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The Impact of Bank's Mobile Application on Competitive Advantage of Jordanian Commercial Banks

أثر تطبيق الهاتف البنكي على الميزة التنافسية للبنوك التجارية الأردنية

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DEDICATION

Nobody has been more important to me in the dedication of this thesis than my family. I would like to thank the soul of my father and my mother, whose love and guidance are with me in whatever I pursue. They are the ultimate role models. Most importantly, I wish to thank my loving and supportive husband, Wajdi, and my wonderful children, Rafiq and Rojeh.

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Tania Issam Fannoush

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The Impact of Bank's Mobile Application on Competitive Advantage of Jordanian Commercial Banks

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Abstract

Banks Mobile application has appeared as a key technology tool for Banks to retain customers and provide the expected services, which attempt to serve customers and accomplish the standards of services provided by online banking to achieve e-service quality. Therefore, this study aims to investigate the impact of banks' mobile application sub-variables (usability, availability, information, security, and privacy) on the competitive advantage of Jordanian commercial banks.

Data were collected from 256 managers by questionnaire, from Jordanian commercial bank in Amman, Jordan. After confirming the tool's normality, validity, and reliability, the descriptive analysis was carried out, and the correlation between variables was checked. Finally, the effect was tested by multiple regression.

The result shows that the Jordanian Commercial banks implement both mobile applications and competitive advantage dimensions. It also shows that there is strong correlation between banks mobile application sub-variables and Competitive Advantages dimensions. Finally, it shows that there is a significant and positive impact of banks mobile application on Competitive Advantages of Jordanian commercial banks, where information has rated the highest, then usability, security, availability, and privacy.

Based on study results and conclusions, the following recommendations are suggested: The current study was conducted on Jordanian commercial banks. Therefore, it recommends future researchers collect more data over a longer period check the current model validity and measuring instrument. It also recommends carrying out similar studies on other areas in Jordan and outside Jordan to ensure that results can be generalizable.

Keywords: Banks Mobile Application, competitive advantage, Jordanian commercial banks.

أثر تطبيق الهاتف البنكي على الميزة التنافسية للبنوك التجارية الاردنية

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الملخّص

برز تطبيق الهاتف المحمول كأداة تكنولوجية رئيسية للبنوك للاحتفاظ بالعملاء وتقديم الخدمات المتوقعة، والتي تهدف الى خدمة العملاء وتحقيق معايير الخدمات البنكية الالكترونية المقدمة لهم لتحقيق جودة الخدمة الإلكترونية. وبالتالي تهدف هذه الدراسة الى بحث إثر المتغيرات الفرعية (قابلية الاستخدام، مدى التوفر للاستخدام، المعلومات، الحماية، الخصوصية) في تحقيق الميزة التنافسية للبنوك التجارية الأردنية.

جمعت البيانات من 256 مدير يعملون بالبنوك التجارية الاردنية في عمان، الاردن بواسطة الاستبانة، وبعد التأكد من التوزيع الطبيعي للإجابات وصدق وثبات الأداة، تم إجراء التحليل الوصفي والتحقق من الارتباط بين المتغيرات وأخيرًا، تم اختبار الأثر بواسطة الانحدار المتعدد.

أظهرت النتيجة أن البنوك التجارية الأردنية تطبق كلاً من تطبيقات الهاتف البنكية وأبعاد الميزة التنافسية. كما يوضح أن هناك علاقة قوية بين المتغيرات الفرعية لتطبيقات الهاتف البنكية وأبعاد الميزة التنافسية. أخيرًا، يُظهر أن هناك تأثيرًا كبيرًا وإيجابيًا لتطبيقات الهاتف البنكية على الميزة التنافسية للبنوك التجارية الأردنية، حيث تم تصنيف المعلومات في المرتبة الأولى، ثم قابلية الاستخدام، الحماية، مدى التوفر للاستخدام، والخصوصية.

بناءً على نتائج الدراسة والاستنتاجات، يتم اقتراح التوصيات التالية: أجريت الدراسة الحالية على البنوك التجارية الأردنية. لذلك، توصي الباحثين المستقبليين بجمع المزيد من البيانات على مدى فترة زمنية أطول للتحقق من صلاحية النموذج الحالي وأداة القياس. كما توصي بإجراء دراسات مماثلة على مناطق أخرى في الأردن وخارجه للتأكد من إمكانية تعميم النتائج.

الكلمات المفتاحية: تطبيقات الهاتف البنكية، الميزة التنافسية، البنوك التجارية الأردنية.

CHAPTER ONE: GENERAL FRAMEWORK

1.1 Introduction

Commercial banks are one of the most important economic establishments that contribute to raising the level of commercial activity in the country, through the provision of a range of banking services, which is the collection of funds, the granting of loans and credit, addition to the collection of checks and bills of exchange, and the sale and buy of securities and opening documentary credits With the advancement of technology and increasing interbank competitiveness, it is not only confidence, security, and reassurance that affect the Bank's competitive advantage. Bank’s operations have become more diverse Achieving high speed and accuracy due to its high sensitivity has led to increased attention to the flexibility and clarity of the business of banks and ensures that they keep pace with the technological development that has proved effective in serving the world of business and finance.

Mobile application is one of the modern technological tools through telecommunications and information companies, where banks have tended to rely on them in providing their services to their customers, and the aim was to provide banking services without the need to reach the bank with due regard for safety, in order to give Its customers greater convenience and reduce the cost and time on the client when conducting financial transactions in the bank. Hence, mobile applications offer many banking services including (personal account management, electronic payment, electronic transfer, credit card related services and electronic administrative services), where such banking services are the focus of attention of banks in order to meet the needs of customers and earn To their satisfaction on the one hand and to achieve competitive advantage on the other. Mobile applications have also enabled the customer to conduct

many e-banking operations, and e-applications have become among the factors that banks compete for because they are of great importance to customers.

Many studies had discussed the use of modern technology to keep and reach out to new customers with unique services, Kastner, et. al. (2010) mentioned that mobile phone applications support customers' purchases and help save their money and time. Fraser, et. al. (2011) said that there is an added value for companies that use mobile applications for their operation and can help firms to be more competitive in the market. Jeon, et. al. (2012) said that the recent technological development related to electronic device applications created many changes in all aspects of our daily life. Bahrami, et. al. (2012) stated that new advances in technology can help companies to contact, reach customers, and provide feedback to act quickly in markets. Meskini, et. al. (2013) found that as customers use different tools to communicate, mobile is the favorite communications tool used by people around the world. It has many applications that satisfy customer needs. According to Ibrahim, et. al. (2014) using a mobile phone application can give businesses a unique advantage by the availability of the products compression all day active, also it can expand market share and generate more profit for the business. Moreover, Prabhavathy, et. al. (2015) stated that in modern life individuals are more reliant on mobile rather than any other electronic devices, mobiles act like mini-laptops with the mobile communication facility. Azizi, et. al. (2016) said that competition among companies is increasing, and to be able to sustain the business, companies should develop unique services, Jung & Yim (2016) stated that mobile apps are easy to use for communication to create excellent service to customers, Seelan & Anuar) 2017) stated that technology could create a competitive advantage such as using mobile applications.

Competitive advantage is a collection of unique features, efficient use of resources that allow better company performance than competitors, is not easy to simulate, and the ability to provide more valuable products and services to customers, (Shahmansouri, et. al. 2013).

Innovation management literature has mostly focused on how new product development is managed and organized (Worthington and Welch, 2011). In the early 90s, there was a shift in focus after it was realized that for any business to achieve sustained growth as well as good financial performance than more had to be done and this led to the rise in continuous product innovation as a perspective in the process of innovation, (Bartezzaghi, et. al. 2011). Mobile banking being such an innovation has had an incredible uptake in Kenya because it has allowed both the banked and the unbanked to transfer money more conveniently, more safely, and at a much lower cost than through formal banking services or other money transfer methods (Mithika and Liu, 2009).

In recent times, offering a superior product is no longer sufficient as firms in the new economy compete on a much broader platform. A world-class product is no longer enough to enter global marketplace dominance but simply the admission price to compete (Baregheh and Rowley, 2009). The business environment has become dynamic, especially with globalization (Aboelmaged and Gebba, 2013). Therefore, companies need to maintain their competitive advantage to improve their performance and compete effectively with their competitors. Among these complicated markets and sophisticated delivery systems, the major challenge for banks is how to earn a satisfactory return on stockholders' money while adhering to sound and time-tested banking principles (Cocheo, 2013). This is mainly because banks desire to grow the profits since there is no reason a stockholder will continue to hold like most players in the service industry, have

been very fast in injecting cash into new technology to achieve customer retention and cost control by meeting their convenience and technological expectations. This has helped banks top pull new customers with new attractive products (Ratten, 2011). There is a significant impact of mobile banking applications of all dimensions (personal account management, e-payment, e-transfer, credit card services-services) on Achieving competitive advantage in all dimensions (speed, confidentiality, security, and diversity (Samail and Younes, 2020).

Based on the mentioned above introduction, this study aims to investigate the effect of Mobile Phone Application sub-variables (Usability, Availability, Information, Security, and Privacy) on the competitive advantage of Jordanian commercial banks.

1.2 Study Purpose and Objectives

This study aims to investigate the impact of Banks Mobile applications on the competitive advantage of Jordanian commercial banks., and attaining the following objectives:

1. Determine the level of using mobile applications by Jordanian Commercial banks.
2. Determine the level of implementing competitive advantage by Jordanian Commercial banks.
3. Investigate the relationship between Bank's mobile applications and competitive advantage.
4. Identify the impact of Bank's mobile applications on competitive advantage.

1.3 Study Significance and Importance

The current study might be considered as one of the leading studies that examine the impact of Banks Mobile Application on Competitive Advantages of Jordanian

commercial banks. Moreover, this study aims to draw valuable understanding guidelines about the impact of Banks Mobile Application on Competitive Advantages of Jordanian commercial banks. The content also maybe an interest to academic studies related to the reporting and decision making concerning mobile application and competitive advantage.

Therefore, the value of this study arises from the following scientific and practical considerations:

This study could make other researchers search in this important field, through the study literature review and previous studies.

This study is contributing to adding more value to this field, and from this point, this study reveals its importance in these rapid changes era that is hard to control.

Show the role of Mobile phone applications in enhancing competitive Advantage.

The importance of this study is to recognize the impact of Bank Mobile applications on the competitive advantage of Jordanian commercial banks and this will lead banks to better understand the use of Bank's Mobile applications as modern technology, in a way to improve or maintain their competitive advantage. Recognizing the impact of Bank's Mobile applications on competitive advantage, especially in Jordanian Banks, this study is going to set many helpful suggestions that help decision-makers in the banking sector.

1.4 Study Problem Statement

The competitiveness of Jordanian commercial banks and the diversity of their e-banking services have intensified competition among them, thus achieving the competitive advantage of banks. In the current turbulent, highly competitive contemporary business environment bank managers are under pressure to make decisions

that will achieve their banks optimal competitiveness. Among tools they are largely applying in their pursuit for competitive advantage are banks mobile application.

Banks have major challenges conforting their competitiveness, in order to achieve competitive advantage in all levels and services, which led to the development of banks and their systems significantly to keep pace with modern technology to provide their services through personal computers and mobile phones of customers. This encouraged the researcher to search more on the impact of banks mobile application on competitive advantage.

Commercial banks assaulted by the pressures of globalization, competition from non-banking financial institutions, and volatile market dynamics- are constantly seeking new ways to add value to their services (Sufian and Parman, 2009). In recent years mobile banking, mobile commerce, and other systems have been treated as innovations and self-service technologies among customers who adopted such technologies (Yousafzai and Soriano, 2012). Mobile banking evolved when financial companies (especially banks) began to offer their operations online. This new approach provides many advantages for service providers such as allowing the bank to be free of restrictions to specific geographical areas, so they operate in new marketplaces, expand delivery options, improve performance, increase customers' loyalty, and reduce the cost of operations. Also, customers benefit from a customized and personalized service, and a reduction in wait time for the sake of more convenient service (Yee and Faziharudean, 2010).

Pandhared and Joglekar (2010), mobile phone application allows fast response to customer needs. It reduces delivery time and cost. Piotrowicz and Cuthbertson (2014), the use of smartphones is increasing, which gives new opportunities and challenges for retailers. Meihami and Meihami (2014) stated that the use of new technology helps

organizations to compete and survive in the marketplace. Goetsch and Davis (2014) added that nowadays there are many challenges facing all organizations worldwide and companies need to adopt new solutions to face challenges. Knego, et. al. (2015) mentioned that mobile could create huge opportunities to improve the business and create added value in the retail industry. Ramanathan, et. al. (2015) explained that using new technology in retail business provides a unique business model to gain and retain customers, which creates a competitive advantage. Das, et. al. (2017) said in globally competitive markets, if an organization does not move fast to use new digital technology, it may lose a lot in the market. Balaji et. al. (2017) stated that information technology development is rapidly changing the retail industry and retailers must adapt that technology to survive in the marketplace.

1.5 Study Questions

Based on the discussion above the following questions was raised:

1. What is the level of using mobile application by Jordanian Commercial banks?
2. What is the level of implementing competitive advantage by Jordanian Commercial banks?
3. Is there a relationship between Bank's mobile application and competitive advantage?
4. Do Bank's Mobile application sub-variables (Usability, Availability, Information, Security, and Privacy) impact the competitive advantage of Jordanian Commercial Banks?

5. Does Bank's Mobile application impact the competitive advantage sub-variables (Cost, Quality, Speed, Reliability, and Innovation) of Jordanian Commercial Banks.

The first and second questions were answered by descriptive analysis and the third question by correlation test, while the fourth and fifth questions were answered by hypothesis testing as follows.

1.6 Study Hypotheses

H_{01}: Bank's Mobile applications sub-variables (Usability, Availability, Information, Security, and Privacy) do not impact the competitive advantage of Jordanian Commercial Banks, at $\alpha \leq 0.05$.

H_{02}: Bank's Mobile application does not impact the competitive advantage sub-variables (Cost, Quality, Speed, Reliability, and Innovation) of Jordanian Commercial Banks, at $\alpha \leq 0.05$.

The main hypothesis can be divided to the following according to Banks Mobile Application:

$H_{02.1}$: Usability does not impact the competitive advantage (Cost, Quality, Speed, Reliability, and Innovation) of Jordanian Commercial Banks, at $\alpha \leq 0.05$.

