

The Role of Mobile Applications in Accelerating Digitization: Transforming Business Operations Through Automation

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Abstract- *Due to the enormous changes in the business environment of the twenty-first century, digitalization has become a prominent necessity for companies' survival. This research studied how mobile applications are critical enablers of digitally driven Change in organizations. By analyzing how mobile apps enable the automation of business processes, the research demonstrates their displacement in driving organizational effectiveness, customer relations, and productivity improvements. In this article, employing case studies and interviews with expert information technology users, the author examines primary trends and issues linked to incorporating mobile applications into conventional enterprise models and procedures. The study establishes that mobile applications increase outcomes in terms of communication, reduce costs, and improve data handling but pose threats like security risks and a reluctance to switch to new technologies. This research provides a set of managerial implications for businesses on how to manage and utilize mobile applications to drive digitization. It discusses potential future trends in this rapidly evolving domain.*

Indexed Terms- *New Technologies, Smart Phone Applications, Company Processes, Robotics, Productivity.*

I. INTRODUCTION

1.1 Background on digitization in business

Digitalization is characterized as the integration of advanced innovation into existence. As commerce and working could be a major portion of the standard of living for most individuals, it is likely the most important thing to change. It can mechanize forms and degree perspectives of trade that were already

unmeasurable, cross reference, and apply data from various sources to supply knowledge into choice-making. Moreover, all these are done so that the central method of reasoning behind businesses can flourish: Making a benefit.

1.2 Importance of Mobile Applications in the Digital Landscape

Mobile applications are crucial in today's digital landscape because they enhance user engagement, streamline business operations, and facilitate service access. The proliferation of smartphones and mobile devices has transformed how individuals and businesses interact. Here are some key points highlighting their importance:

- **Accessibility:** Mobile applications enable users to access services and information anytime and anywhere. This level of accessibility is essential for meeting the demands of today's on-the-go consumers.
- **Enhanced User Experience:** Well-designed mobile applications provide a superior user experience to mobile websites. Features such as push notifications, offline access, and personalized interfaces contribute to higher user satisfaction and retention.
- **Data Collection and Analytics:** Mobile apps allow businesses to collect valuable user behavior and preferences data. This data can be analyzed to improve services, target marketing efforts, and make informed business decisions.
- **Competitive Advantage:** Organizations that leverage mobile applications can gain a competitive edge by improving customer engagement, increasing operational efficiency, and adapting quickly to market changes.

- Integration with Emerging Technologies: Mobile applications can integrate with technologies such as artificial intelligence (AI), augmented reality (AR), and the Internet of Things (IoT), enhancing their functionality and providing innovative solutions to users.

1.3 Purpose and Scope of the Research

The main purpose of this study is to understand the role mobile applications play in the digital transformation of various businesses. The research investigates how different industries can automate operations, gain efficiency, and engage with customers more effectively using mobile apps. The research topics of interest for the project will include benefits and affective user adoption of mobile applications across the retail, healthcare, financial, and services industries. It will analyze the effectiveness of mobile app integration in the context of quality and quantity its impact on the user and concerning the performance of an organization, as well as the best practices for how a business can successfully integrate the apps. The challenges businesses face when integrating mobile technologies will also be highlighted with specific solutions. The study aims to understand how mobile apps can facilitate automation, improve operational efficiency, and enhance customer engagement in various industries.

Scope of the Research:

- The research will focus on the impact of mobile applications in diverse sectors, including retail, healthcare, finance, and service industries.
- It will examine both qualitative and quantitative aspects of mobile app integration, including user experiences, business outcomes, and case studies of successful implementations.
- The study will also address the challenges businesses face in adopting mobile technologies and provide recommendations for effective integration.

1.4 Research Questions and Objectives

To guide the research, the following questions and objectives have been formulated:

Research Questions:

- What are the Key benefits of mobile applications in enhancing business operations and customer engagement?

- How do mobile applications contribute to the automation of business processes?
- What challenges do organizations face when integrating mobile applications into their existing systems?
- What best practices can businesses adopt to maximize the effectiveness of mobile applications in their digital transformation efforts?

Research Objectives:

- To understand the positives of mobile applications for business concerning operation dynamics and customer relations.
- To assess the possibility of mobile applications in automating business and work processes in an organization.
- To identify the issues organizations can face while implementing mobile applications, suggest solutions.
- To make practical suggestions on how organizations can use mobile applications in their strategic business reinvention plans.

II. LITERATURE REVIEW

2.1 Definition of key concepts

1. Digitization

Digitization is the method of changing data into an advanced organization. This includes changing analog information, such as paper, photos, or sound recordings, into computerized records that computers and other automated gadgets can put away, prepare, and get to.

