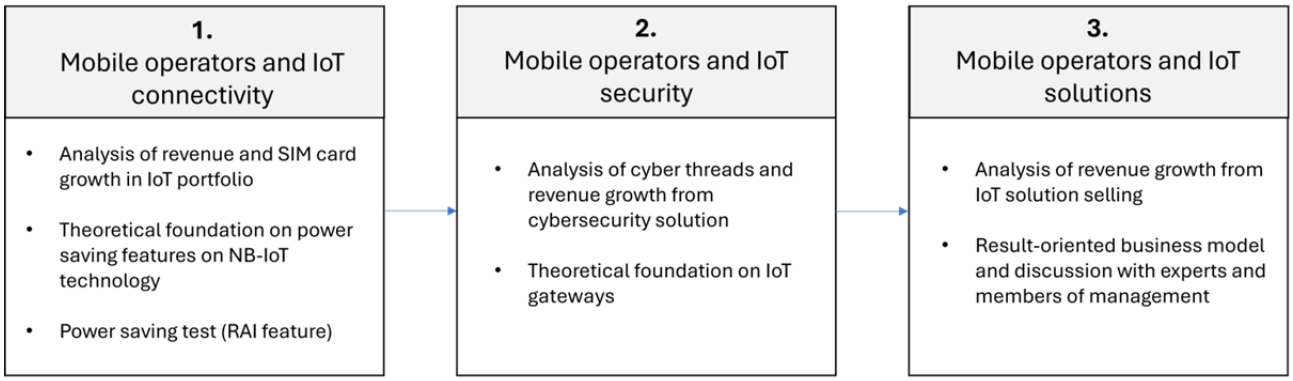

Figure 4: Research methodology

A literature review highlighted technological opportunities in IoT, with particular emphasis on how NB-IoT technology can impact energy efficiency and security (García-Martín & Torralba, 2022, Lukic et al., 2020, Schiller et al.,2022). Empirical measurements of device power consumption were conducted using the Otii Arc Pro tool, with the Release Assistance Indicator (RAI) feature enabled on both network and device side. Quantitative data on IoT devices, cybersecurity threats, and revenue growth were provided by the operator and complemented with public data. For the business perspective, in-depth interviews were conducted with key stakeholders involved in IoT solution design and sales, supported by internal documents and public materials.

Preliminary findings were presented to the company for validation, and secondary data were used to triangulate results, reducing bias and improving study reliability of the study.

RESULTS AND DISCUSSION

Through in-depth discussions with experts, the study has shown that the revenue generated from the IoT segment (which includes both IoT connectivity services and IoT solutions) has annual growth between 17% and 21% since 2020, which reflects the market demand and the strategic importance of IoT within the telecommunications business portfolio.

The findings have shown three key insights:

1. Reduction in IoT Device Power Consumption:
   The study demonstrated that IoT device power consumption can be substantially decreased by optimizing both network configurations and device settings. In particular, enabling the Release Assistance Indication (RAI) feature on the network and device sides significantly improved energy efficiency, extending the battery life of NB-IoT devices. These technical optimizations are crucial for large-scale IoT deployments where prolonged device autonomy and lifetime is very important.

2. Enhancement of IoT Network Security:
   Security remains a concern for operators in IoT ecosystems. The research identified strategies that operators can implement to improve network security, including real-time monitoring of threats, implementation of advanced encryption protocols, and integration of security features within IoT devices and gateways. Strengthening security not only protects infrastructure but also builds customer trust, which is vital for broader IoT adoption.

3. Result-oriented business model for IoT Solutions as market differentiator:
   From a business perspective, operators can increase the market visibility and commercial success of their IoT solutions by tailoring offerings to specific end-user needs and industry verticals. With result-oriented business model customers pay certain amount for the service they use for as long as they use the service. Operator is the owner of equipment, he is responsible for maintenance, system updates and improvements, repairs, and replacements (if needed) and he has to provide the desired outcome to customer for the duration of contract. With this model, operator maximizes the equipment usability, contributing to sustainability. As for customer, he benefits from using the well-maintained equipment for as long as he needs it, and when he no longer needs it, he has no concerns about the hardware, he just returns it back.

CONCLUSION

With reference to theory and with real-world examples this study identifies and categorizes strategic approaches mobile operators can adopt to strengthen position in the IoT ecosystem. The study has shown that operators, as the owners of well established, secure infrastructure and experts in the domain of network technologies can play a crucial role in supporting IoT solution development and maximizing the value derived from the technology.

While previous studies analysed mobile operators in the IoT ecosystem from either strongly technological (Savic et al., 2021) or business perspective (Mihailovic, Stosic, & Milutinovic, 2024), this research combines both technology and business strategies

operators can have in the IoT ecosystem, depending on who the users of the service are. The findings complement the literature regarding the NB-IoT technology and module energy consumption and IoT security, it also provides a detailed application of result-oriented business model. The study emphasizes how operators can transform technical competencies into commercially viable offerings.

Several managerial implications can be drawn for telco companies that want to improve and better structure their business in the field of IoT. Firstly, by emphasizing operator strengths in the technology domain, and secondly by presenting business model that could help them differentiate on the market.

The study provides practical insights for telco organizations aiming to define strategic direction, generate value, and gain advantage in the rapidly evolving IoT ecosystem.

Keywords: *Telco operators; NB-IoT; strategy; result-oriented solutions.*

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