$H_{02.2}$: Availability does not impact the competitive advantage (Cost, Quality, Speed, Reliability, and Innovation) of Jordanian Commercial Banks, at $\alpha \leq 0.05$.

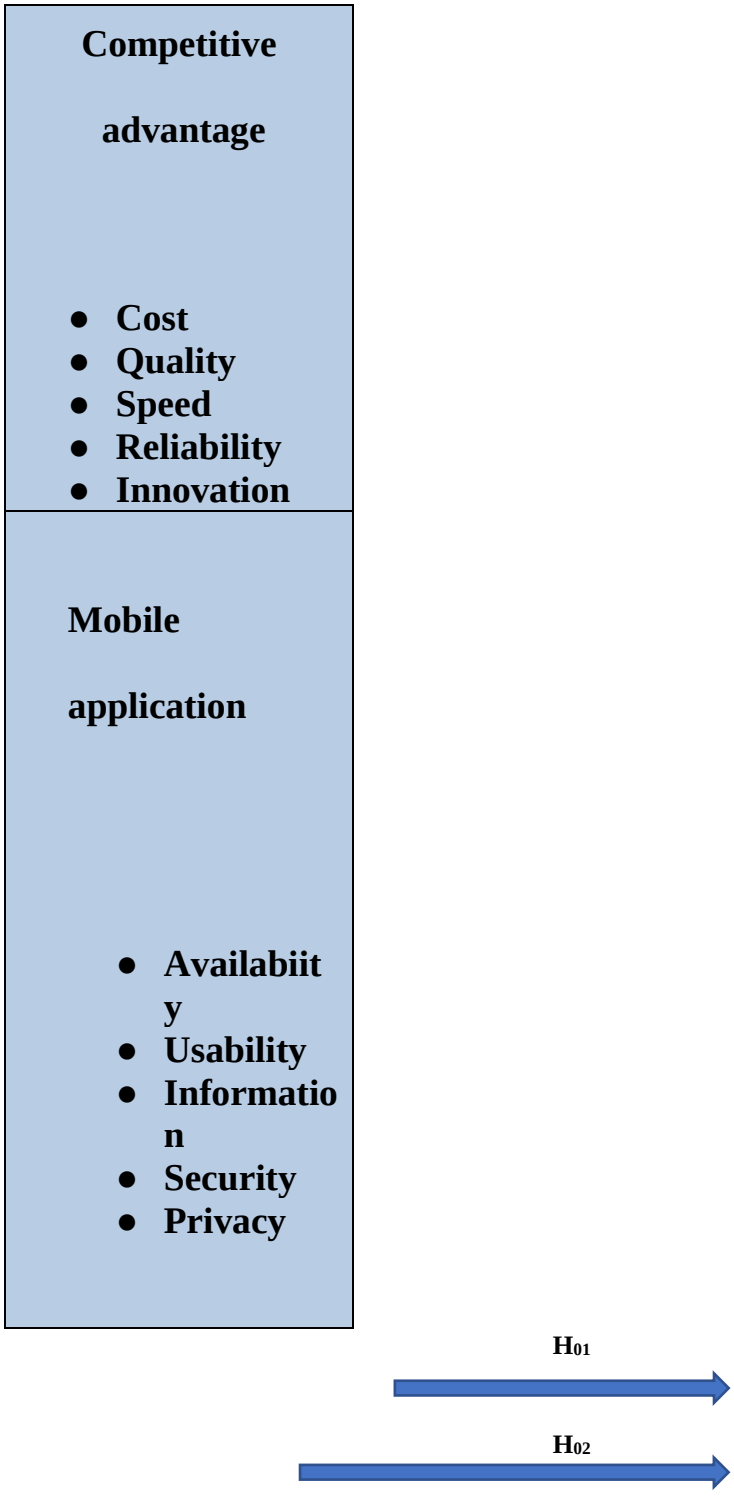
$H_{02.3}$: Information does not impact the competitive advantage (Cost, Quality, Speed, Reliability, and Innovation) of Jordanian Commercial Banks, at $\alpha \leq 0.05$.

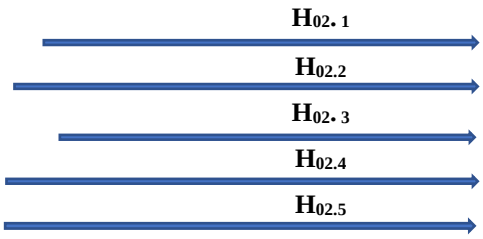
$H_{02.4}$: Security does not impact the competitive advantage (Cost, Quality, Speed, Reliability, and Innovation) of Jordanian Commercial Banks, at $\alpha \leq 0.05$.

$H_{02.5}$: Privacy does not impact the competitive advantage (Cost, Quality, Speed, Reliability, and Innovation) of Jordanian Commercial Banks, at $\alpha \leq 0.05$.

1.7 Study Model

Independent Variable **Dependent Variable**





Sources: This model has been adopted based on the following studies: Independent variable: Okumus and Bilgihan, 2014; Cristofaro, et. al., 2011; Jung and Yim, 2015; Kim, et. al., 2016; Okumus, et. al., 2015. Kim, et. al., 2016; Pentina, et. al., 2016). Dependent variable: : (Awwad, et. al. 2010; Gunasekaran, et. al., 2001; Boyer & Lewis, 2002; Li, et. al., 2006; Kroes & Ghosh, 2010; Sukati, et. al., 2011; Thatte, et. al., 2013 and Marinagi. et, al., 2014 Hinterhuber, 2013; Patel, et. al. 2016).

1.8 Operational Definitions

Bank's Mobile applications: designed software that users can download through the internet on their mobile phone to use in a specific task to satisfy their needs.

Usability: the degree to which a mobile phone application is enjoyable to use, simple to learn, can be accessed easily, and can provide needed and fast service 5-9.

Availability: the ability of a mobile phone application to be continually available, can correct mistakes, reply to user requests, and run in a fast time to serve users 1-4.

Information: the degree to which mobile phone applications can provide complete, accurate, updated, and clear information that users can benefit from it 10-14.

Security: the degree to which a mobile phone application can be secure in terms of providing an inaccessible password to protect user data and payments from loss or theft 15-19.

Privacy: the degree to which a mobile phone application gets permission from users about their personal data and at the same time protects it from exposure or manipulation 20-24.

Competitive Advantage: The uniqueness and difference in the (Time, Quality, Costs, reliability, and Innovation) that increase the value of output and gain the benchmark between the competitors.

Cost: provide the same product or service at a lower cost without compromising quality 25-28.

Quality: Providing what meets or exceeds the expectations of the customer's requirements 29-32.

Speed: is a quick response to meet customers' demands that does not affect the quality of service or product 33-36.

Reliability: is providing product/service to customers accurately and constantly while maintaining the quality 37-40.

Innovation: the new idea to do the service that added value to the customer 41-45.

1.9 Study Limitations

Human limitation: This study will be carried out on managers and employees who are working at Jordanian commercial banks.

Place Limitation : This study is evolving around commercial banks in Amman, Jordan.

Time Limitation : This study will be studied within the period between the 1st semester and 2nd semester of the academic year 2021/2022.

1.10 Study Delimitations

This study will be implemented just in commercial banks in Amman- Jordan.

we will study the impact of Mobile phone applications, sub-variables (Usability, Availability, Information, Security, and Privacy), and their impact on competitive advantage (cost, quality, speed, reliability, innovation).

Gathering data through the questionnaires, limit the results to the ability of the questionnaire to cover all needed data, and to that period.

CHAPTER TWO: Conceptual and Theoretical Framework and Previous Studies

Introduction:

This chapter includes variables definitions, the relationship between variables, previous models, previous studies, and what differentiates this study from previous studies.

1.1 Banks Mobile Application

Franko and Tirrell (2011) defined applications on a mobile phone as an independent software that can be downloaded and run from innovative smartphones throw application stores. Islam, et. al. (2010) it is a set of programs or software that runs on mobile devices to perform certain tasks for users and it is easy to use, user-friendly, and cost less. Lee, et. al. (2012) said that a mobile application is a program designed to accomplish a specific function and it can start by downloading it from different application stores to serve users and/or other applications. Charani, et. al. (2012) said it is a technological tool for identifying opportunities, which leads to taking strategic action for organizations. Glynn, et. al. (2014) stated that it is a software application designed to operate on smartphones to give automatic feedback, visual appearing graphics display, and have goal setting functionality to users.

In summary, a mobile phone application is defined as designed software that users can download through the internet on their mobile phones to use in a specific task to satisfy their needs.

Definitions and Component of Variables:

1.1.1 Usability

Coursaris and Kim (2011) defined usability as the degree that which users can employ a specific technology instrument with relative ease to accomplish a specific goal within a

context of use. Gutierrez, et. al. (2011) said that it is a graphical platform that could display information for application users and show users how they interact with it. Nayebi, et. al. (2012) defined usability as the ability of the mobile application to be more efficient to use, easy to learn, and provide user satisfaction. Ginsburg et. al. (2016) said it is the degree to which mobile applications can be used and navigated by users for their intended goal.

In summary, usability is defined as the degree to which a mobile phone application is enjoyable to use, simple to learn, can be accessed easily, and can provide needed and fast service.

1.1.2 Availability

Toma and Foxvog (2006) defend availability as the extent to which a user can interact with a system in terms of time and location whenever the user wants. Galster and Bucherer (2008) the ability of a system to do the required tasks and be operational and accessible anytime required functioning. Papageorgiou, et. al. (2010) the percentage of successful requests of a system in a period. Santouridis, et. al. (2012) defined availability as the degree to which mobile application technical functions are working to facilitate customer purchase from an online shop easily and without errors, and dissatisfied customers which lead to not using mobile applications again.

In summary, availability is defined as the ability of a mobile phone application to be continually available, can correct mistakes, reply to user requests, and run in a fast time to serve the user.

1.1.3 Information

Sonnenberg (2010) said that information in mobile phone applications is related to users that they can benefit from it should be presented on time and prioritized where

appropriate. Appelbaum (2010) said any communicated data that is used to be in touch with users, and different users should understand data. Successful banks invest in what they know, transferring that knowledge through their regulatory channels for use in banking operations or in the development of structures, functions and operations (Omari, et. al. (2012). Enck, et. al. (2014) said information is dynamic and can be difficult to identify even when sent in clear messages.

In summary, information is defined as the degree to which a mobile phone application can provide complete, accurate, updated, and clear information that users can benefit from it.

1.1.4 Security

Brooks (2010) stated that security in smartphone applications is the ability of users to safely and confidently benefit from the potential and convenience offered by mobile platforms. Mbogo (2010) said it is one of the primary factors that relate to the intention to use a smartphone application to secure their payments. Chin, et. al. (2012) definition of security as the oriented methods to protect user-sensitive data within a digital environment. Sarwar and Soomro (2013) said it is the ability to control the access of an application through a smartphone to Sucre the information of the user. User's personal information, et. al. (2016) defined security as the ability of an application to secure user information without exposing this information to another third party.

In summary, security is defined as the degree to which a mobile phone application can be secure in terms of providing an inaccessible password to protect user data and payments from loss or theft.

1.1.5 Privacy

Mbogo (2010) stated that privacy relates to the user's personal information that should be not exposed. Cristofaro, et. al. (2011) divided privacy into two categories to protect user information in smartphone applications first, related to sharing information with others without using private data. Two, related to location and time that determine user location without revealing personal information. Limiting personal information exposure when installing an application. Chin, et. al. (2012) said it is the degree to which users believe that they can be performing sensitive tasks on an application without any concerns. Qin, et. al. (2014) defined privacy it is a kind of personal data that exists on smartphones application that users prefer keeping private and is usually not easy to obtain from the public.

In summary, privacy is defined as the degree to which a mobile phone application gets permission from users about their personal data and at the same time protects it from exposure or manipulation.

1.2 Competitive Advantage

Competitive advantage has attracted different definitions among scholars for instance, Barrette et al (2015) define it as the creative product development processes as well as the innovation ideas in an organization that gives it value than the competitors. Kasasbeh et al (2017) define it as the facets and processes that put an organization ahead of others in the industry. Krajewski, et. al. (2013) told that competitive advantages mean the crucial operational elements that a process should have to earn customer satisfaction. Marinagi, et. al. (2014) and Veerendrakumar & Narasalagi (2015) mentioned the Competitive Advantages definition as the creation of essential organizational bases to differentiate itself from its competitors.

Vanpoucke et al. (2014), companies strive to get competitive advantage due to its myriad of benefits including higher competence and increased capacity to seize market opportunities, which enables them to achieve superior performance and create value for the firm. Thus, competitive advantage gives a firm distinct competency that enables it to be outstanding in the market by enabling it to achieve superior performance relative to the competitors. This explains why commercial banks strive to adopt strategies that are geared to enhance competitiveness.

In summary, Competitive Advantage is the uniqueness and difference in the (Time, Quality, Costs, reliability, and Innovation) that increase the value of output and gain the benchmark between the competitors.

1.2.1 Cost

Goetsch and Davis (2016) mentioned that cost is about how much money you spent to introduce a service and including any expenses or materials required for introducing that service. Kinyua (2015) mentioned that decreasing carrying costs would lead to enhancing returns on investments. Wheelen & Hunger (2017) defined the cost-competitive strategy that focuses on specific customers or regional markets and attempts to utilize that niche.

In summary, the cost as a Competitive Advantage can be defined as the organizational capability to offer a product with the lowest cost in the industry without compromising quality.

1.2.2 Quality

Quality has been seen as a competitive weapon in the marketplaces. In other words, being quality-oriented may be the cause of owning a competitive advantage, in which through producing products/ services that meet or exceed the customer expectations Lee

and Zhou, (2000). However, the quality concept has been defined in several ways and from different perspectives Kazan et al., (2006). Similarly, Reeves and Bednar, (1994) defined quality as excellence, conformance to specifications, and value, in addition, to meeting or exceeding customers' expectations.