Digitization is significant since it upgrades the proficiency and openness of data. By changing analog information into advanced groups, organizations can streamline their operations, decrease costs related to physical capacity, and move forward with information conservation. Digitized information is less demanding to share and analyze, empowering superior decision-making and enhancing efficiency. Within the protection industry, for illustration, digitization leads to quicker claims handling, progressed client encounters, and more

2. Mobile applications

A computer program created specifically for mobile platforms, like smartphones and tablets, is known as a

mobile application. Users can download and install these apps, which are usually available in app stores. Mobile apps can be used for various purposes, from social networking and gaming to flight booking and money management.

3. Automation

Automation Definition

Automation is using technology to complete tasks without requiring human interaction. Automating routine, repetitive, or dangerous processes aims to increase efficiency, reduce errors, and save costs. Automation is becoming more common in various industries, such as manufacturing, finance, healthcare, and transportation.



Figure1 : Automation

This has led to notable improvements in safety, quality, and productivity. However, there are disadvantages to automated adoption, such as the loss of human jobs, cybersecurity risks, and ethical quandaries.

Automation frequently employs sensors, actuators, and controls to monitor and regulate how machinery and systems operate. This makes it possible for machines to work constantly without breaks or downtime, completing tasks more precisely and effectively than humans. The degree of automation can range from simple rule-based processes to complex cognitive tasks.

2.2 Historical context of digitization in business

The reason why digitalization is such a hot topic is not because it sounds like a "cool thing" to do but because it is probably one of the first true revolutions in business history. (In comparison, the industrial "revolution" 1760-1840 took 80 years. Sure, there are many similarities as well.)

Digitalization is defined as the integration of digital technology into everyday life. As business and work

are major parts of everyday life for most people, it is the main thing that needs to change. Being able to automate processes, measure aspects of business that were previously unmeasurable, and even cross reference and apply information from various sources to provide insight into decision-making.

III. METHODOLOGY

The method explains how the study was conducted systematically to ascertain how mobile applications fast-track businesses' digitization process and automate their operations. The following subtopic describes the research methodology, data collection tools, and methods of analyzing data.

3.1 Research Design

The research design lays down the exploited sourcing method and scrutinizes empirical data. To draw up the results for this work, the mixed approach was chosen; therefore, the qualitative data along with the quantitative one were analyzed.

1. Qualitative vs. Quantitative Approach:

Qualitative Approach: This aspect concerns the discovery of the views and activities of consumers and industrial practitioners about mobility applications and their influence on digitalization. Quantitative data fails to provide contextual and related factual information that qualitative data can provide.

Quantitative Approach: Data collection in this approach involves assessing many smaller values that can be analyzed statistically. It offers the possibility to quantify particular factors, such as the increases in productivity due to the application of mobile applications, the satisfaction levels of the users, and the degree of automation.

2. Case Studies or Surveys:

Case Studies: The case studies of organizations implementing and adopting effective mobile applications will be investigated in detail. The discussion of these case studies will give contextual, detailed descriptions of the real-world applications of mobile technology to digitization.

Surveys: Additional standardized questionnaires will be given to a larger population of business consumers to obtain quantitative information. It would be useful to detect trends, usage, or impressions of users and their attitudes toward the availability of mobile applications in different types of businesses.

3.2 Data Collection Methods

Data is an important element of the whole research process and is the subject of special attention in the Research Methodology. This study will utilize two primary methods to gather relevant data:

1. Interviews with Industry Experts:

Purpose: Structured interviews will be conducted with IT department heads, business analysts, and managers, mainly in Ireland and other UK-developed countries. These interviews are meant for collectors of information on successes, problems, and strategies related to the usage of mobile applications.

Process: Semi-structured interviews will be face-to-face or via video conference to practice social distancing. Video conferencing will be used in person or online. Adopting open-ended research questions will enable specialists to provide detailed information on their calamity experience.

2. Surveys of Business Users:

Purpose: Questionnaires will be developed to capture feedback from various business users across organizations with mobile applications. The end has been to collect "tactical" information about frequency of use, perceived satisfaction, and perceived utility.

Process: Online surveying instruments will then be employed to administer the surveys across the targeted populations. It will comprise several closed questions on the Likert-type scales and several open questions to address a more qualitative side of the survey.

3.3 Data Analysis Techniques

Data analysis is also important when studying data to establish meaningful conclusions. The following techniques will be employed:

1. Qualitative Analysis:

Thematic Analysis: The interviews and their corresponding transcriptions shall be developed using thematic analysis to extrapolate themes, regularities, and lessons. This involves assigning numbers to each text and using number codes to cluster numeric codes that define findings of a similar nature.

