

From Industry Leader to Near Extinction: Unpacking the Tragic Tale of Nokia's Downfall

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Abstract – In-depth assessments and analyses of Nokia Corporation's strategic technology management are provided in this study. We examined and studied the historical evolution of Nokia's core business, leadership strategies, business architecture, R&D policy, innovation strategy, various product launches, and recognition and demonstration of smartphones using traditional narrative literature studies and secondary sources. We discovered a number of strategic gaps that earlier analytical investigations appeared to have failed to recognize and generalize. In order to add to the body of knowledge, we present a collection of the lessons discovered that chronologically explain why Nokia was unable to establish and maintain a competitive edge, particularly in the smartphone market. We concluded that Nokia's issues were not caused by a lack of innovation but rather by a lack of precise technology forecasting and a failure to recognize that the demands of the smartphone market went beyond simply showcasing a mobile phone that can make calls, send texts, and connect to the internet, but also the platform that runs all these functions simultaneously. We further debate how likely it is that the new Nokia handsets would compete and credibly succeed in a very well-established market since the brand name Nokia has lately returned to the market through a newly licensed company (HMD Global).

Index Terms – Nokia, UI, UX, strategy, failure, design, market, mobile phone.

I. INTRODUCTION

According to Peter Drucker, a company's mission statement should serve as the foundation for all of its goals and plans. Nokia's objective was "connecting people," which was clear and concise. Nokia was committed to expanding its brand internationally and regaining the authority and market dominance it formerly possessed. The company successfully transitioned from a Finnish corporation to a worldwide player in 1994, becoming one of the largest mobile phone companies in the world in terms of volume,

revenue, market share, and profit in the 1990s and early 2000s. The launch of its first smartphone, the N95, and the Symbian operating system in spring 2007 helped the business maintain its leadership position, which is evidenced by the increase in market share from 36% in 2006 to 38% in 2007.

In fact, Nokia established another hegemony, particularly in the smartphone sector, with a market share of 70% in 2007, considerably outpacing its rival. However, with the release of the Apple iPhone in the third quarter of 2007 and the ground-breaking Human-Computer Interface (HCI), which established the standards for the user experience, Nokia's success story started to fade. Even though Nokia's global market share still stood at 39% in 2008, all of its financial metrics started to fall. Net sales decreased (-1%), operational profit decreased (-38%), and profit attributable to equity investors decreased (-45%), for example. As a result, senior management implemented a number of strategic reforms to put the business back in the forefront, or at the very least, to make up for or lessen the losses sustained since then. In order to implement new plans, the CEO was replaced as part of these strategic adjustments in 2010. Nokia continued to deteriorate year after year.

According to Nokia, its market capitalization decreased from 110 billion euros to 15 billion euros in 2012, which forced the business to close a few manufacturing facilities and R&D centers and lay off a large number of workers. Additionally, Microsoft made a formal announcement in September 2013 about the acquisition of Nokia's business unit for devices and services for 3.79 billion euros, as well as a 1.65 billion euro patent license. Sadly, Microsoft was unsuccessful in the smartphone market as well, and later in May 2016, the feature phone assets were sold for \$350 million to FIH Mobile Ltd., a subsidiary of the Taiwanese company Foxconn Technology, and the newly founded company HMD Global. This research aims to answer these questions:

- Despite being one of the greatest business success stories in history, what strategic flaws at Nokia Corporation caused its downfall, notably in the smartphone market?
- How probable is it that HMD Global, the new manufacturer of Nokia phones, will be successful in the smartphone market?

In this study, we want to show that a very successful company's tale might end in complete failure, especially if its strategies and plans diverge from its goals and mission. When the leadership fails to anticipate the appropriate time for the technology to hit the marketplace or underestimates or misunderstands the total capabilities of the competitors, the market size and demand, the customer wants and needs, and the industry ecosystem, the business eventually fails, regardless of how large its market share or how superior its leading position may be. Although a company's failure like Nokia's was painful and costly, it might serve as an ideal lesson learned to evaluate strategies for establishing, developing, and maintaining competitive advantages.