According to Akpulonu (2017), quality means meeting client expectations. To get the best products or services and company image. As well as to improve services or products' durability and reliability. Goetsch and Stanly (2016) said that quality means when a company meets or exceeds the customer's needs. Awwad, at. al. (2010) told that quality means reliability and performance. However, Garvin, (1987) discussed the dimensions of the quality. He linked the eight different dimensions to the term quality (e.g., conformance, serviceability, perceived value, features, performance, reliability, durability, and aesthetics). However, it can be noticed that all these dimensions are related or taken from the customer's perspective. Thus, the customer I considered to be the main concern of quality. Li, et. al. (2006) mentioned that quality is a Competitive Advantage when the organizations are capable to offer products and services matching with a higher value for customers through the product's quality and performance. Slack, et. al. (2010) stated that the quality Competitive Advantage is the organization oriented to set the quality as the function of value creation to achieve customer confirmation and a perceived high level of products quality.

In summary, quality is a Competitive Advantage that can be defined as the organization's capabilities to offer a premium product that differentiates itself from rivalries to meet or exceed customers' requirements.

1.2.3 Speed

Defined as the duration that any service needs to be delivered. It's about how the company delivers according to a promised schedule. Goetsch and Davis (2016) stated that time/speed refers to the duration needed to deliver the service to the client, and the number of clients served during fixed periods.

Speed or time refers to the organizational capability to compete with interested customers, by satisfying the customer's need and want effectively and efficiently at the right time and with needed quality and quantity as well. Time can give an indicator of the operations that reflects the products, in which they are meeting the customers' needs of quality, reliability from the curtained product/ service, also delivering the right quantity, to the right place, in the right place according to the time constraints is considered to be as achieving a part of the organization's competitive advantage (Kumar and Kumar, 2004)

Awwad, et. al. (2010) defined speed as how quickly a product or service is delivered to a customer. Goetsch and Davis (2016) stated that time/speed refers to the duration needed to deliver the service to the client, and the number of clients served during fixed periods.

In summary, speed is a quick response to meet customers' demands that does not affect the quality of service or product.

1.2.4 Reliability

According to Zalfa and Siew, (2017) the reliability means performance dependability or consistency, the obligation to provide the service on time. It is committed to the promise lau, et. al. (2013) describes it as the degree of the bank's commitment to the customer's direction, the bank that provides customers with a very well documented service.

However, Lo and Osman, (2010) indicates that it is a natural means of the bank and its ability to provide a reliable and accurate service as per the date, and the banks provide services. According to a specific structure to observe at the time of delivery service, problem-solving and price, all of which have an impact on customer service quality perception. As the bank is committed to the business structure, especially those that are intrinsic to the core features of the service, banks need to be aware of customer expectations for reliability.

In summary, reliability is providing product or service to customers accurately and constantly while maintaining quality.

1.2.5 Innovation

Innovation related to process, people and service. Moore and Tushman (1982) stated that innovation means both developing new services and working on existing services to improve them. Askar and Mortagy (2007), and Peng, et. al. (2008) also agreed that innovation refers to the developing or introducing new services or processes or technologies. Sari and Firdaus (2015) stated that innovation is introducing new ideas services or goods, or ways that add benefit or value for customers. Goetsch and Davis (2016) said, "Innovation is how organizations continually improve the quality and cost of their products as well as the quality of their services".

In summary, innovation is the new idea to do a service that added value to the customer.

1.3 The Relationship Between Variables

Onobrakpeya and Stanley (2016) said that there is a relationship between using high-tech products including smartphones in providing a sustainable competitive advantage. Arcand, et. al. (2017) stated that mobile applications had become mandatory in banking

businesses to service their clients in the best way and to provide them with the service they are accepting. Karjaluoto, et. al. (2018) mentioned that mobile services have reinvented business models and provided customers with the service delivery they needed, in addition, mobile services have facilitated the access of information by customers and all of that can be done through mobile applications.

Thakur (2018) the huge changes in technologies especially in the retail industry regarding e-retailers make it hard to gain customer satisfaction and loyalty at the same time he mentioned that e-service quality could develop customers' experience and the way they cross through a mobile application to gain their satisfaction and loyalty. Tsai, et. al. (2018) said that mobile applications have become an important matter for organizations to contact their customers to provide them with services as well as to enhance the service quality offered to customers to gain their satisfaction and loyalty that lead to the competitiveness. At the same time, Kaur (2018) said that the huge development of internet technology and mobile applications have transferred the organizations' direction to gain customer satisfaction by enhancing e-service quality.

Lee and Park (2008) said that the adoption of mobile information technology influenced market performance in business. Chen and Zhao (2008) stated that using a mobile business model could be effective through the implementation of mobile business in firms to acquire unique Services. Casagranda, et. al. (2011) mentioned that using internet-based technology as a marketing tool can support the creation of expected services by customers. Limburg (2012) said that internet-based technologies could gain strategic benefits through distinctive IT applications.

Mobile financial innovation is aimed at gaining more capital at the lowest cost and the majority of the fund composition is high-cost funds such as deposit accounts. Only a

small amount of funds is low-cost, such as saving accounts. Therefore, banks must innovate well and every innovation must be communicated effectively to their targeted market. Customers prefer to deposit money into a system in which they can gain a good payment service. Innovation improves the movements of deposits from checking accounts to other easiest options (Mbogo, 2010).

1.4 Previous Studies

The previous studies review is mentioned to establish how other scholars investigated the same problem as follows:

Sultan, (2007) study titled: "**The Competitive Advantage Of Small and Medium-Sized Enterprises: The Case of Jordan's Natural Stone Industry**" The main purpose of the research was to discuss the dimensions of competitive advantage of the Small and Medium-Sized Enterprises working in the processing of the natural stone field in Jordan and determine the dimensions that need improvements to improve the level of competitiveness of these Small and Medium-Sized Enterprises. Additionally, the study discussed the impact of information and communications technology on the competitiveness of these small and medium-sized enterprises. Based on the strengths, weaknesses, opportunities, and threats (SWOT) analysis, six conclusions are developed to improve the competitive advantage of the small and medium-sized enterprises working in the natural stone field in Jordan.

Hernando & Nieto (2007), a study titled " **Is the Internet delivery channel changing banks' performance? The case of Spanish banks**" the study investigated the online banking on bank performance, it concludes that the Internet channel is a complement to, rather than a substitute for, physical bank branches. Any implementation of Internet banking requires information technology investment by Internet banking service

providers. To succeed in such investments, bank customers must see value in the technology, or they are unlikely to use it much. In some areas, things have not moved as quickly as some anticipated in turning these benefits into reality in the banking sector, and many bank customers still hesitate in switching to web-based service transactions. The study found that, over time, online banking was associated with lower costs and higher profitability for a sample of Spanish banks.

Chen and Zhao (2008) study titled "**Mobile Business as a Strategic Tool to Acquire Competitive Advantages**", aimed to analyze using mobile business in the logistics industry to provide a sustainable competitive advantage. Data were collected from the logistic industry in China. Data was collected via a survey of companies in the logistics industry in China. Results showed that mobile business could enhance response time, and interaction with customers, and gain a competitive advantage. The Study recommended that using a mobile business model can be effective through the implementation of mobile business in firms to acquire competitiveness.

Verkasalo, et. al. (2010) study titled "**Analysis of users and non-users of smartphone applications**", aimed to explore users of three selected mobile applications to find the reason behind using these applications. Data was collected from 579 smartphone users by a web-based survey to investigate the intention to use smartphone applications. The Analysis was tested by using the technology acceptance model. Results showed that two major characteristics affect using applications perceived enjoyment and usefulness of the application. The Study recommended that to generalize study results there is a need to include more young users of other mobile applications.

Islam, et. al. (2010) study titled "**Mobile Application and Its Global Impact**", aimed to explore the impact of the mobile application on individuals, businesses, and

social areas in the modern communication and information age. Data was collected from statistical past and present use of the mobile application from various parts of the global market. Results showed the use of mobile applications by users is increasing, people are becoming more dependent on mobile rather than any technological tool to communicate and do their business. The study recommended that there are some areas on the mobile need to be more suitable for the customer to accept such as screen size, lack of windows, navigation, types of pages accessible, and speed.

Ganguli and Roy (2011) study titled "**Generic technology-based service quality dimensions in banking**", aimed to identify the basic service quality dimensions of technology-based banking and to examine the effect of these dimensions on customer satisfaction and customer loyalty. Data was collected from 325 students of 336 through an online questionnaire. The related hypotheses were tested using structural equation modeling. Results show that customer service and technology usage easiness and reliability have a positive and significant impact on customer satisfaction and customer loyalty. The Study recommended using different sampling strategies in future studies to be able to generalize study results.

Al Jabri and Sohail (2012) study titled "**Mobile Banking Adoption: Application of Diffusion of Innovation Theory**", aimed to fills the gap and examines a number of factors affecting the mobile banking adoption. Using diffusion of innovation as a baseline theory, data are obtained from 330 actual mobile banking users while the sampling technique for data collection was connivance and the findings can't be generalized because the majority of the sample size is young respondents between 18-25 years old. And it is found that relative advantage, computability, and observe ability have positive impact on adoption. The study population was in Saudi Arabia. Results showed that it

will have practical implications for banking industry in Saudi Arabia that should offer mobile banking services that are compatible with various current user requirements, past experiences, lifestyle and beliefs in order to fulfill customer expectations.

Masrek et al. (2012) study titled "**Mobile Banking Utilizations, Satisfaction and loyalty**", aimed to show mobile banking utilization predicts user satisfaction and does satisfaction in mobile banking predicts loyalty. Were the study population was in Malaysia. A survey methodology involving 312 respondents, the finding showed that mobile banking use is positively related to satisfaction not loyalty also it is found that satisfaction significantly predicts loyalty. The collected data were analyzed using statically computer programs known as IBM, SPSS version 20 and analysis of moment structure that used for structural equation modeling. The study results find that have empirically shown the importance of mobile banking services and its influence towards customer satisfaction in Malaysia.

Persaud and Azhar's (2012) study titled "**Innovative mobile marketing via smartphones"** aimed to investigate consumers' willingness to accept marketing through their smartphones. Data was collected from 428 respondents by an online survey. The data were analyzed through ANOVA and regression analysis. Results showed that customer shopping style, brand trust, and value are important issues to motivate customers to use mobile marketing through their smartphones. The Study recommended that marketers must listen to their customers and develop appropriate strategies rather than simply adapting existing marketing strategies via mobile applications.

Pilinkiene, et.al. (2013) study titled "**E-Business as a Source of Competitive Advantage**". aimed to find out the relationship between EB benefits and the competitive advantage. Data collected from 1010 random companies in Spain participated in the

study, Data in the research was analyzed and hypotheses tested using structural equation modeling the results are the positive impact of EB on nine different business processes.

Urbancova (2013) study titled: "**Competitive advantage achievement through innovation and knowledge** " this study aimed to show the importance of innovation and knowledge in gaining a competitive advantage. The data were obtained through a questionnaire survey in 189 Czech Republic companies. The findings showed that the knowledge and experience of employees encourage the success of innovations to gain a competitive advantage to survive in today's highly competitive environment.

Diab (2014) study titled: "**Using the Competitive Dimensions to achieve Competitive Advantage**" the aim of this study was to know if the Jordanian private hospitals use the competitive advantage dimensions (cost, quality, flexibility, and delivery) to achieve a competitive advantage, the data were obtained from 200 managers. The finding showed that the Jordanian private hospitals used all competitive dimensions (cost, quality, flexibility, and delivery) to achieve a competitive advantage.

Jung (2014) study titled "**What a smartphone is to me: understanding user value in using smartphones**", aimed to find the values that can be achieved through smartphones to users and how an application in a smartphone can be personalized. Data were collected from 54 smartphone users through interviews. Interviews were analyzed by using a means-end chain approach to understand consumer hierarchical value structure. Results showed that users have diverse goals and values that are associated with using a smartphone. The Study recommended considering the relationship between values when investigating user values in information technology and it also recommended comparing the findings with different information technology contexts.

Hamad et al. (2016) study titled" **Evaluating the Experience of Implementing Electronic Banking by Commercial Banks Operating in Sudan Using the Unified Theory of Acceptance and Use of Technology**" aimed to evaluate the adoption of electronic banking by banks operating in Sudan using the Unified Theory of Acceptance and Use of Technology. The study population consisted of a group of employees of commercial banks operating in the region in this study, the quality of service variable was included as one of the variables that affect adoption to replace the expected performance variables, expected voltage, and concessional conditions included in the unified theory of acceptance and use of technology. The price and spread variables were also added as affecting the adoption of electronic banking services. The study reached a number of results, the most important of which are that the quality of service, price and spread, as well as the rest of the variables included in the unified theory of acceptance and use of technology affect the intention of customers to use e-banking in Sudan.

Chemtai (2016) study titled " **The effects of mobile-banking on the banks competitive advantage"**, aimed to investigate how mobile banking affected bank competitive advantage in Eldoret. The research applied explanatory research design and used primary data collected from 161 management staffs in 26 commercial banks operating in Eldoret town using a questionnaire. Through inferential and descriptive statistics, the data was analyzed whereby, results reveal that oppositive influence of mobile banking on competitive advantage.

Al Nahar (2016) study titled "**The Impact of Smartphone Applications on Customer Satisfaction in Jordanian Commercial Banks** ", aimed to detect and know the impact of smartphone applications on customer satisfaction in Jordanian commercial banks. Data were collected from a group of customers of commercial banks operating in

the region. The study showed that there is an impact of smartphone applications on the positive word transferred and repeat purchases and fulfillment of desire as it showed that Secret factors Response and ease of dealing with banking applications affect average customer satisfaction. The study recommended that the banks studied should pay more attention to smartphone applications than they are currently and continue to develop these applications.

Arcand, et. al. (2017) study titled **"Mobile banking service quality and customer relationships"**, aimed to examine the multidimensional concept of mobile banking application or website service quality, which include (privacy, security, design/aesthetics proactivity, enjoyment, and sociality and their influence on customer relationship in terms of service quality, which include (satisfaction, trust, and commitment). Data was collected from 375 out of 3,806 by online questionnaire and the sample was customers who used smartphone or website applications to purchase goods. Hypotheses were tested using multiple scales developed by marketing scholars also seven-point scale was used. Results showed that trust positively and significantly influences satisfaction and commitment; it also showed that the mobile banking application service quality influences trust, commitment, and satisfaction of customers. The study recommended that future studies should also formally test whether results vary by key financial sectors segmentation variables such as age and gender as they were found relevant variables in recent mobile banking adoption.