Content Analysis: Quantitative data collected from closed questions of the survey will be categorized and made into a frequency distribution to draw inferences concerning the feelings and experiences of the users.

2. Quantitative Analysis:

Descriptive Statistics: Questionnaire data will be collected quantitatively, and descriptive analysis will

include statistical measures to depict the data's main characteristics. This involves arithmetic mean, median, st. Dev and all other ways of computing means to interpret user satisfaction and app usage.

Inferential Statistics: Statistical generalizations, such as the correlation between mobile application usage and productivity improvement, will be applied to the survey results. Methods such as regression may be used to test hypotheses about some variables' interactions.

IV. THE ROLE OF MOBILE APPLICATIONS IN BUSINESS OPERATIONS

Businesses use mobile applications in diverse aspects, including communication, workflow, customers, and service delivery systems. Below are key areas where mobile applications significantly impact business operations:

4.1 Enhancing Communication and Collaboration:

Since everyone can access the mobile application, they can easily engage in real-time communication with their colleagues, irrespective of their location. Chatter, instant messaging, video conferencing, and file sharing help employees communicate. This is particularly important in decentralized work contexts where the normal process of direct contact is often challenging. The efficiency of teams is guaranteed with the help of mobile applications, therefore realizing business projects with higher efficiency and making decisions faster.

Streamlining Processes and Workflows:

Mobile applications provide efficiency in business development and productivity due to their support of various actions and routines. For instance, mobile apps can help in data entry, scheduling, and reporting processes, which would require much time. It improves efficiency and reduces the probability of ure oft,ewhich socioftentimesuman interaction. Moreover, high interoperability can make the integration of mobile applications with existing business systems, making it easy to share data and enhance operations.

Improving Customer Engagement and Service Delivery:

Mobile applications improve customer engagement, increase customer satisfaction, and provide convenient service access. Companies can always use applications

to send alerts, give rewards, and make content based on the client's likes. Such levels of involvement lead to better establishment relationships and customer repeat consumption. In addition, the necessity of mobile applications ensures effective delivery of services due to the flexibility of service delivery in parts unknown, hence promoting personal satisfaction and loyalty.

Case Studies of Successful Mobile Application Integration:

Several organizations have successfully integrated mobile applications into their operations, demonstrating the potential benefits:

- Starbucks: Starbucks announced that the mobile application facilitates placing and paying for an order in advance to decrease the waiting time and improve customer satisfaction. It also consists of a loyalty program that promotes repeated use of the app, which leads to high product sales and repeated usage (Brown, 2020).
- Nike: Nike has made its mobile application personalize its products for the customers and offers the latest products. It has been instrumental in direct-to-consumer sales and demonstrates what a good integration with a mobile application can bring to revenue (Taylor, 2020).
- Domino's Pizza: This mobile application makes it easier for customers to order food through Domino's and monitor the delivery progress. This integration has contributed significantly to digital sales, proving that mobile applications work in the food service industry (Wilson, 2020).

These informative case studies demonstrate how they create positive changes in business processes, improve customer experiences, and unlock growth from mobile applications.

V. AUTOMATION THROUGH MOBILE APPLICATIONS

5.1 Definition and types of automation in business

Automating refers to using technology to automate repetitive or manual tasks, reducing the need for human intervention. This can include using sales and marketing software, scripts, or other technologies to streamline workflows and increase efficiency. It can also be applied to various processes, from

manufacturing and logistics to marketing and customer experience.

Types of automating

There are several types of automation, including:

- Fixed Automation: Typically used for high-volume, repetitive tasks that require high consistency. Examples of fixed automation include assembly lines and industrial robots.
- Programmable Automation: This type of automation is more flexible than fixed and can be programmed to perform various tasks. Examples of programmable automation include CNC machines and robotic arms.
- Intelligent Automation: Automation that uses artificial intelligence (AI) and machine learning algorithms to make decisions and perform tasks. Examples of intelligent automation include chatbots and predictive analytics.
- Robotic Process Automation (RPA): A type of automation that uses software robots to perform repetitive, manual tasks. Examples of RPA include data entry and invoice processing.
- Business Automation (BPA): This type of automation involves using technology to streamline and automate complex business processes. Examples of BPA include workflow automation and document management.

Automating tasks through technology can greatly benefit businesses by reducing the need for manual labor and increasing efficiency. The benefits of automating, including cost savings, increased accuracy, and scalability, can result in improved productivity and overall success. With the variety of automation available, businesses can select what best suits their needs and goals.