II. HISTORY

Established in 1865 as a paper mill in Finland, Nokia underwent a remarkable transformation, emerging as a versatile technology conglomerate engaged in the electronics, rubber, and cable industries. Its pioneering concepts propelled Nokia to dominance in the mobile phone market during the late 1990s

and early 2000s. Nevertheless, the advent of smartphones led Nokia to adapt swiftly, ultimately resulting in the sale of its mobile phone division to Microsoft in 2014. Despite the challenges and setbacks, Nokia's enduring legacy endures in the realm of mobile technology. The company's innovations and breakthrough designs continue to shape the industry and leave an indelible mark on its evolution. Nokia's rich history and invaluable contributions serve as a testament to its pivotal role in revolutionizing the telecommunications landscape.

III. DESIGN STRATEGIES

Nokia was once a leading mobile phone manufacturer known for its innovative designs and user-friendly interfaces. The company's early design strategies for UI and UX focused on simplicity, intuitiveness, and user-centricity. Here are some of the key design strategies that Nokia followed in its early days

Focus on simplicity: Nokia's design philosophy of simplicity was a critical factor in their success in the mobile phone market. They believed in easy-to-use interfaces with minimal buttons and menu options, clear icons and graphics, and an intuitive interface. This helped users find functions quickly and without extensive training. The consistent design language across their product line built brand loyalty, while customization options added to the user experience. Nokia's focus on simplicity attracted a broad range of customers and helped them become a leader in the market. This approach is still relevant today and remains a key factor in modern user interface design.

User-centric design: User-centric design is an approach to product design that prioritizes the needs, preferences, and experiences of the user. Nokia's designers recognized the importance of this approach early on and incorporated it into their design process. They conducted extensive research to understand user needs and preferences, which included studying market trends, analyzing user behavior, and conducting usability testing. One of Nokia's key strengths was its ability to gather and analyze user feedback. The company solicited feedback from users through various channels, such as customer support, social media, and online forums. The result of this user-centric approach was an interface that was tailored to the needs of the user.

Consistency across devices: Nokia's commitment to consistency in its product design was a key aspect of its UI/UX strategy. A consistent design language made it easy for users to transition between devices and built brand loyalty. Nokia achieved consistency by developing design guidelines that covered everything from buttons to typography. This approach allowed users to quickly find features and functions, without having to navigate complex menus. Consistency across devices also helped establish Nokia's brand identity and differentiate it from competitors, creating a sense of brand loyalty among its customers.

Customization: Customization was a crucial aspect of Nokia's early design strategy, and it played a significant role in building brand loyalty among users. Nokia recognized that users wanted to personalize their phones to suit their individual tastes and preferences.

As a result, Nokia provided users with a range of options for personalization, including:

Ringtones: Nokia allowed users to choose from a range of built-in ringtones or create their own using the phone's built-in composer. This gave users the freedom to set a ringtone that suited their personality and preferences.

Wallpapers: Nokia phones came with a variety of built-in wallpapers, and users could also download their own images to use as wallpapers. This allowed users to customize their phone's interface and make it more personalized.

Themes: Nokia also offered users the option to change the phone's theme, which would change the overall look and feel of the interface. Users could choose from a range of built-in themes or download custom themes from third-party websites. By providing users with a range of options for personalization, Nokia made its phones feel more personalized and unique to each user. This helped to build brand loyalty, as users became attached to their personalized phones and were more likely to stick with Nokia when upgrading to a new phone.

Easy Navigation: In their User Interface/User Experience (UI/UX) design, Nokia placed significant emphasis on the navigation to ensure that users could easily find the features they needed and reach their desired destination as quickly as possible. This design strategy involved creating a clear and intuitive navigation system that allowed users to move through the interface with ease. Nokia's UI/UX design followed a logical and hierarchical structure where the most critical features were placed in prominent positions, making them easily accessible to the user. They also used clear and concise labeling and avoided cluttering the interface with unnecessary elements that could distract the user from their goal. By prioritizing navigation in their UI/UX design, Nokia aimed to create a seamless user experience that maximized efficiency and reduced frustration.

Intuitive Design: Intuitive interaction is an essential aspect of user interface/user experience (UI/UX) design, and Nokia focused on making their products easy to use with minimal effort. Intuitive interaction refers to the user's ability to interact with the product in a natural and effortless manner. Nokia achieved this by designing their products in a way that matched users' expectations and behaviors, making the interaction intuitive and easy to understand. They ensured that their products had a consistent design and that the user could predict the system's behavior with minimum effort.