Gashi (2017) study titled "**The Effect of using electronic payment cards on raising the quality of Banking Services**" aimed to identify the nature, types, and tools of electronic payment cards in the Algerian external bank, it was concluded that the environment New banking, competition and applications for electronic payment cards led

banks to find sophisticated mechanisms in the use and diversification of electronic banking services, and the tools used were the collection of documents and interview with external bank staff Touggourt agency. The study recommended banks focus more on dealing with the basic requirements for the adoption of electronic banking services, which can be reflected in the wider adoption of those services.

Kilonzi (2017) study titled " **Mobile banking technology, Innovation Strategy and Competitive advantage"** aimed to investigate how Mobile banking influenced banks competitive advantage in Kenya. Applying a descriptive cross-sectional design, the study was based on 5 years data collected from 42 commercial banks. Multiple linear regression analysis was applied in analyzing the data where it was revealed that mobile banking has a positive effect on banks effectiveness.

McLean, et. al. (2018) study titled **"Developing a Mobile Applications Customer Experience Model (MACE)-Implications for Retailers"**, aimed to investigate the variables that may influence the customer experience during the use of a retailer's mobile application. Data was collected from 1024 out of 1410 customers in the UK. Data tested using structural equation modeling also the sample was customers who used smartphone applications at least for the past 6 months. Results showed that customer is still demanding new technology for service delivery, also results show the importance of utilitarian factors that influence customers to experience mobile application for retailers to serve them without having a long time using the application to satisfy their needs. The Study recommended using different variables that may influence e-commerce applications and can improve customer experience.

Tsai, et. al. (2018) study titled **"Upgrading service quality of mobile banking",** aimed to investigate the opinions of customers and experts and employed them to

determine the key factors for the superior service quality in a mobile application. Data was collected from 508 out of 737 users of mobile banking by questionnaire using a five-point Likert scale. Data tested using contract validity, discriminate validity, and convergent validity. Results showed that users of mobile banking highly emphasize system availability, privacy, compensation, and assurance one the service quality provided by the mobile application, moreover the study found that users of mobile banking pay more attention to their interests and rights of themselves to be more secure and protected while using mobile banking. The study recommended that to understand the effects of mobile banking on service quality; future studies should include more users of different countries to have a clear understanding.

Samail and Younes (2020) study titled "**The Impact of Using E-Services Application by Mobile Phones in Achieving Competitive Advantage in the Jordanian Commercial Banks** " aimed to measure the impact of the use of E-Services by mobile phones to achieve competitive advantage in Jordanian commercial banks. The study relied on descriptive analytical methodology, The population consists of (13) commercial banks in Amman City. The study sample was using the comprehensive survey of the banks managers departments, deputies and the department heads. A set of questionnaires were designed and developed to cover the study variables. The most result shows that there is a significant impact of mobile banking applications on Achieving competitive advantage. The most important recommendation is to raise awareness among the departments and managers of commercial banks about the concept of e-banking and e-mobile applications to assist in presenting ideas, creative ideas that increase the bank's growth and development of financial performance to achieve competitive-advantage.

Nguyen (2021) study titled "**Critical Factors Affecting Consumer Intention of Using Mobile Banking Applications During COVID-19 Pandemic**" aimed to analyzes the factors affecting the intention and recommendation to use the mobile banking applications of 314 customers from Vietnam. The study analyzes 7 factors affecting the intention and recommendation to use the mobile banking applications of customers from Vietnam, including Perceived risk, Perceived ease of use, Perceived usefulness, Attitude, Perceived trust, Social image, and Innovativeness. Besides, the study also analyzes 4 variables that reflect the customer's demographics, including gender, age, education, and occupation, and 6 variables describing the behavior of customers using mobile banking applications. The study findings indicate that the following factors: Innovativeness, Attitude, Perceived risk, Perceived ease of use, and Perceived trust have the most significant impact on customers' behavior of using mobile banking applications in emerging markets such as Vietnam in the context of prolonged pandemic and continuous lockdown in many provinces and cities. The study is also of great value to studies on behavior changes among customers using mobile banking applications after the COVID-19 pandemic in Vietnam.

1.5 What Makes this Study Different from Previous Studies?

This study is considered one of few studies that investigated the impact of Bank Mobile Applications on the Competitive Advantage of Jordanian Commercial Banks in Jordan.

This study is going to be an expansion on the impact of Bank's Mobile Applications on the competitive Advantage field for all practitioners and researchers.

Most of the previous research works were conducted to find the use of mobile phone applications as a tool to satisfy customers and gain their loyalty. Relatively few of these studies addressed the impact of Bank Mobile Applications on competitive Advantage.

This study is going to specifically explain how the Bank Mobile Applications impact the competitive advantage of Jordanian commercial banks.

This study focuses more on the banking sectors due to central banks vision which are becoming more aware of digital banks, as there is a growing trend towards synergizing financial industries with modern technologies, adding that new tools are capable of fundamentally changing the way financial and banking institutions conduct their business, and in partnership with the banking sector, a systematic legislation to govern the work of digital banks will be created, including requirements to grant licensing to digital banks.

The majority of past research has taken place in countries outside of the Arab world. The current research is being carried out in Jordan, which is one of the Arab World's countries.

CHAPTER THREE: STUDY METHODOLOGY

1.6 Introduction

This chapter includes study design, population and sampling, data collection methods, data collection analysis, study tool, and validity and reliability test. In addition to the respondent demographic description.

1.7 Study Design

This study is a quantitative, cross- sectional and descriptive cause-effect study. Its purpose is to investigate the impact of Bank Mobile applications on the competitive advantage of Jordanian commercial banks. The study started with a review of literature to improve the current measurement model. Then the items included in the questionnaire was confirmed based on a panel of judges. Finally, the survey was conducted and the data collected verified and coded against SPSS. The variables correlation tested -after testing data normality, validity and reliability- and multiples regressions were conducted to test the effect.

1.8 Study Population, Sample and Unit of Analysis

The Jordanian Commercial Banks that are registered in Jordanian Association of Banks at 2022 in Jordan are 13 Banks (The Jordanian Association of banks (ABJ)). All Jordanian Commercial Banks were targeted except Arab Bank, because providing data needs special permission and this negate the need for sampling.

Unit of Analysis: The survey unit of analysis is composed of 256 managers (out of 690 managers, Association of Banks in Jordan (ABJ), 5, 2022, www.abj.org.jo) from the three levels who was working at Jordanian Commercial banks and available at the time of distributing the questionnaires and ready to participate.

1.9 Data Collection Methods (Tools):

For fulfilling the purposes of the study, the data was collected from two sources: secondary and primary data. Secondary data: books, journals, and previous studies in well-known magazines, articles, thesis, and websites. Primary data: the researcher developed a questionnaire that reflects the study objective es.

1.10 Study Instrument (Tool):

The Questionnaire.

To actualize this study, the questionnaire was used as the main tool, which contains two parts, as follows:

The first part contains the demographic dimensions related to gender, age, experience, education, position, and job title. The Second part includes both independent and dependent variables as follows:

Independent Variable (Bank Mobile Application): contains the following sub-variables (Usability, Availability, Information, Security, and Privacy).

Dependent Variable (Competitive Advantages): contains the following dimensions: (Cost, Quality, Speed, Reliability, and Innovation).

All variable items were measured by five Likert-scale as follows: (Strongly Agree - Agree - Agree to a point - Disagree - Strongly disagree).

1.11 Data Collection and Analysis:

To fulfill the purpose of this study all Jordanian commercial banks in Amman were targeted and covered, except Arab Bank, because providing data via questionnaire needs special permission, which counts 12 commercial banks. The data was collected from the managers who are working at these commercial banks in Amman-Jordan. 275

questionnaires were distributed and only 256 questionnaires were suitable for analysis, while 19 questionnaires were eliminated because of uncompleted or anomalies data. Then they were coded against SPSS 20 and the following analysis was carried out.

1.12 Validity Test

The tool`s validity was confirmed by using three methods: content, face, and construct. The content validity was confirmed by collecting the data from multiple literatures resources such as books, journals, working papers, research, thesis, dissertations, and articles. Moreover, the face validity was confirmed by the board of judges, which judged the questionnaire (appendix 1). Finally, construct validity was confirmed by Principal Component Factor Analysis with Kaiser Meyer Olkin (KMO).

Construct Validity (Factor Analysis):

To ensure the structural validity of the study tool, Pearson Correlation coefficients were found between each paragraph and the total score for its axis, in order to determine the ability of each paragraph of the scale to be distinguished, and items whose correlation coefficient is less than (0.25) are considered low and should be deleted (Linn & Gronlund, 2012), and the following tables show this:

Table (3-1) Correlation coefficients between each of the paragraphs of the dimensions of the independent variable and the total degree of its axis

Availability		Usability		Information		Security		Privacy	
#	Correlation coefficient	#	Correlation coefficient	#	Correlation coefficient	#	Correlation coefficient	#	Correlation coefficient
1	.739**	5	.777**	10	.724**	15	.790**	20	.719**
2	.837**	6	.797**	11	.759**	16	.780**	21	.787**
3	.805**	7	.784**	12	.780**	17	.781**	22	.809**
4	.704**	8	.751**	13	.817**	18	.790**	23	.771**
		9	.704**	14	.784**	19	.753**	24	.784**

**. Correlation is significant at the 0.01 level (2-tailed).

Table (3-2) shows that the coefficients for distinguishing paragraphs for "Mobile applications" ranged between (0.704-0.837), which are significant values at the level (α≤0.01), which means that the paragraphs have a high distinction and greater than (0.25), and this indicates the paragraphs of the independent variable are true to what they were designed to measure.

Table (3-2) Correlation coefficients between each of the paragraphs of the dimensions of the dependent variable and the total score for its axis

Dependent variable: Competitive Advantages									
Cost		Quality		Speed		Reliability		Innovation	
#	Correlation coefficient	#	Correlation coefficient	#	Correlation coefficient	#	Correlation coefficient	#	Correlation coefficient
25	.760**	29	.813**	33	.792**	37	.834**	41	.678**
26	.834**	30	.794**	34	.855**	38	.858**	42	.586**
27	.808**	31	.796**	35	.823**	39	.831**	43	.603**
28	.712**	32	.777**	36	.839**	40	.810**	44	.622**
								45	.830**
** Correlation is significant at the 0.01 level (2-tailed).									

Table (3-3) shows that the coefficients for distinguishing paragraphs for "Competitive Advantages" ranged between (0.586-0.858), which are significant values at the level (α≤0.01), which mean that the paragraphs have a high distinction and greater than (0.25), and this indicates the paragraphs of the dependent variable are true to what they were designed to measure.

Convergent structural validity using exploratory factor analysis:

To ensure the convergent structural validity of the study variables, the exploratory general analysis test was used, and the following tables show that:

First: Convergent structural validity, exploratory factor analysis of the independent variable (Bank Mobile Application):

The results of the exploratory factor analysis appearing in the table (3-4) shows that the KMO division amounted to (0.945) and according to the rule (Kaiser, 1979) which indicates that the minimum acceptable test value is (0.5), it turns out that the resulting value is greater than 0.5 Thus, the sample size is sufficient and appropriate for the study and for the application of the exploratory factor analysis, and we note from the data shown in the above table that the Eigen value is greater than the correct one. Therefore, the values of the explained variance ratios for each factor that was extracted, and the lowest explanatory variance value was (3.751), and the total explanatory ratios amounted to (63.309%) of the total variance of the independent variable. Moreover, the loading values (saturation) for each of the paragraphs of each of the extracted factors, it was found that the lowest value was (0.510), and this value is greater than (0.40), so it is considered sufficient and appropriate and expresses acceptable and sufficient saturation values for the paragraphs every factor is extracted.

Table (3-3) Saturation (loading) values of factors that represent the independent variable through orthogonal rotation of the axes (Varimax)

#	Paragraph	Saturation values on the extracted factors				
		Availability	Usability	Information	Security	Privacy
1	The bank mobile application is available for use	.510				
2	The bank mobile application responds at a suitable time	.608				
3	The bank mobile application runs fast as requested	.678				
4	The bank mobile application reduces errors	.678				
5	The bank mobile application is user friendly		.630			
6	The bank mobile application is easy to learn		.712			
7	The bank mobile application is easily accessible		.693			
8	The bank mobile application provides timely services		.577			

9	The bank mobile application meets user needs		.643			
10	The bank mobile application provides accurate information			.671		
11	The bank mobile application provides complete information			.588		
12	The bank mobile application includes updated content			.695		
13	The bank mobile application presents useful information			.730		
14	The bank mobile application provides clear information			.685		
15	The bank mobile application is secure to use				.659	
16	The bank mobile application secures payments				.695	
17	The bank mobile application uses a secure password				.699	
18	The bank mobile application protects data from theft				.668	
19	The bank mobile application security terms are available to review				.691	
20	The bank mobile application preserves personal data					.659
21	The bank mobile application gets permission to use personal information					.645
22	The bank mobile application protects information from exposure					.743
23	The bank mobile application protects location information					.565
24	The bank mobile application protects personal messages					.672
KMO		0.945				
Eigen value		10.466	1.416	1.341	1.071	1.069
Explained variance ratio		43.61	5.866	4.586	4.46	3.751
Cumulative Explained Variance Ratio		63.309				

Second: Convergent structural validity, exploratory factor analysis of the dependent variable (Competitive Advantages):

Table (3-5) shows that the KMO division amounted to (0.935) and according to the rule (Kaiser, 1979) which indicates that the minimum acceptable test value is (0.5), it turns out that the resulting value is greater than 0.5 Thus, the sample size is sufficient and appropriate for the study and for the application of the exploratory factor analysis, and

we note from the data shown in the above table that the Eigen value is greater than the correct one. Therefore, the values of the explained variance ratios for each factor that was extracted, and the lowest explanatory variance value was (3.769), and the total explanatory ratios amounted to (69.593%) of the total variance of the dependent variable. Moreover, the loading values (saturation) for each of the paragraphs of each of the extracted factors, and it was found that the lowest value was (0.468), and this value is greater than (0.40), so it is considered sufficient and appropriate and expresses acceptable and sufficient saturation values for the paragraphs Every factor is extracted.