5.2 How Mobile Apps Facilitate Automation

1. Examples of automated tasks and processes

Ad-hoc or one-time activities or tasks could be better for process automation. This technology suits repetitive tasks with formalized steps, sequences, and rules. Automation ensures the business process is done right every time – involving the right people, in the right order, considering the right information, and within a specified timeframe. A planned and modeled business process is the first step to improving efficiency by reducing redundant tasks and activities.

While process automation priorities will vary from business to business, some areas often benefit from process automation.

- **Recruitment:** Process automation tools can help streamline various recruitment activities, including the ability to upload résumés and references quickly and efficiently and to rapidly process assessments, rejections, or follow-ups so you can find and scoop up the best talent.
- **Employee onboarding and training:** From records processing to compliance and training, process automation can help simplify recruitment and onboarding tasks. This leads to quicker development of an engaged and productive employee.
- **Payment and payroll processes:** The past few years have seen a big rise in gig and remote employees working in multiple regions. Automated processes can streamline regular payroll activities and payment of contractors and external vendors.
- **Workforce scheduling:** It is a struggle to manage employee scheduling – especially across multiple locations and departments. Syncing time off requests and business trips across departments means absences are covered, and HR and payroll teams can better automate admin tasks.
- **Simpler and more consistent invoicing:** While invoice generation should ideally be the remit of accounting departments, this is only sometimes the case. Automated invoicing processes can help to alleviate errors, accounting mix-ups, and even legal risks.
- **Customer experience:** In a competitive climate, it is easier than ever for your customers to bounce away if they experience hassles and delays. Process automation helps to create a more personalized customer experience and move customers quickly and accurately through process flows.
- **Compliance and regulatory tasks:** A variety of business processes must adhere to compliance and regulatory requirements. Process automation solutions log files and leave a visible data trail, making monitoring and reviewing these activities in real-time easier. For example, before maintenance crews access power plant workings, managers can confirm that all potentially

dangerous systems have completed and logged the necessary shut-down safety protocols.

5.3 Challenges and limitations of automation

Although automation has revolutionized the assembly line, it has challenges and limitations. While automation has increased efficiency, reduced costs, and improved product quality, it has also created new problems that must be addressed.

1. Cost

One of the primary challenges of automation is cost. Automation can be expensive to implement, and the cost of maintenance and repair can be high. Additionally, the cost of retooling or reprogramming automation systems can be substantial, making it difficult for smaller companies to keep up with larger competitors. However, the long-term benefits of automation often outweigh the initial costs.

2. Complexity

Another challenge of automation is complexity. Automated systems can be complex and difficult to understand, making it challenging to diagnose and repair problems when they arise. Additionally, the complexity of these systems can make it difficult to train employees to operate and maintain them effectively.

3. Dependence on Technology

Another limitation of automation is the dependence on technology. Automated systems rely on technology to operate; the entire system can halt if that technology fails. Additionally, automated systems require regular updates and maintenance to keep them functioning properly, which can be time-consuming and expensive.

4. Lack of Flexibility

Another limitation of automation is the need for more flexibility. Automated systems are designed to perform specific tasks, and they may need help to adapt to changes in production needs or customer demands. This lack of flexibility can make it difficult for companies to respond to changing market conditions.

5. Job Losses

One of the most significant challenges of automation is the potential for job losses. As automation systems become more advanced, they can replace human workers, leading to job losses and economic disruption. While some argue that automation will

create new jobs, others believe the net effect will be significant job losses.

Automation has revolutionized the assembly line but has challenges and limitations. While automation can increase efficiency and reduce costs, it can also be expensive, complex, and dependent on technology. Additionally, automated systems may need more flexibility, which could lead to job losses. It is essential for companies to consider these factors when implementing automation carefully and to develop strategies to mitigate these challenges and limitations.

VI. IMPACTS OF MOBILE APPLICATIONS ON DIGITIZATION

By attesting to its widespread usage in mobile devices, the technology is also of central importance for the digitization of enterprises, deeply changing their functioning and relating with consumers. In this section, the author looks at the overall benefits of mobile applications, focusing on major areas like efficiency gains, reduction of costs, and data management.

6.1 Positive Impacts

1. Increased Efficiency

Mobile applications contribute to increased efficiency in several ways:

- **Streamlined Processes:** Through mobile app integration, thousands of business processes and activities that would have otherwise taken a lot of time and physical effort are minimized. For example, business applications include mobile order entry, inventory tracking, and customer relations action.
- **Real-Time Access:** The choice means that employees can use smartphones to access important data and appropriate tools to make decisions faster. This type of access enables the teams to address customer inquiries and specific operations issues faster, increasing efficiency.
- **Collaboration and Communication:** A wide variety of services, for example, include instant messaging, video conferencing, and file exchange. These functionalities enable increased efficiency of working for all team members, irrespective of

where they are located, and they improve the working of a team and its projects.