The Evolution of Nokia's User Interface Throughout Time

Throughout its history, Nokia's user interface has undergone significant evolution. Here is a summary of the key points:

- Mobira Senator (1982): The first mobile phone in a box, it had a handle and no display screen. The number pad and function buttons were operated from the top.
- Mobira Talkman (1984): A portable car phone that could be recharged in the vehicle. It had a monochromatic display on the hook and a keypad pointing away from the user's face.
- Mobira Cityman (1987): a compact mobile phone with a hands-free design and a range of functions accessible through numbered keypads.

- Cityman PT (1990s): similar brick-shaped design with improved portability and alphabetic buttons for typing contact names. supports rapid dialing and automatic redial.
- Nokia Analogue 101 (1992): popular candy bar-shaped phone with green and red-coloured keys and a user-friendly menu system.
- Nokia 2110 (1994): A best-selling business phone with a compact size and oval group of navigation and select keys arranged within the display screen.
- Nokia 3210 (1999): mass-market phone with a curved design for comfortable button operation and a menu button to access functions. The first Nokia phone with a built-in camera.
- Nokia 1100 (early 2000s): best-selling phone globally, designed for users who primarily needed basic functions like calling, saving contacts, and sending messages.
- Nokia 7650 (2002): The first phone running the Symbian OS, featuring a sliding keyboard, a color display, and a joystick for menu browsing.
- Nokia 613-133 (2006): Clamshell smartphone with improved features like a 1.3-megapixel camera, microSD card slot, and enhanced internet access.
- Nokia N97 (2009): touchscreen smartphone with a tilt-slide-out QWERTY keyboard, eliminating navigation keys on the front screen.
- Nokia X6 (2010): compact touchscreen phone with a trapezoidal shape, Symbian OS, and various colored backlit buttons.
- Nokia N900 (2012): the last flagship smartphone in the Nokia N series, featuring a simple design, an AMOLED display, and no physical buttons except for power and volume control.

Nokia's user interface has evolved from simple button-based interfaces to more advanced touchscreens, offering improved functionality and design aesthetics over the years.

Motivation for our work

Once upon a time, the world was ruled by one mobile phone brand: Nokia. Their sturdy button phones were the talk of the town, and everyone, from tech-savvy youngsters to old folks who still used dial phones, wanted a Nokia in their hands. Quality, service, and customer satisfaction were their hallmarks, and for nearly a decade, Nokia was unbeatable in the mobile industry. But as they say, all good things must come to an end. The mobile landscape changed with the introduction of smartphones, and Nokia struggled to keep up with its competitors. The once-mighty empire that ruled the mobile industry for so long has fallen, and now the only place you can find Nokia mobiles is in memes.

It's a tale of rags to riches and back to rags again. Nokia tried to make a comeback, but their efforts proved to be in vain. The question on everyone's mind is: how did such a prominent mobile empire fall so hard that people just remember the company as a distant memory? The answer to this question is the motivation for our research—the curiosity to uncover the story behind Nokia's downfall. It's a fascinating journey, full of twists and turns, triumphs and failures, and one that has many lessons to teach us about the volatile and unpredictable nature of the technology industry.

IV. DESIGN CHALLENGES

- Limited-screen real estate: Nokia faced the challenge of designing visually appealing interfaces with limited screen space. They used simple and intuitive navigation menus to optimize functionality.
- Button-based navigation: Early Nokia phones relied on physical buttons for navigation, requiring UI designers to create easy-to-understand interfaces.
- Limited processing power: Nokia's early phones had limited resources, resulting in slow processors and less memory. Designing responsive and quick-loading UIs was a challenge.
- Battery life: Balancing functionality and power conservation was crucial due to limited battery life.
- Limited memory: UI designers optimized memory usage through compression techniques due to limited memory in early Nokia phones.
- Multi-lingual support: Nokia incorporated dynamic font sizes, variable spacing, and flexible layouts to support different languages.
- Accessibility: Early Nokia phones lacked modern accessibility features, unlike contemporary smartphones.
- Consistency: Nokia achieved UI design consistency by adopting standardized principles, enhancing brand identity and the user experience.
- Designing for different use cases: Nokia catered to various user profiles, tailoring UIs for professionals and leisure-oriented users.
- Limited input options: Early Nokia phones had limited input methods, unlike modern smartphones with touch screens, providing more design flexibility.