Table (3-4) Saturation (loading) values of factors that represent the dependent variable through orthogonal rotation of the axes (Varimax)

#	Paragraph	Saturation values on the extracted factors				
		Cost	Quality	Speed	Reliability	Innovation
25	The bank reduces costs over time	.606				
26	The bank reduces servicing cycle time	.714				
27	The bank develops an effective control system for cost	.624				
28	The bank manages various resources cost	.581				
29	The bank assures product quality		.689			
30	The bank provides services quality that is superior to the competition		.560			
31	The bank controls service quality		.502			
32	The bank satisfies the customer requirements		.585			
33	The bank delivers services on time.			.597		
34	The bank follows a planned services schedule			.635		
35	The bank develops new services in time			.555		
36	The bank provides employees with continuous training at a suitable time.			.676		
37	The bank adapts processes according to customer services				.657	
38	The bank provides many different customer services				.621	
39	The bank provides consistent services				.599	
40	The bank provides different kinds of services				.671	

41	The bank conducts innovation training continuously					.672
42	The bank uses customers' complaints to improve its services					.619
43	The bank uses the latest technology to serve customers					.635
44	The bank encourages employees to come up with new ideas					.609
45	The bank finds solutions to customer problems					.468
KMO		0.935				
Eigen value		10.155	1.699	1.542	1.400	1.201
Explained variance ratio		48.356	8.088	4.868	4.515	3.765
Cumulative Explained Variance Ratio		69.593				

1.13 Reliability Test

Cronbach's Alpha coefficients were found to ensure the stability of the study tool, and the results were as in the following table:

The values of Cronbach's alpha coefficients are shown in the table (3-6), which range between (0.77-0.91), we note that all of them are more than (0.6), which indicates the stability of the study tool (Sekaran & Bougie, 2016).

Table (3-5) Cronbach's Alpha coefficients for testing the stability of the study tool

variable		Cronbach's Alpha	# of paragraphs
Independent variable	Availability	0.87	4
	Usability	0.84	5
	Information	0.91	5
	Security	0.84	5
	Privacy	0.80	5
	Mobile Application	**0.91**	**24**
Dependent variable	Cost	0.80	4
	Quality	0.82	4
	Speed	0.89	4
	Reliability	0.77	4
	Innovation	0.79	5
	Competitive Advantages	**0.89**	**21**

Demographic Analysis:

To show the frequency and percentages of demographic characteristics for respondents, SPSS was used in the current study to describe all variables. The respondents' demographic profile aims to show the frequency and percentages of

demographic characteristics for respondents. This is related to the first part of the questionnaire, such as gender, age, experience, educational level, and job title.

Gender: Table (3.7) shows that 49.6% of the respondents are males while 50.4% are females. The reason may be that the percentage of males is close to the percentage of females is that the nature of the job in banks does not depend on one gender more than the other.

Age: Table (3.7) shows that a percentage of (56.3%) of the study sample members are between (30-39) years old, while (21.9%) are between (40- 50) years old, (12.5%) are aged less than 30, and the percentage of those over 50 years old (9.4%).

Table (3-6) Distribution of the study sample according to their personal variables

variable	Category	Frequency	Percent
Gender	Female	129	50.4
	Male	127	49.6
Age (years)	Above 50	24	9.4
	Bet. 30-39	144	56.3
	Bet. 40-50	56	21.9
	Less than 30	32	12.5
Experience (years)	Bet.10-20	169	66.0
	Bet.21-30	32	12.5
	Less 10	40	15.6
	More than 30	15	5.9
Education	Bachelor	188	73.4
	Diploma	2	.8
	Master's	62	24.2
	Ph.D.	4	1.6
Job Title	Administrative Manager	39	15.2
	Executive Manager	22	8.6
	General Director	13	5.1
	Head of Section	124	48.4
	other	58	22.7
years of Experience in Banks	15-20 years	52	20.3
	5-14 years	137	53.5
	Less than 5 years	37	14.5
	More than 20 years	30	11.7
Total		256	100.0

Experience: Table (3.7) shows that a percentage (66.0%) of the respondents experience ranges between (10-20) years, (15.6%) less than 10 years, (12.5%) between (21-30) years, and (5.9%) their experience more than 30 years.

Education: Table (3.7) shows that (73.4%) of the study sample hold a bachelor's degree, (24.2%) hold a master's degree, (1.6%) hold a Ph.D., (0.8%) hold a diploma. The reason may be that the percentage of the sample that holds a bachelor's and master's degree is the highest due to the nature of the work in the bank requires that the employees be holders of university degrees.

Job Title: Table (3.7) shows that a percentage of (48.4%) of the study sample is head of a section, a15.2%) administrative manager, (8.6%) executive manager, (5.1%) general director.

Years of Experience: Table (3.7) shows that a percentage (53.5%) of the respondent's experience in banks ranges between (5-14) years, (20.3%) between (15-20) years, (14.5%) less than 5 years, and (11.7%) experience in banks more than 20 years.

CHAPTER FOUR: DATA ANALYSIS

Introduction:

This chapter includes data descriptive statistical analysis of respondent's perception, Pearson Bivariate Correlation Matrix to test the relationships among Bank Mobile Application sub-variables with each other; Competitive Advantage dimensions with each other, and between Bank Mobile Application sub-variables with Competitive Advantages dimensions. Finally, multiple regressions to check the hypothesis; of the impact of Bank Mobile Application on the Competitive Advantages.

1.14 Descriptive Statistical Analysis

A set of statistics were used including the mean, standard deviation, t-value, ranking, and implementation level.

To analyze the study data and test its hypotheses, the SPSS Ver26 software was used to conduct descriptive and inferential analysis by using the statistical methods shown in the following table:

Table (4-1) The statistical methods used

Descriptive statistics:					
Means: to measure the average answers of the sample members on the items of the study questionnaire, were the five Likert scale used:					
Degree	**Strongly Agree**	**Agree**	**Agree to a point**	**Disagree**	**Strongly Disagree**
Approval	5	4	3	2	1

Relative weight	81-100%	61-80%	41-60%	21-40%	1-20%

ength of the period =	upper - lower	=	5 -1	= 1.33
	The number of levels		3	

Degree	**Ranged**
Low	1– 2.33
Medium	2.34 – 3.67
High	3.68 - 5

1.14.1 Independent Variable (Banks Mobile Application):

- **What is the level of using mobile application by Jordanian Commercial banks?**

To answer the first study question, table (4-2) shows the means and standard deviations and T values of the responses of the study sample towards the dimensions of the independent variable "Mobile application": the results show that the means expressing the dimensions of the independent variable (Mobile application) ranged between (3.97-4.11), the dimension “Information” got the highest with a high degree, and the dimension “Privacy” got the lowest with a high degree also, while the general index of mobile application reached (4.07), which indicates that the level of using mobile application by Jordanian Commercial banks came to a high degree.

Table (4-2) Means, standard deviations, and the t values of the dimensions of "Mobile application"

Rank	#	Variable	Mean	S.D.	t	Sig.	Degree
4	1	Availability	4.08	.653	26.45	.000	High
2	2	Usability	4.10	.594	29.56	.000	High
1	3	Information	4.11	.607	29.20	.000	High
3	4	Security	4.09	.603	28.89	.000	High
5	5	Privacy	3.97	.615	25.12	.000	High
		Mobile Application	4.07		32.69	.000	High

T-Tabulated= 1.960

1.14.1.1 Availability:

Table (4-3) Means, standard deviations, t values and degrees of the answers of the study sample members towards the "Availability"

Rank	#	Paragraphs	Mean	S.D.	t	Sig.	Degree

2	1	The bank mobile application is available for use	4.10	.832	21.10	.000	High
1	2	The bank mobile application responds at a suitable time	4.11	.833	21.30	.000	High
3	3	The bank mobile application runs fast as requested	4.08	.882	19.55	.000	High
4	4	The bank mobile application reduces errors	4.03	.835	19.76	.000	High
Availability			4.08		26.45	.000	High

T-Tabulated= 1.960

Table (4-3) shows the means, standard deviations, and the order of the respondents' answers towards the dimension of the "Availability", which was measured based on four items. The results shown in the table indicate that the general indicator for the dimension of the "Availability" has reached (4.08) of the total scale area, which indicates a that the level of using mobile applications (Availability) by Jordanian Commercial banks came to a high degree from the respondents' point of view. It is also noted that paragraph No. (2) " The bank mobile application responds at a suitable time" got the highest estimates with a high mean of (4.11) and a standard deviation of (0.833), and Paragraph No. (4) "The bank mobile application reduces errors" got the lowest estimates with a mean of (4.03), which is a mean with a high degree and a standard deviation of (0.835).

1.14.1.2 Usability

Table (4-4) Means, standard deviations, t values, and degrees of the answers of the study sample members towards the "Usability"

Rank	#	Paragraphs	Mean	S.D.	t	Sig.	Degree
3	5	The bank mobile application is user friendly	4.09	.804	21.68	.000	High
1	6	The bank mobile application is easy to learn	4.12	.788	22.67	.000	High
4	7	The bank mobile application is easily accessible	4.08	.780	22.18	.000	High
2	8	The bank mobile application provides timely services	4.11	.759	23.38	.000	High
3	9	The bank mobile application meets user needs	4.09	.757	22.95	.000	High
Usability			4.10		29.56	.000	High

T-Tabulated= 1.960

Table (4-4) shows the means, standard deviations, and the order of the respondents' answers towards the dimension of the "Usability", which was measured based on five items. The results indicate that the general indicator for the dimension of the "Usability" has reached (4.10) of the total scale area, which indicates a that the level of using mobile application (Usability) by Jordanian Commercial banks came to a high degree from the respondents' point of view. It is also noted that paragraph No. (6) " The bank mobile application provides timely services" got the highest estimates with a high mean of (4.12) and a standard deviation of (0.788), and Paragraph No. (7) "The bank mobile application is easily accessible" got the lowest estimates with a mean of (4.08), which is a mean with a high degree and a standard deviation of (0.780).

1.14.1.3 Information:

Table (4-5) shows the means, standard deviations, and the order of the respondents' answers towards the dimension of the "Information", which was measured based on five items. The results indicate that the general indicator for the dimension of the "Information" has reached (4.11) of the total scale area, which indicates a that the level of using mobile application (Information) by Jordanian Commercial banks came to a high degree from the respondents' point of view. It is also noted that paragraphs No. (10, 13, 14) " The bank mobile application, The bank mobile application presents useful information, The bank mobile application provides clear information " got the highest estimates with a high mean of (4.11) and standard deviation of (0.809, 0.807, 0.740), and Paragraph No. (11) "The bank mobile application provides complete information" got the lowest estimates with a mean of (4.04), which is a mean with a high degree and a standard deviation of (0.801).

Table (4-5) Means, standard deviations, t values, and degrees of the answers of the study sample members towards the "Information"

Rank	#	Paragraphs	Mean	S.D.	t	Sig.	Degree
1	10	The bank mobile application provides accurate information	4.13	.809	22.33	.000	High
3	11	The bank mobile application provides complete information	4.04	.801	20.75	.000	High
2	12	The bank mobile application includes updated content	4.11	.771	23.09	.000	High
1	13	The bank mobile application presents useful information	4.13	.807	22.30	.000	High
1	14	The bank mobile application provides clear information	4.13	.740	24.50	.000	High
Information			4.11		29.20	.000	High

T-Tabulated= 1.960

1.14.1.4 Security

Table (4-6) shows the means, standard deviations, and the order of the respondents' answers towards the dimension of the "Security", which was measured based on five items. The results indicate that the general indicator for the dimension of the "Security" has reached (4.09) of the total scale area, which indicates a that the level of using mobile applications (Security) by Jordanian Commercial banks came to a high degree from the respondents' point of view. It is also noted that paragraph No. (17) " The bank mobile application uses a secure password" got the highest estimates with a high mean of (4.20) and a standard deviation of (0.774), and Paragraph No. (19) " The bank mobile application security terms are available to review" get the lowest estimates with a mean of (3.93), which is a mean with a high degree and a standard deviation of (0.835).

Table (4-6) Means, standard deviations, t values and degrees of the answers of the study sample members towards the "Security"

Rank	#	Paragraphs	Mean	S.D.	t	Sig	Degree
2	15	The bank mobile application is secure to use	4.16	.740	24.99	.000	High
3	16	The bank mobile application secures payments	4.14	.756	24.23	.000	High
1	17	The bank mobile application uses a secure password	4.20	.774	24.78	.000	High
4	18	The bank mobile application protects data from theft	4.02	.772	21.21	.000	High

5	19	The bank mobile application security terms are available to review	3.93	.835	17.75	.000	High
Security			4.09		28.89	.000	High

T-Tabulated= 1.960

1.14.1.5 Privacy

Table (4-7) shows the means, standard deviations, and the order of the respondents' answers towards the dimension of "Privacy", which was measured based on five items. The results indicate that the general indicator for the dimension of the "Privacy" has reached (3.97) of the total scale area, which indicates a that the level of using mobile application (Privacy) by Jordanian Commercial banks came to a high degree from the respondents' point of view. It is also noted that paragraph No. (24) " The bank mobile application protects personal messages" got the highest estimates with a high mean of (4.01) and a standard deviation of (0.738), and Paragraph No. (23) " The bank mobile application protects location information" got the lowest estimates with a mean of (3.95), which is a mean with a high degree and a standard deviation of (0.815).

Table (4-7) Means, standard deviations, t values, and degrees of the answers of the study sample members towards the "Privacy"

Rank	#	Paragraphs	Mean	S.D.	t	Sig.	Degree
2	20	The bank mobile application preserves personal data	4.00	.717	22.41	.000	High
5	21	The bank mobile application gets permission to use personal information	3.91	.889	16.30	.000	High
3	22	The bank mobile application protects information from exposure	3.96	.806	19.07	.000	High
4	23	The bank mobile application protects location information	3.95	.815	18.56	.000	High
1	24	The bank mobile application protects personal messages	4.01	.738	21.92	.000	High
Privacy			3.97		25.12	.000	High

T-Tabulated= 1.960

1.14.2 Dependent Variable (Competitive Advantage):

- **What is the level of implementing competitive advantage by Jordanian Commercial banks?**

To answer the second study question, table (4-8) shows the means and standard deviations and T values of the responses of the study sample towards the dimensions of the dependent variable "Competitive Advantages".