- **Task Automation:** Mobile applications can do data entry, scheduling, and preparing reports within an organization. Not only does this save time for the employees to work on these more value-added tasks, but it also reduces the probability of making mistakes.

2. Cost Savings

The implementation of mobile applications can lead to significant cost savings for businesses:

- **Reduced Operational Costs:** Operational costs are reduced through streamlining activities and increased efficiency through mobile applications. For instance, automated inventory control can result in a lesser workload for personnel and optimum cutting down on the costs incurred.
- **Decreased Overhead:** Activities such as selling or conducting business using a mobile application also allow business operations with minimal need for physical infrastructure and, thus, the costs associated with having physical offices. This flexibility is beneficial since it implies overall lower overhead costs and better resource management on average.
- **Minimized Errors and Waste:** One of the major benefits is the minimization of human error in some activities, including order dispatching and billing, which are expensive when wrong. By reducing these errors, one will likely avoid occasions where resources were used to produce the wrong products or fail to meet customers' needs.
- **Improved Marketing Rob:** As a result, mobile applications efficiently promote advertisements since they accumulate user information. This way, it is easier for businesses to adjust their marketing strategies, increasing conversion rates through improved marketing returns on investment.

3. Enhanced Data Management

Mobile applications significantly improve data management practices within organizations:

- **Centralized Data Access:** Mobile applications enable employees to synch their devices to a central database so that the workforce has correct information at archetypical. These are all

important to ensure that they have consolidated points of access to the truth that is latitude across the firm.

- **Real-Time Data Collection and Analysis:** Many mobile applications can collect customer-facing and internal operational data in real-time. The capability of up-to-date insights enables rapid data evaluation and decision-making for any business.
- **Improved Data Security:** Smartphone applications typically include effective guards, encryption, and secure user authentication mechanisms. These features are useful in offering business and customer information security and minimizing cases of insecurity on a business's networks.
- **Better Customer Insights:** Technological advancements in smartphones allow for the gathering of users of their behavior, choices, and opinions. Using this information, one can learn more about customers and their needs, leading to businesses delivering appropriate services and products.

6.2 Potential drawbacks

Nowadays, Mobile applications are more secure. Every developed app has some or the other mistakes followed by third-party tool integration. These loopholes in development affect smartphone devices and damage user's data and information on a heavy scale. Defects here can be anything, whether it is relevant to hardware or the software.

Mobile apps have become a part of the current culture at fast speed. Furthermore, developing secure mobile apps has been obvious at a different ability level. Of course, secure development guidelines exist in the community. Here, we will sum up some drawbacks, as these are the most obvious ones in mobile apps.

1. Insufficient Transport Layer Protection:

You should need TLS/SSL encryption with solid algorithms within communications. Unencrypted connections from the app to a third-party app development company are a unique blunder. It would help if you programmed your apps to showcase any warning messages so that the user is intercommunicated with the configuration of the encrypted connection.

2. Poor Authorization & Authentication:

These vulnerabilities are established mostly on the server side. The best exercises you should follow are the same as those on web apps. Especially for app development, device identifiers ought to be ignored since devices can be removed and interfered with. Finally, out-of-band authentication tokens should not be sent to the related device.

3. Client Side Injection:

This category consisted of diverse input strikes against the application itself. General best practices for reducing client-side injection drawbacks cover the input validation of the app entry points on the server side. To avoid this, you should use parameterized queries, restrict file system access for Web views, and Javascript and plugin support for Web views.

4. Wrong Session Handling:

While session handling mechanisms are largely applied on the server side of apps, secure session management practices can be used on devices themselves. The Confidentiality and integrity of session tokens should be preserved via TLS/SSL connections. Like authorization authentication, device identifiers should also be avoided here, and you should execute safe mechanisms to cancel sessions on lost devices.

5. Security Resolutions through Untrusted Inputs:

While these issues primarily affect Android-based apps, there has been a case in point for iPhone apps, too. Usually, output escaping, authorization controls, input validation, and canonicalization should be carefully analyzed. Also, it would help if you took extra care when accepting and validating URL schemes.