Research & Comparisons

CASE STUDY – 1: Nokia vs. Motorola



Fig. 1: Nokia and Motorola initial phone designs as persona representation

Motorola, a major rival of Nokia in the mobile phone industry, gained recognition with its popular RAZR line. Both companies were pioneers, introducing innovative features and designs. The Nokia 3310, released in 2000, impressed users with its durability and straightforward UI/UX. Meanwhile, the 2004 Motorola RAZR V3 captivated users with a visually appealing UI/UX, utilizing icons and a color display.

CASE STUDY – 2: Nokia vs. Samsung



Fig. 2: Nokia and Samsung initial touch phone designs as persona representation

The Nokia Lumia 920 boasts a sleek and contemporary polycarbonate unibody design, vibrant colors, and rounded edges. It exudes a premium feel with well-placed physical buttons. On the other hand, the Samsung Galaxy S3 sports a traditional plastic body, rounded corners, a physical home button, and a slim profile with a higher screen-to-body ratio than the Lumia 920.

CASE STUDY – 3: Nokia vs. Apple



Fig. 2: Nokia and Apple (iPhones) initial touch phone designs as persona representation

The Nokia Asha 306 and iPhone 5 present distinct user experiences in design, interface, customization, connectivity, features, and security. The Asha 306 offers a basic interface with limited customization and app store access, while The iPhone 5 boasts a modern design, advanced features, extensive customization, a large app store, and heightened security. Similarly, the Lumia 920 and Galaxy S3 differ in UI/UX design, with the Lumia 920 featuring a sleek tile-based interface and the Galaxy S3 offering a customizable app-based interface. The choice between them relies on personal preferences, OS familiarity, and desired features.

What were the key factors that led to the downfall of Nokia in terms of UI and UX?

The downfall of Nokia in terms of UI/UX can be attributed to several key factors, including:

- **Failure to Keep Up with Evolving User Expectations:** Nokia failed to keep up with rapidly evolving user expectations in terms of user interface and user experience.
- **Lack of Innovation in UI/UX:** Nokia struggled to innovate in terms of UI/UX. While competitors like Apple and Android-based smartphones were introducing new UI/UX features such as

capacitive touch screens, app stores, and customizable interfaces, Nokia's UI/UX remained stagnant.

- **Inability to Adapt to New Technologies:** Nokia failed to effectively adapt to new technologies that were shaping the mobile industry, such as app stores, mobile internet, and touch-based interfaces.
- **Fragmented UI/UX Across Devices:** Nokia had a wide range of devices with different operating systems, UI/UX, and user experiences, which created a fragmented ecosystem.
- **Competitive Pressure from Rivals:** Competitors such as Apple and Android-based smartphones gained popularity with their innovative UI/UX, compelling app stores, and modern design aesthetics.
- **Slow Response to Changing Market Dynamics:** Nokia was slow to respond to changing market dynamics and emerging trends in the mobile industry.

What lessons can be learned from Nokia's downfall in terms of UI/UX strategy for other companies in the mobile industry?

Nokia's downfall in terms of UI/UX strategy provides valuable lessons for other companies in the mobile industry. These lessons include:

- **Evolve with user expectations:** It is crucial to continually evolve UI/UX to meet changing user expectations.
- **Foster Innovation:** Innovation is key to staying competitive in the mobile industry. Companies should invest in research and development to introduce new and innovative UI/UX features that differentiate their products from competitors.
- **Adapt to Emerging Technologies:** Keeping up with emerging technologies is crucial for UI/UX success.
- **Provide Customization and Personalization Options:** Offering customization and personalization options in the UI and UX can enhance user satisfaction.
- **Create a Cohesive and Consistent User Experience:** Providing a cohesive and consistent UI/UX experience across devices and platforms is crucial.
- **Listen to Customer Feedback:** Paying attention to customer feedback and reviews is vital for UI/UX strategy. Companies should actively seek feedback from users and incorporate their suggestions into improving UI and UX experiences.

V. CONCLUSION

Nokia's downfall in the mobile industry can be attributed to factors such as outdated UI/UX strategies. Lessons from Nokia's experience include evolving with user expectations, fostering innovation, adapting to emerging technologies, customizing, creating a cohesive user experience, and listening to customer feedback. This cautionary tale emphasizes the importance of staying innovative, adapting to changing expectations, and implementing effective UI/UX strategies for long-term success in the mobile industry.

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