Table (4-8) Means, standard deviations, and the t values of the dimensions of "Competitive Advantages "

Rank	#	Variable	Mean	S.D.	t	Sig.	Degree
3	1	Cost	3.98	.547	28.51	.000	High
1	2	Quality	4.01	.580	27.86	.000	High
2	3	Speed	4.00	.667	24.10	.000	High
2	4	Reliability	4.00	.602	26.67	.000	High
4	5	Innovation	3.95	.663	22.91	.000	High
Competitive Advantages			3.99		30.23	.000	High

T-Tabulated= 1.960

The results shows that the means expressing the dimensions of the independent variable (Competitive Advantages) ranged between (3.95-4.01), and the dimension “Quality” got the highest with a high degree, and the dimension “Innovation” got the lowest with a high degree also, and the general index of mobile applications reached (3.99), which indicates that the level of implementing competitive advantage by Jordanian Commercial banks came to a high degree.

1.14.2.1 Cost:

Table (4-9) Means and standard deviations and t value of the answers of the study sample members towards the "Cost"

Rank	#	Paragraphs	Mean	S.D.	t	Sig.	Degree
2	25	The bank reduces costs over time	3.95	.763	19.91	.000	High
2	26	The bank reduces servicing cycle time	3.95	.679	22.47	.000	High
2	27	The bank develops an effective control system for cost	3.95	.684	22.28	.000	High
1	29	The bank manages various resources cost	4.05	.690	24.27	.000	High
Cost			3.98		28.51	.000	High

T-Tabulated= 1.960

Table (4-9) shows the means, standard deviations, and the order of the respondents' answers towards the dimension of the "Cost", which was measured based on four items.

The results indicate that the general indicator for the dimension of the "Cost" has reached (3.98) of the total scale area, which indicates that the level of implementing competitive advantage (Cost) by Jordanian Commercial banks came to a high degree from the respondents' point of view. It is also noted that paragraph No. (29) " The bank manages various resources cost" got the highest estimates with a high mean of (4.05) and a standard deviation of (0.690), and Paragraphs No. (25, 26, 27) The bank reduces costs over time, The bank reduces servicing cycle time, The bank develops an effective control system for cost" got the lowest estimates with a mean of (3.95), which is an average with a high degree and a standard deviation of (0.763, 679, 684).

1.14.2.2 Quality:

Table (4-10) shows the means, standard deviations, and the order of the respondents' answers towards the dimension of the "Quality", which was measured based on four items.

Table (4-10) Means and standard deviations and t values of the answers of the study sample members towards the "Quality"

Rank	#	Paragraphs	Mean	S.D.	t	Sig.	Degree
3	29	The bank assures product quality	4.01	.759	21.32	.000	High
4	30	The bank provides services quality that is superior to the competition	3.96	.748	20.63	.000	High
2	31	The bank controls service quality	4.02	.694	23.49	.000	High
1	32	The bank satisfies the customer requirements	4.04	.715	23.32	.000	High
Quality			4.01		27.86	.000	High

T-Tabulated= 1.960

1.14.2.3 Speed:

Table (4-11) Means and standard deviations and T values of the answers of the study sample members towards the "Speed"

Rank	#	Paragraphs	Mean	S.D.	t	Sig.	Degree
1	33	The bank delivers services on time	4.06	.782	21.64	.000	High
3	34	The bank follows a planned services schedule	3.96	.786	19.55	.000	High

2	35	The bank develops new services in time	4.04	.823	20.12	.000	High
3	36	The bank provides employees with continuous training at a suitable time.	3.96	.832	18.54	.000	High
Speed			4.00		24.10	.000	High

T-Tabulated= 1.960

Table (4-11) shows the means, standard deviations, and the order of the respondents' answers towards the dimension of the "Speed", which was measured based on four items. The results indicate that the general indicator for the dimension of the "Quality" has reached (4.01) of the total scale area, which indicates that the level of implementing competitive advantage (Quality) by Jordanian Commercial banks came to a high degree from the respondents' point of view. It is also noted that paragraph No. (32) "The bank satisfies the customer requirements" got the highest estimates with a high mean of (4.04) and a standard deviation of (0.715), and Paragraph No. (30) " The bank provides services quality that is superior to the competition" got the lowest estimates with a mean of (3.96), which is an average with a high degree and a standard deviation of (0.748).

The results shown in the above table indicate that the general indicator for the dimension of the "Speed" has reached (4.00) of the total scale area, which indicates that the level of implementing competitive advantage (Speed) by Jordanian Commercial banks came to a high degree from the respondents' point of view. It is also noted that paragraph No. (33) " The bank delivers services on time." got the highest estimates with a high mean of (4.06) and a standard deviation of (0.782), and Paragraphs No. (34, 36) " The bank follows a planned services schedule, The bank provides employees with continuous training at a suitable time." got the lowest estimates with a mean of (3.96), which is an average with a high degree and a standard deviation of (0.786, 0.832).

1.14.2.4 Reliability

Table (4-12) shows the means, standard deviations, and the order of the respondents' answers towards the dimension of the "Reliability", which was measured based on four items. The results indicate that the general indicator for the dimension of the "Reliability" has reached (4.00) of the total scale area, which indicates that the level of implementing competitive advantage (Reliability) by Jordanian Commercial banks came to a high degree from the respondents' point of view. It is also noted that paragraph No. (39) " The bank provides consistent services" got the highest estimates with a high mean of (4.05) and a standard deviation of (0.712), and Paragraphs No. (37, 38) "The bank adapts processes according to customer services, The bank provides many different customer services" got the lowest estimates with a mean of (3.98), which is an average with a high degree and a standard deviation of (0.761, 0.738).

Table (4-12) Means and standard deviations and t values of the answers of the study sample members towards the "Reliability"

Rank	#	Paragraphs	Mean	S.D.	t	Sig.	Degree
3	37	The bank adapts processes according to customer services	3.98	.761	20.51	.000	High
3	38	The bank provides many different customer services	3.98	.738	21.25	.000	High
1	39	The bank provides consistent services	4.05	.712	23.51	.000	High
2	40	The bank provides different kinds of services	4.01	.677	23.90	.000	High
Reliability			4.00		26.67	.000	High

T-Tabulated= 1.960

1.14.2.5 Innovation

Table (4-13) Means, standard deviations, t values, and degrees of the answers of the study sample members towards the "Innovation"

Rank	#	Paragraphs	Mean	S.D.	t	Sig.	Degree
5	41	The bank conducts innovation training continuously	3.89	.831	17.22	.000	High
2	42	The bank uses customers' complaints to improve its services	4.00	.764	21.01	.000	High
1	43	The bank uses the latest technology to serve customers	4.02	.767	21.36	.000	High

3	44	The bank encourages employees to come up with new ideas	3.92	.910	16.13	.000	High
4	45	The bank finds solutions to customer problems	3.91	.801	18.09	.000	High
Innovation			3.95		22.91	.000	High

T-Tabulated= 1.960

Table (4-13) shows the means, standard deviations, and the order of the respondents' answers towards the dimension of the "innovation", which was measured based on four items. The results indicate that the general indicator for the dimension of the "Innovation" has reached (3.95) of the total scale area, which indicates that the level of implementing competitive advantage (Innovation) by Jordanian Commercial banks came to a high degree from the respondents' point of view. It is also noted that paragraph No. (43) "The bank uses the latest technology to serve customers" got the highest degrees with a high mean of (4.02) and a standard deviation of (0.767), and Paragraph No. (41) "The bank conducts innovation training continuously" got the lowest estimates with a mean of (3.89), which is an average with a high degree and a standard deviation of (0.831).

1.14.3 The Relationship between Independent and Dependent Variables:

Bivariate Pearson Correlation Test has been used to check the relationship between variables. Table (4-14) shows that the all-Pearson correlation coefficients are significant statistically at ($\alpha \leq 0.01$), and the overall correlation coefficient between mobile applications and competitive advantage was (0.783), which means that there is a strong positive relationship between Bank's mobile applications and competitive advantage.

Table (4-14) Pearson correlation coefficients between Bank's mobile application and competitive advantage

	Cost	Quality	Speed	Reliability	Innovation	Competitive Advantages
Availability	.565**	.507**	.510**	.498**	.474**	.595**
Usability	.527**	.579**	.656**	.676**	.610**	.716**
Information	.547**	.597**	.669**	.619**	.605**	.713**

Security	.540**	.534**	.574**	.548**	.572**	.649**
Privacy	.525**	.572**	.595**	.577**	.556**	.662**
Mobile Application	.636**	.655**	.704**	.684**	.660**	.783**
**. Correlation is significant at the 0.01 level (2-tailed).						

In order to further confirm the previous result, Pearson correlation coefficients were found between the dimensions of the independent variable to make sure that there was no high multiple linear correlation between the independent variables, and the results in the following table show that:

The values of Pearson's correlation coefficients in the table (4-15) shows that the relationships among Banks Mobile Application sub-variables are strong, where r ranges from 0.583 to 0.719.Moreover, the relationships among Competitive Advantages dimensions are also strong, where r ranges between 0.506 and 0.878. Finally, the relationship between independent and dependent variables is very strong, where r equals 0.783

Table (4-15) Pearson correlation between independent variables

No		1	2	3	4	5	6	7	8	9	10	11	12
1	Availability												
2	Usability	.677**											
3	Information	.583**	.731**										
4	Security	.668**	.621**	.696**									
5	Privacy	.584**	.614**	.665**	.719**								
6	Mobile application	.831**	.854**	.861**	.869**	.841**							
7	cost	.565**	.527**	.547**	.540**	.525**	.636**						
8	quality	.507**	.579**	.597**	.534**	.572**	.655**	.733**					
9	Speed	.510**	.656**	.669**	.574**	.595**	.704**	.564**	.701**				
10	Reliability	.498**	.676**	.619**	.548**	.577**	.684**	.568**	.679**	.722**			

11	Innovation	.474**	.610**	.605**	.572**	.556**	.660**	.506**	.662**	.723**	.747**		
12	Competitive advantage	.595**	.716**	.713**	.649**	.662**	.783**	.774**	.878**	.878**	.873**	.862**	

****. Correlation is significant at the 0.01 level (2-tailed).*. Correlation is significant at the 0.05 level (2-tailed).**

1.15 Testing Study Hypothesis

After confirming validity, reliability, and the correlation between independent and dependent variables, the following tests should be carried out to ensure the validity of regression analysis. (Sekaran, 2003):

Normal distribution test:

Skewness and Kurtosis coefficients were extracted to test the normal distribution of the study data, where if the Skewness and Kurtosis coefficient values were less than (1), then the data is normally distributed (Doane & Seward, 2015).

Table (4-16) shows that all the values of the skewness and Kurtosis coefficient are less than 1, which indicates that the data are distributed normally, and according to the central limit theorem, which shows that if we choose all the possible samples from a particular population, and we calculate the arithmetic mean for each sample, We will note that all the arithmetic means of the samples are distributed close to the normal distribution, even if the distribution of the original population is not close to the normal distribution, provided that the number of observations in each sample exceeds 30 observations (Fidell, Tabachnick, 2018).

Table (4-16) Normal distribution of the data based on the Skewness and Kurtosis coefficients

Variable	Mean	S.D.	Kurtosis	Skewness
Availability	4.0791	.65255	.819	-.075
Usability	4.0969	.59355	.833	-.048
Information	4.1078	.60684	.470	-.953
Security	4.0898	.60343	.544	-.920

Privacy	3.9656	.61490	.152	-.581
Mobile Application	4.0679	.52260	.475	-.601
Cost	3.9756	.54740	.734	-.472
Quality	4.0098	.57981	.786	-.405
Speed	4.0049	.66696	.564	-.402
Reliability	4.0039	.60227	.032	-.908
Innovation	3.9492	.66279	.135	-.387
Competitive Advantages	3.9887	.52313	.631	-.945

Normality test: Figure (4.1) shows that the shape follows the normal distribution, in such case the model does not violate this assumption.

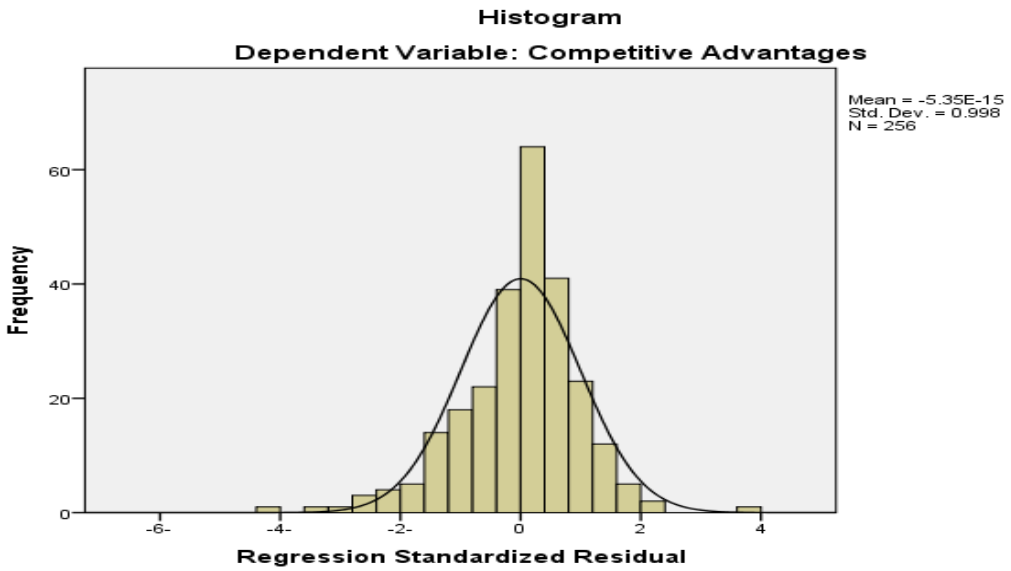


Figure (4.1): Normality Test

Linearity test: Figure (4.2) shows that there is a linear relationship between independent and dependent variables. In such case, the model does not violate this assumption.

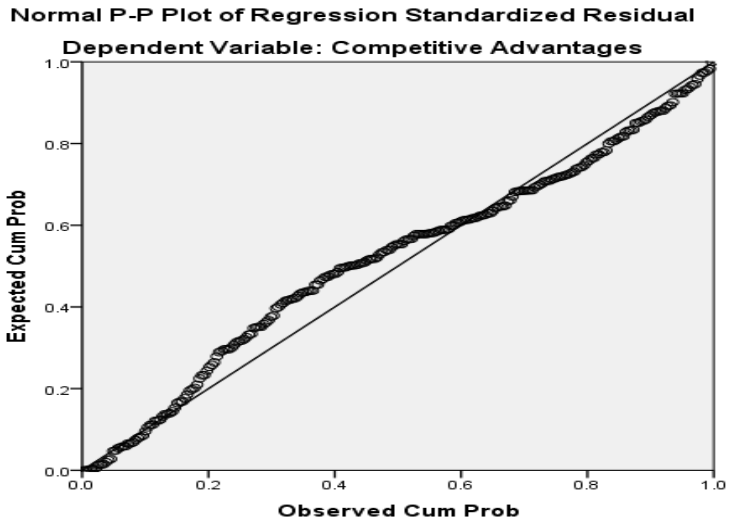


Figure (4.2): Linearity Test

Equal variance (homoscedasticity): figure (4.3) shows that the errors are scattered around the mean, therefore there is no relation between errors and predicted values, in such case the model does not violate this assumption.