VII. FUTURE TRENDS AND IMPLICATIONS

7.1 Emerging technologies and their influence on mobile applications

1. Artificial Intelligence (AI) and Machine Learning (ML)



Figure2: Artificial Intelligence (AI)

Artificial Intelligence (AI) and Machine Learning (ML) make mobile apps smart and unique to each user. These advanced technologies enable apps to learn about your preferences over time, working like a personal helper anticipating your needs. As an illustration, AI-enabled virtual helpers like Siri or Alexa can comprehend your voice instructions and questions in a conversational style. Furthermore, AI and ML give music apps the ability to suggest new tracks you may enjoy and shopping apps the power to select specific product suggestions. On a more intricate level, these technologies monitor your app usage habits and responses to modify the total app experience. This is why your top choice apps appear to understand what you require and when, whether delivering personalized news articles, recommending meeting departure times based on current traffic conditions, or even predicting which emoji you might choose next. Through AI and machine learning, mobile apps adjust according to your needs.

2. Augmented Reality (AR) and Virtual Reality (VR)
 Augmented reality (AR) and virtual reality (VR) are changing the mobile app experience. AR merges digital visuals and information with real-world images from your phone's camera. For instance, AR apps let you see how different glasses or jewelry look on you by adding to your camera view. Some home design apps use AR to show you how furniture might look in your living room before you buy it. VR takes this another step forward by placing users into digitally made 3D environments. Using a VR headset, numerous VR apps can bring life-like virtual worlds for gaming, education, travel, and much more. One could be exploring old ruins from thousands of years ago, walking through museum exhibits showing unique artifacts, or flying through space while sitting comfortably at home. Through AR and VR, mobile

apps are moving beyond the small screen, merging the physical and digital worlds for experiences that are more interactive, immersive, and surprisingly realistic.

3. Internet of Things (IoT)

The Internet of Things is turning our homes, cars, and even bodies into smart environments controlled by mobile apps. IoT refers to all the regular household items and technologies that can connect to the Internet and communicate with each other. This allows your mobile apps to be a remote control for your entire life. Using IoT-enabled apps, you can control smart home devices like lightbulbs, thermostats, security cameras, and appliances from your phone. Some apps can start your car remotely or check how much fuel is left. Wearable fitness trackers and smartwatches sync up health and activity data to apps. The possibilities are endless as more and more "things" become internet-connected. Rather than having separate apps for every device, IoT allows apps to unify control over your entire smart home, car, wardrobe of wearables, and more into one integrated experience. With just a few taps, your mobile device becomes the hub to monitor and remotely manage all your life's intelligent environments and technologies. The Internet of Things makes our apps far more powerful and convenient by connecting previously "dumb" objects to the digital world.

7.2 Predictions for the future of mobile applications in business

1. Chatbot Equipped Mobile App

Chatbot escalation began in early 2016, and within less than a year, it has become the most prevailing feature to integrate into chat apps. People use chat apps more than any social media platform for socialization. Easy layout and capability to interact instantly with loved ones are a few advantages of integrating chatbots within mobile apps. Top app development companies prefer incorporating chatbots to build better client business prospects. Companies from different industries have already made their Chatbots available on Messenger, such as CNN News Chatbot, Hyatt, etc.

2. IoT Applications

According to a report by Gartner, there will be 26 billion connected devices by 2020, including home appliances, Smartwatches, Health monitors, Fitness trackers, etc. With growing numbers of connected

devices, the Internet of Things is another fastest-growing technology influencing almost every domain. Following the most powerful concept of connecting everything to the Internet, giants like Google and Apple have also shown keen interest in including IoT in their mobile app development regime. Nest develops smart home products- smoke alarms, cameras, and thermostats, whereas Brillo supports Wi-Fi, Bluetooth Low Energy, and other Android things through an IoT operating system. Recently launched Apple's 'Homekit' allows the user to have control of the household appliances.

3. Android Instant Apps

One of the most interesting revelations at the Google I/O developer conference last year was Android Instant Apps, which lets you experience beautiful and immersive apps with material design and smooth animations without installing them on your device. Built on Google Play services, the Android app integrates several advantages — location, identity, payments, and Firebase- enhancing a seamless user experience.

4. Location-Based Services

Location-based apps have become a necessity in our society. User location information allows essential data that leads to incredible mobile features. Location sensing is useful in geo-tagging, games, vehicle navigation, fitness apps, and more. Precise indoor location sensing and mobile applications will enable a new generation of personalized services and information.

5. Cloud Computing Apps

For apps that demand huge storage space, cloud computing is one of the necessary ingredients to integrate while building apps with heavy graphics and functions. They are fast, can be built without restriction, and, most importantly, secure. Most of the top app development companies offer cloud as SaaS.

6. AR and VR

AR and VR hold a special place in the gaming zone. After the worldwide success of Pokemon Go, Augmented Reality has gained immense popularity across domains. Many top app development companies have integrated AR and VR across various industries like e-commerce, infrastructure, gaming,

sports, and fitness. Increasing use of the technology has proportionally led to the creation of interesting ideas with remarkable user responses.

7. Mobile Security Apps

Mobile security plays an important role, with smartphones becoming more important to us, and our dependence on them is increasing in accessing some of the most confidential data. As a data privacy breach can lead any company to a huge loss, demand for mobile security apps will exceptionally rise across domains in the coming years. Best app development companies strictly focus on maintaining the security and Confidentiality of app data.

8. Mobile E-commerce

Consumers' inclination toward online shopping has led marketing strategies to shape better user experience through comprehensive shopping apps. Shopping apps allow users to easily log in, save items for later, connect with friends, invite friends to avail themselves of discounts, etc. In the coming time, mobile e-commerce will be in much more demand as user reliance on online shopping grows rapidly. Major brands like Amazon, eBay, and Walmart already know the importance of mobile apps and provide easy access to services through apps for almost every device.

All the above information about mobile app development trends will help you and your business understand the latest trends, as the future is bright for entrepreneurs and those who enhance their skills to bring incredible app ideas to life.

7.3 Recommendations for businesses to leverage mobile apps for digitization

Digital transformation integrates technologies to improve operations, organizational culture, and customer experiences. In this way, it helps you to solve complex problems, reduce costs, increase efficiency, and meet changing business requirements. The pandemic has altered the speed and scope of digital transformation. The traditional way of working is rapidly changing. Those who adapt to change will survive and benefit; the rest will eventually lose out. Having worked in the industry for over a decade, I know digital transformation is a journey, not a destination. You are not alone if you feel stuck in your digital transformation journey. Organizations always

face tough obstacles on their road to success, including (but not limited to) a lack of vision, strategy, budget, talent, and culture change. There is no silver bullet, but here are my top 5 recommendations to keep you on the right track.

1. Unlock Data

Data is the foundation of digital transformation. More data is produced and captured than ever, but most businesses need help figuring out what to do with it. Unlocking the opportunities of data starts with collecting reliable and accurate data for the right purpose in the right way and authorizing the right users to access it. Let us take a small, deeper dive into the subject.

As your organization looks for new data sources and evaluates the existing ones, ask yourself, "Are we collecting the right data?" To answer this question properly, first, you must understand the underlying purpose of collecting the data; "What problem are you trying to solve?" or similarly, "What area of your business are you hoping to improve?" If you unthinkingly dump data into a repository, you will reduce the chance of meeting the organizational goals and drastically increase the cost. When it comes to data, never forget; "garbage in, garbage out."

Your solution architecture must be based on individual requirements of the problem that you are trying to solve. There is no one-size-fits-all solution to the challenges facing the industry. Look at the characteristics of your Data: Is it relational or non-relational, more specifically, time series, object (e.g., image, video), etc? What about the classifications of data: structured, semi-structured, or unstructured? Also, consider the data collection requirements of your use case, including pattern (request-response, pub-sub), form (static, streaming), size, speed, and volume. For example, operational metrics and events coming from industrial equipment or data from sensors can be modeled structured or semi-structured and usually require latency-sensitive and frequent writes into an optimized database. On the other hand, surveillance imagery, audio files, and social media feeds are traditionally unstructured and can be processed as a stream or batch depending on the trade-off between benefits and costs.



Figure 3: Unlock your data's potential.

Undoubtedly, security concerns are the number one roadblock in your digital transformation journey. It is unlikely that all the required resources will be readily available internally, but security becomes a bigger challenge when discussing cloud adoption. These concerns must be addressed at all levels from the very beginning by applying industry standards and best practices.

Today, there are plenty of resources available for us to take advantage of cloud technologies to protect data, systems, and assets in a way that can improve your current security and privacy posture—for instance, identity and access management services can be used to implement a rock-solid and fine-grained foundation. Advanced traceability features to monitor, alert, and audit actions and changes in your environment in real-time—Out-of-the-box data classification and protection both in transit and at rest.

Organizations should have a coherent, holistic, risk-based, risk-based, proportionate security strategy to support digital transformation initiatives, not block them. If the only tool you have is for keeping data on-premises with extremely restricted access, forget about being a data-driven organization.

2. Embrace Change

A successful digital transformation is not about introducing fancy tools and implementing sophisticated systems but company-wide cultural and behavioral changes. As a result, it is a challenge for the entire business, not only limited to technology departments. Therefore, you will likely encounter resistance from all levels of the organization.



Figure 3: Embrace Change to get ahead.