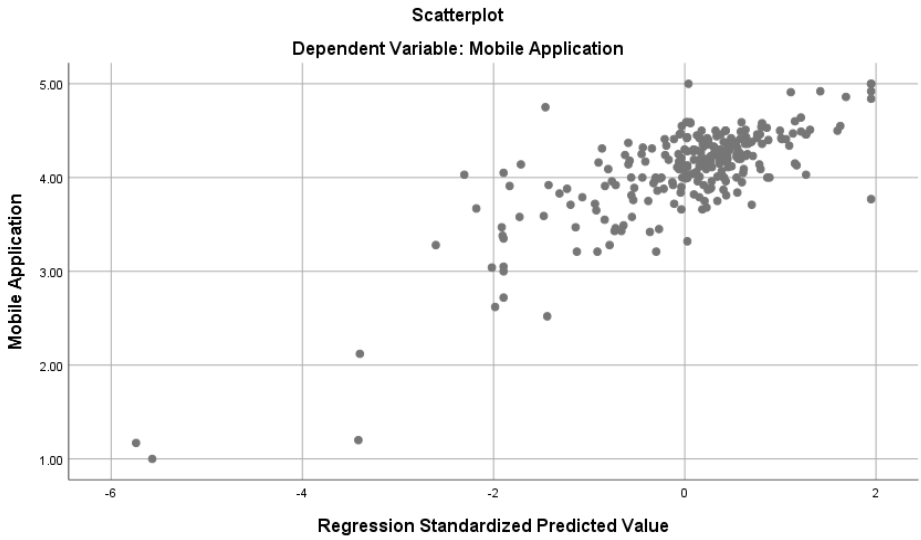


Figure (4.3): Linearity Test

To perform the multiple regression analysis tests, requires that the independent variables are highly correlated with the dependent variable, and at the same time that they are not strongly correlated with each other, because if they are strongly correlated with each other, this reduces the value of (R) because the independent variables share a

variance The dependent variable itself, in addition to the difficulty in determining the relative importance of each independent variable (Dudin, 2018), and in order to verify this, the Multiple Linear Correlation Test (Multicollinearity) were conducted.

Multi-Collinearity: Before using this method, it was ascertained that there was no high correlation between the independent variables (Multi-collinearity) in addition to the fact that the data fulfilled the condition of the normal distribution, and Table (4-17) indicates that the Tolerance coefficient of the independent variables was less than 1 and greater than 0.1, and the values of the variance inflation factor (VIF) are less than 5, which is an indication that there is no high correlation between the independent variables (Hair et al., 2018).

Table (4-17) The results of the test (multi-collinearity)

Independent variables	Collinearity Statistics	
	Tolerance	VIF
Availability	.439	2.276
Usability	.365	2.740
Information	.354	2.823
Security	.349	2.869
Privacy	.416	2.402

1.15.1 Main Hypothesis

H_{01}: Bank's Mobile application sub-variables (Usability, Availability, Information, Security, and Privacy) do not impact the competitive advantage of Jordanian Commercial Banks, at $\alpha \leq 0.05$. Multiple Regression was used to test this hypothesis, and the following table shows that:

Table (4.18) shows that when regressing the five sub-variables of Banks Mobile application against the total of Competitive Advantages, the model shows that Bank mobile application can explain 63.2% of the variation of Competitive Advantages, where

(R2=0.632, F=85.798, Sig.=0.000). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which states that Bank mobile application sub variables (Privacy, Availability, Information, Usability, Security) impact Competitive Advantages of Jordanian commercial banks, at $\alpha \leq 0.05$.

Table(4-18) Multiple Regressions of Banks Mobile application Sub-variables on Competitive Advantages

Model	R	R^2	Adjusted R^2	f	Sig.
1	.795[a]	.632	.624	85.798	.000[b]

a. Predictors: (Constant), Privacy, Availability, Information, Usability, Security

b. Dependent Variable: Competitive Advantages

Table (4.19): Multiple Regressions of Bank Mobile application sub-variables on Competitive Advantages (ANOVA).

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.767	.158		4.854	.000
	Availability	.044	.046	.055	.942	.347
	Usability	.273	.056	.309	4.868	.000
	Information	.217	.056	.252	3.901	.000
	Security	.088	.056	.102	1.564	.119
	Privacy	.170	.051	.200	3.365	.001

a. Dependent Variable: Competitive Advantages, T-tabulated=1.960

Based on the components of Bank Mobile application, table (4.19) shows the impact of each sub-variable on Competitive Advantages, where three of them impacted Competitive Advantages, the highest impact was for Usability with 30% of the total impact, and followed by Information with an impact of 25.2% on Competitive Advantages, then Privacy rated 20%. While, the Availability and security do not significantly affect Competitive Advantages.

Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted which states that the Bank's Mobile application sub-variables (Usability, Information,

and Privacy) impact the competitive advantage of Jordanian Commercial Banks, at $\alpha \leq 0.05$.

H_{02}: Bank's Mobile application does not impact the competitive advantage sub-variables (Cost, Quality, Speed, Reliability, and Innovation) of Jordanian Commercial Banks, at $\alpha \leq 0.05$.

Table (4.20) shows that when regressing Bank mobile application against the Competitive Advantages (Cost, Quality, speed, Reliability and Innovation), the model shows that bank mobile application can explain 62.2% of the variation of Competitive Advantages (Cost, Quality, speed, Reliability and Innovation), where (R2=0.622, F=82.448, Sig.=0.000). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which states that the Bank mobile application impact on Competitive Advantages (Cost, Quality, speed, Reliability and Innovation) of Jordanian commercial banks, at $\alpha \leq 0.05$.

Table (4.20): Multiple Regressions of Bank Mobile application on Competitive Advantages dimensions (Cost, Quality, Responsiveness, Reliability and Innovation)

Model	R	R^2	Adjusted R^2	f	Sig.
1	.798[a]	.622	.615	82.448	.000[b]

Based on the components of Competitive Advantages, table (4.21) shows the impact of Bank mobile application on Competitive Advantages (Cost, Quality, speed, Reliability and Innovation) Jordanian commercial banks Industry, where four of them impacted bank mobile application, the highest impact was for speed with 28% of the total impact, and cost with an impact of 27.1% on Competitive Advantages, followed by Reliability rated 19%, and finally Innovation rated 16.4%. While, the Quality does not significantly affect the competitive advantage.

Table (4.21): Multiple Regressions of bank mobile application on Competitive Advantages (Cost, Quality, speed, Reliability and Innovation) (ANOVA)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.909	.163		5.56	.000
	Cost	.259	.055	.271	4.68	.000
	Quality	.020	.063	.022	.317	.752
	Speed	.219	.051	.280	4.29	.000
	Reliability	.165	.057	.190	2.87	.004
	Innovation	.130	.051	.164	2.53	.012

T-tabulated=1.960

1.15.2 Results of sub-Hypothesis1

$H_{02.1}$: Usability does not impact the competitive advantage (Cost, Quality, Speed, Reliability, and Innovation) of Jordanian Commercial Banks, at $\alpha \leq 0.05$.

To test the first sub-hypothesis, Simple Regression was used, and the following table shows that:

Table (4-22) The results of testing the impact of usability on competitive advantage

Dependent variable	Model Summery		ANOVA			Coefficient					
	r	R^2	df	f	Sig.	Model	B	S.D Error	Beta	t	Sig.
Competitive Advantages	.716[a]	.513	254/1	267.2	.000[b]	Usability	.631	.039	.716	16.34	.000
* Significant at ($\alpha \leq 0.05$)											
Tabulated F =3.84						Tabulated T =1.96					

The table (4-19) shows that the dimension (Usability) has a statistically significant effect on competitive advantages, as the calculated F value (267.221) is greater than its tabular and equal value (3.84) and it is significant at a level of significance less than (0.05), this indicates the significance of the study model at a degree of freedom (1/254), and the value of R2 (0.513) indicates that the usability explained 51.3% of the variance in competitive advantages, and through the correlation coefficient R (71.6) we note a strong relationship Between usability and competitive advantages.

Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted which states that Usability impact the competitive advantage (Cost, Quality, Speed, Reliability, and Innovation) of Jordanian Commercial Banks, at α ≤0.05.

1.15.3 Results of sub-Hypothesis 2

$H_{02.2}$: Availability does not impact the competitive advantage (Cost, Quality, Speed, Reliability, and Innovation) of Jordanian Commercial Banks, at α ≤0.05.

To test the second sub-hypothesis, Simple Regression was used, and the following table shows that:

Table (4-23) The results of testing the impact of availability on competitive advantage

Dependent variable	Model Summery		ANOVA			Coefficient					
	r	R^2	df	f	Sig.	Model	B	S.D. Error	Beta	t	Sig.
Competitive Advantages	.595[a]	.354	254/1	139.4	.000[b*]	Availability	.477	.040	.595	11.80	.000
* Significant at (α≤0.05)											
Tabulated F =3.84					Tabulated T =1.96						

The table (4-20) shows that the dimension (Availability) has a statistically significant effect on Competitive Advantages, as the calculated F value (139.411) is greater than its tabular and equal value (3.84) and it is significant at a level of significance less than (0.05), this indicates the significance of the study model at a degree of freedom (1/254), and the value of R2 (0.354) indicates that the availability explained 35.4% of the variance in competitive advantages, and through the correlation coefficient R (59.5) we note a strong relationship Between availability and competitive advantages.

Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted which states that Availability impact on the competitive advantage (Cost, Quality, Speed, Reliability, and Innovation) of Jordanian Commercial Banks, at α ≤0.05.

1.15.4 Results of sub-Hypothesis 3

$H_{02.3}$: Information does not impact the competitive advantage (Cost, Quality, Speed, Reliability, and Innovation) of Jordanian Commercial Banks, at $\alpha \leq 0.05$.

Table (4-24) The results of testing the impact of information on competitive advantage

Dependent variable	Model Summery		ANOVA			Coefficient					
	r	R^2	df	f	Sig.	Model	B	S.D. Error	Beta	t	Sig.
Competitive Advantages	.713[a]	.509	254/1	262.49	.000[b]	Information	.615	.038	.713	16.21	.000
* Significant at ($\alpha \leq 0.05$)											
Tabulated F =3.84						Tabulated T =1.96					

The table (4-21) shows that the dimension (Information) has a statistically significant effect on competitive advantages, as the calculated F value (262.492) is greater than its tabular and equal value (3.84) and it is significant at a level of significance less than (0.05), this indicates the significance of the study model at a degree of freedom (1/254), and the value of R2 (0.509) indicates that the information explained 50.9% of the variance in competitive advantages, and through the correlation coefficient R (71.3) we note a strong relationship Between the information and competitive advantages.

Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted which states that Information impact the competitive advantage (Cost, Quality, Speed, Reliability, and Innovation) of Jordanian Commercial Banks, at $\alpha \leq 0.05$.

1.15.5 Results of sub-Hypothesis 4

$H_{02.4}$: Security does not impact the competitive advantage (Cost, Quality, Speed, Reliability, and Innovation) of Jordanian Commercial Banks, at $\alpha \leq 0.05$.

To test the fourth sub-hypothesis, Simple Regression was used, and the following table shows that:

Table (4-25) The results of testing the impact of security on competitive advantage

Dependent variable	Model Summery		ANOVA			Coefficient					
	r	R^2	df	f	Sig.	Model	B	S.D. Error	Beta	t	Sig.
Competitive Advantages	.649 [a]	.421	254/1	184.82	.000 [b]	Security	.563	.041	.649	13.59	.00
* Significant at (α≤0.05)											
Tabulated F =3.84					Tabulated T =1.96						

Table (4-22) shows that the dimension (Security) has a statistically significant effect on competitive advantages, as the calculated f value (184.822) is greater than its tabular and equal value (3.84) and it is significant at a level of significance less than (0.05), this indicates the significance of the study model at a degree of freedom (1/254), and the value of R2 (0.421) indicates that the security explained 42.1% of the variance in competitive advantages, and through the correlation coefficient R (64.9) we note a strong relationship between security and competitive advantages.

Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted which states that Security impact the competitive advantage (Cost, Quality, Speed, Reliability, and Innovation) of Jordanian Commercial Banks, at α≤0.05.

1.15.6 Results of sub-Hypothesis 5

$H_{02.5}$: Privacy does not impact the competitive advantage (Cost, Quality, Speed, Reliability, and Innovation) of Jordanian Commercial Banks, at α ≤0.05.

To test the fifth sub-hypothesis, Simple Regression was used, and the following table shows that:

The table (4-23) shows that the dimension (Privacy) has a statistically significant effect on competitive advantages, as the calculated F value (198.346) is greater than its tabular and equal value (3.84) and it is significant at a level of significance less than

(0.05), this indicates the significance of the study model at a degree of freedom (1/254), and the value of R2 (0.438) indicates that the privacy explained 43.8% of the variance in competitive advantages, and through the correlation coefficient R (66.2) we note a strong relationship between privacy and competitive advantages.

Table (4-26) The results of testing the impact of privacy on competitive advantage

Dependent variable	Model Summery		ANOVA			Coefficient					
	r	R^2	df	f	Sig.	Model	B	S.D. Error	Beta	t	Sig.
Competitive Advantages	.662 [a]	.438	254/1	198.34	.000 [b]	Privacy	.563	.040	.662	14.08	.00
* Significant at (α≤0.05)											
Tabulated F =3.84					Tabulated T =1.96						

Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted which states that Privacy impacts the competitive advantage (Cost, Quality, Speed, Reliability, and Innovation) of Jordanian Commercial Banks, at α ≤0.05.