Here are some quick tips to overcome resistance to digital transformation efforts. First, determine stakeholders properly, ensuring staff from across the organization have a voice. Listen to their concerns without getting defensive, be transparent, keep channels of communication open and use them effectively, acknowledge difficulties, provide technical assistance, encourage co-creation, make them a part of the solution where possible, and do not hesitate to ask for help from key stakeholders when required. Fundamentally, it is a two-way street. You cannot expect people to be digital transformation champions while taking no action on your end.

Even though you do everything just right, two groups of people tend to slow down the momentum of transformation: *digital dinosaurs* and *lone wolves*. The most common attribute of these is legacy thinking, which is a much bigger barrier than legacy systems to the success of a digital transformation project. In one of my previous projects, I remember a high-ranking IT executive who was supposed to be one of the early adopters. However, he became one of the biggest blockers due to his lack of industry knowledge and understanding of the problem. Engage these two groups. Make sure they understand that you are focused on their problem.

3. Start from Somewhere

A digital transformation initiative can be scary and overwhelming. At the beginning of your journey, it is likely to have so many unknowns. Furthermore, it will always have risks. However, they are not greater than deciding not to start at all. To get started faster, I suggest my clients:

- Break up big problems into a series of smaller and manageable ones.
- Prioritize them based on importance and feasibility.

- Only have a little on your plate; instead, expand incrementally.
- Be clear about the milestones. Monitor closely and keep track of the progress achieved.
- Once you reach a milestone, evaluate the impact on your business.

Following agile methodologies such as Scrum could be instrumental in reducing risks and improving productivity while providing a greater ability to incorporate changes as they occur.

4. Build Capabilities

Ideally, companies carry out digital transformation projects with the guidance of consultants who are competent and proficient in their work. This gives confidence and reassurance to those who need such capabilities in place. The bitter truth is that you cannot sustain a project solely relying on external support. I have seen plenty of instances where such successful initiatives were abandoned due to a lack of talent and low adoption. Have you implemented an API management solution? Then, make certain you have a well-planned migration strategy across the organization. Have you deployed a machine learning inference recently? If so, ask yourself: Who will maintain it?



Figure 4: Invest in talent development and strategic acquisition

Withtually, we will need a reliable workforce capable of using existing technologies and adapting to evolving methods and new approaches. Thus, it is necessary to ensure that digital culture is created by training the right people internally and acquiring new talent, which is key to business success.

5. Top Management Support

Leadership is the most critical factor for a successful digital transformation. It is simply "a top management

project." It is too important to leave technology or innovation departments alone. Your work should be guided by the broader business strategy defined by the company's leadership. Executives should provide the required resources, help remove obstacles, and encourage everyone to contribute. They must collectively share the accountability of failure as much as success. The most successful transformation programs I ever worked on were those that had effective executive involvement. In short, failure is inevitable. There needs to be strong commitment and support from the executive

CONCLUSION

The study reveals how mobile applications play an important role in the digitalization of enterprises. In this process, it has become evident that most companies integrate mobile technology into their operational strategies and recognize that mobile applications are not an added value that supplements their organic operations. However, they form incontestable, strategic assets to help boost productivity, cut operational costs, and consequently maintain an efficient and effective management of their resources. Mobile applications help save time, provide opportunities for quickly receiving up-to-date data, and enhance teamwork. These apps take time-consuming tasks out of the employee schedule so that these employees can focus on other functions that will make the business more efficient and effective.

By integrating mobile applications, substantial cost savings are realized. They can save operational expenses, which can be accomplished by the efficiency of the tasks and processes; companies can reduce overhead costs such as rent for workspace since employees can work remotely and reduce mistakes that lead to expensive reforms. Also, through the mobile application, marketing becomes targeted, thus enhancing the return on investment and increasing financial effectiveness. The mobile application enhances the way organizations collect and exploit their data. They give a ready reference to the latest data, facilitate real-time data acquisition, and improve data security. They enable organizations to understand their consumers better and, as a result, improve strategy formulation and implementation.

Given the growing trends that have enabled businesses to operationalize their digital strategies through apps, the argument for focusing on mobile applications must be considered. Thus, the efficiency of using mobile technology will not only increase operational capacity but will also bring value to clients and customers. If combined with advanced technologies in the future, those positive impacts of mobile applications will be boosted tremendously. Business organizations should continuously strive to develop mobile models and strategies to align with new technological developments, such as artificial intelligence, machine learning, and the Internet of Things. By keeping pace with such developments, management can achieve the optimum value of organizations' mobile applications and guarantee their continuous growth in digitalization. To sum up, mobile applications as forms of digitization are essential tools that provide many benefits that can be crucial for changing business. If these tools are managed effectively, then the organization will be set on the right track as it faces the future with uncertain market opportunities.

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