Chapter Five: Results Discussion, Conclusion and Recommendations

1.16 Results Discussion

The result shows that the level of using mobile application by Jordanian Commercial banks came to a high degree. This result agreed with the study of Tsai, et. Al. (2018), were showed that users of mobile banking highly emphasize system availability, privacy, compensation, and assurance one the service quality provided by the mobile application.

- The level of using mobile applications (Availability) by Jordanian Commercial banks came to a high degree. The reason is that the bank mobile application is available for use, and responds at a suitable time.

- The level of using mobile applications (Usability) by Jordanian Commercial banks came to a high degree, The reason is that the bank mobile application provides timely services, and the mobile application is easy to learn.

- The level of using mobile applications (Information) by Jordanian Commercial banks came to a high degree, The reason is that the bank mobile application presents useful information, and provides clear information.

- The level of using mobile applications (Security) by Jordanian Commercial banks came to a high degree. The reason is that the bank mobile application is secure to use, and uses a secure password.

- The level of using mobile applications (Privacy) by Jordanian Commercial banks came to a high degree. The reason is that the bank mobile application protects personal messages, and preserves personal data.

The results of the second question shows that high implementation of competitive advantage by Jordanian Commercial banks. This result agreed with a study by Diab (2014), the Jordanian private hospitals used all competitive dimensions (cost, quality, flexibility, and delivery) to achieve a competitive advantage. Therefore, the level of implementation competitive advantage (Cost) by Jordanian Commercial banks came to a high degree. The reason is that the bank develops an effective control system for cost and the bank manages various resources cost.

- The level of implementation competitive advantage (Quality) by Jordanian Commercial banks came to a high degree, The reason is that the bank controls service quality and satisfies the customer requirements. This result agreed with the study of Arcand. Et. Al. (2017), that trust positively and significantly influences satisfaction and commitment; it also showed that the mobile banking application service quality influences trust, commitment, and satisfaction of customers, the level of implementation competitive advantage (Speed) by Jordanian Commercial banks came to a high degree. The reason is that the bank develops new services in time, and delivers services on time, the level of implementing competitive advantage (Reliability) by Jordanian Commercial banks came to a high degree, The reason is that the bank provides different kinds of services, and provides consistent services, while the level of implementation competitive advantage (Innovation) by Jordanian Commercial banks came to a high degree. the reason is that the bank uses customers' complaints to improve its services, and the bank uses the latest technology to serve customers. This result agreed with a study by Urbancova (2013), where found that the knowledge and experience of employees encourage the success of innovations to gain a competitive advantage to survive in today's highly competitive environment.

The results of the third study question: show that there is a strong positive relationship between Bank's mobile application and competitive advantage.

The results of the study hypothesis:

Bank's Mobile application sub-variables (Usability, Information, and Privacy) do impact the competitive advantage of Jordanian Commercial Banks, at $\alpha \leq 0.05$. This result agreed with the study of Ganguli and Roy (2011) were show that customer service and technology usage easiness and reliability have a positive and significant impact on customer satisfaction and customer loyalty.

Usability impacts the competitive advantage of Jordanian Commercial Banks, at $\alpha \leq 0.05$. The researcher believes that this result is due to the fact that whenever there is the use of the mobile application in banking matters, this has an impact on customers in terms of ease of access to what they want from banking services, which has a significant impact on competitive advantage.

Availability impacts competitive advantage of Jordanian Commercial Banks, at $\alpha \leq 0.05$. The researcher believes that this result is due to the fact that if bank mobile applications are available, they will replace the hassle of going to the bank to perform the required transaction, which has an impact on improving the competitive advantage of the bank. Therefore, the results of the study showed that the Bank Mobile Application information impacts competitive advantage of Jordanian Commercial Banks, at $\alpha \leq 0.05$, Moreover, the results of the study showed that the Bank Mobile Application security impact the competitive advantage of Jordanian Commercial Banks, at $\alpha \leq 0.05$. The researcher believes that this result is due to the fact that the security of applications is one of the factors of great importance to customers, especially with hacker programs, and if the information security feature is available, this affects the competitive advantage.

Finally, the results of the study showed that the Bank Mobile application's privacy impacts the competitive advantage of Jordanian Commercial Banks, at $\alpha \leq 0.05$.

Second, the findings show that the high implementation of Competitive Advantages dimensions, the speed is the highest implemented dimension, followed by cost, then reliability, after that innovation, but quality has the lowest implementation level among the Bank Mobile application sub-variables and Competitive Advantages dimensions. The medium implementation rate for quality due to the employees competence and skills, the reliability of the electronic system and the reliability of the service system, an impeccability banking system integrity , the absent of conducting a continuous training, not contributing employee's complaints the lack for adoption new technologies.

1.17 Conclusion

This research examined the impact of the Bank's Mobile Application sub-variables (Usability, Availability, Information, Security, and Privacy) on the competitive advantage of Jordanian Commercial Banks. Data was collated via a questionnaire, which tested for its validity and reliability. Then correlation and multiple regressions were used to test the hypothesis.

The results of this study show the high degree of using bank mobile application in Jordanian commercial banks. The Usability have rated the highest, followed by Information and Privacy, then security and availability, respectively. Moreover, the findings show that high implementation of Competitive Advantages dimensions, where speed rated highest implementation, followed by cost, then reliability, innovation, and quality, respectively.

Finally, results indicate that there is a significant impact of the total Banks mobile application on total Competitive Advantages of Jordanian Commercial banks. Moreover,

Usability has rated the highest impact on Competitive Advantages, then Information, followed by Privacy. While, Availability and security does not show a significant impact on total Competitive Advantages.

1.18 Recommendations

1.18.1 Recommendations for Jordanian Commercial Banks

For the enhancement of competitive advantage in commercial banks, the research advises that the following should be done:

- This study recommends the widespread use of mobile banking; campaigns should be launched to disseminate the usefulness of the technology.

- This study recommends that banks should improve the quality of the services to increase the customer E-satisfaction which means reliability dimension is important to support service quality.

- This study recommends that mobile service providers and banks should work hand-in-hand to offer a high quality service and can reach to customer satisfaction in security way.

- This study recommends that banks should adopt the concept of electronic banking services and electronic applications used by mobile phones, and the awareness of all its employees to provide ideas and creative ideas that increase the growth of the bank and the development of the marketing performance of banking services and the performance and efficiency of employees and thus achieve the competitive advantage of banks.

- This study recommends that banks should adopt modern technology and its applications to enable them to carry out their duties and responsibilities in a way that would give

them a highly competitive advantage that enhances their competitiveness among other banks, by employing the internal strengths of banks in the optimal investment opportunities in the business environment, and capturing opportunities before its competitors.

- This study recommends that banks should pay attention to the analysis of the customer's demand that will resulted in enhancing the outputs of their services.

1.18.2 Recommendations for Academics and Future Research:

The study implemented a quantitative method to collect data from the study sample; therefore, the study recommends using the qualitative method for future research to validate the result of the study.

-The study carried out on the banking industry; the study recommends conducting similar research on other industries.

-Since this study is carried out on managers who are working in Jordanian commercial banks at three levels, the study recommends including other levels of employees.

-The study recommends carrying out similar researches outside Jordan, to check results generalizability.

-The study was carried out within a limited period; therefore, it is advised to repeat this study after a suitable time to check the development.

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Appendices

Appendix 1

Name of Arbitrators

No	Name	Academic Rank	University Name
1	Prof. Ahmad Ali Salih	Professor	Middle East University
2	Dr. Abdallah Batayneh	Associate professor	Middle East University
3	Prof. Mohsen Al Makhamreh	Former dean of the college of business administration	University of Jordan
4	Prof.Mohammed Khair Abu Zaid	Professor	Al-Balqa's University
5	Dr. Murad Aletiani	Associate professor	Israa University
6	Prof. Shafiq Haddad	Professor	Middle East University
7	Dr. Nahla Al Nazer	Associate professor	Middle East University
8	Dr. Fayez Albadri	Assistant professor	Middle East University
9	Prof. Samer Dhiyat	Professor	University of Jordan
10	Dr. Zina Alqasim	Associate professor	University of Jordan

Appendix 2

Jordanian Commercial banks: (Association of Banks in Jordan (ABJ), 7, 2021) www.abj.org.jo

No	Name of the Bank	Number of employees
1	Arab Bank	3244
2	Etihad Bank	1198
3	Cairo Amman Bank	1562
4	Capital Bank	617
5	Jordan Kuwait Bank	1253
6	Housing Bank	2417
7	Ahli Bank	1144
8	Invest Bank	433
9	ABC Bank	509
10	Jordan Bank	1497
11	Jordan Commercial Bank	703
12	Societe General Bank	317
13	Jordan Arab Investment Bank	750
	Total	15644

Appendix 3

Letter and Questionnaire of Respondents:

Dear Mr. ……

Greeting,

I am honored to request you to referee the attached questionnaire, which will be used as the main data collection tool for the thesis titled:

"**The Impact of Banks Mobile Applications on the competitive advantage of Jordanian Commercial Banks**".

This questionnaire includes 45 paragraphs that cover both dependent and independent variables. It may up to 15 minutes of your time to complete, reflecting your views and suggestions for improvement where needed. You are kindly requested to share your valuable comments and suggestions against each paragraph indicating their clarity, suitability, and validity, which I will be pleased to consider while reviewing and rewriting the final version of the questionnaire.

I would like to thank you for your participation, support, and guidance, and if you have any questions or clarifications, please do not hesitate to call me at (0790463333).

Thank you for your effort.

Prepared by: Tania Fannoush

Supervised by: Dr. Abdel-Aziz Ahmad Sharabati

First section: Demographic information

Gender: □ **Male** □ **Female**

Age (years): □ **Less than 30** □ **Bet. 30-39** □ **Bet. 40-50** □ **Above 50**

Experience (years): □**Less 10** □ **Bet.10-20** □**Bet.21-30** □**More than 30**

Education: □ **Diploma** □ **Bachelor** □ **Master's** □ **Ph.D.**

Job Title: □ **Executive Manager** □ **General Director** □ **Administrative Manager**

□ **Head of Section** □ **Other (kindly mention)……..**

Years of Experience in Banks: □ **Less than 5 years.** □**5-14 years** □ **15-20 years.** □**More than 20 years.**

Second section: The following 45 questions test **The impact of Bank's Mobile Applications on the competitive advantage of Jordanian Commercial Banks**. Please, rate each question according to actual implementation and not based on your belief, as follows: 1 = Strongly disagree, 2 = disagree, 3 = agree to appoint, 4 = agree, 5 = Strongly agree.

No.	Item	Strongly disagree	disagree	agree to a point	agree	Strongly agree
	Mobile Application: designed software that users can download through the internet on their mobile phones to use in a specific task to satisfy their needs. تطبيق الهاتف المحمول: برنامج مصمم يمكن للمستخدمين تنزيله عبر الإنترنت على هواتفهم المحمولة لاستخدامها في مهمة محددة لتلبية احتياجاتهم.					
	Availability: the ability of a mobile phone application to be continually available, can correct a mistake, reply to user requests, and run in a fast time to serve the user. التوفر: قدرة تطبيق الهاتف المحمول على أن يكون متاحًا باستمرار، ويمكنه تصحيح الخطأ، والرد على طلبات المستخدم، وتشغيله في وقت سريع لخدمة المستخدم.					
	The bank mobile application is available for use تطبيق الهاتف المحمول الخاص بالبنك متاح للاستخدام	1	2	3	4	5
	The bank mobile application responds at a suitable time تطبيق الهاتف المحمول الخاص بالبنك يستجيب في الوقت المناسب	1	2	3	4	5
	The bank mobile application runs fast as requested يعمل تطبيق الهاتف المحمول الخاص بالبنك بسرعة كما هو مطلوب	1	2	3	4	5
	The bank mobile application reduces errors تطبيق الهاتف المحمول الخاص بالبنك يقلل من الأخطاء	1	2	3	4	5
	Usability: the degree to which a mobile phone application is enjoyable to use, simple to learn, can be accessed easily, and can supply needed and fast service. سهولة الاستخدام: الدرجة التي يكون فيها تطبيق الهاتف المحمول ممتعًا للاستخدام، وسهل التعلم، ويمكن الوصول إليه بسهولة، ويمكن أن يوفر الخدمة المطلوبة والسريعة.					
	The bank mobile application is user friendly تطبيق الهاتف المحمول الخاص بالبنك سهل الاستخدام	1	2	3	4	5
	The bank mobile application is easy to learn تطبيق الهاتف المحمول الخاص بالبنك سهل التعلم	1	2	3	4	5
	The bank mobile application is easily accessible	1	2	3	4	5

	يمكن الوصول إلى تطبيق الهاتف المحمول الخاص بالبنك بسهولة					
	The bank mobile application provides timely services يوفر تطبيق الهاتف المتحرك الخاص بالبنك الخدمات في الوقت المناسب	1	2	3	4	5
	The bank mobile application meets user needs تطبيق الهاتف المحمول الخاص بالبنك يلبي احتياجات المستخدم	1	2	3	4	5
	Information: the degree to which mobile phone applications can provide complete, accurate, updated, and clear information that users can benefit from it. المعلومات: الدرجة التي يمكن أن توفر بها تطبيقات الهاتف المحمول معلومات كاملة ودقيقة ومحدثة وواضحة يمكن للمستخدمين الاستفادة منها.					
	The bank mobile application provides accurate information يوفر تطبيق الهاتف المحمول الخاص بالبنك معلومات دقيقة	1	2	3	4	5
	The bank mobile application provides complete information يوفر تطبيق الهاتف المحمول الخاص بالبنك معلومات كاملة	1	2	3	4	5
	The bank mobile application includes updated content يتضمن تطبيق الهاتف المحمول الخاص بالبنك محتوى محدثًا	1	2	3	4	5
	The bank mobile application presents useful information يقدم تطبيق الهاتف المحمول الخاص بالبنك معلومات مفيدة	1	2	3	4	5
	The bank mobile application provides clear information يوفر تطبيق الهاتف المحمول الخاص بالبنك معلومات واضحة	1	2	3	4	5
	Security: the degree to which a mobile phone application can be secure in terms of providing an inaccessible password to protect user data and payments from loss or theft الأمان: الدرجة التي يمكن أن يكون بها تطبيق الهاتف المحمول آمنًا من حيث توفير كلمة مرور يتعذر الوصول إليها لحماية بيانات المستخدم والمدفوعات من الضياع أو السرقة.					
	The bank mobile application is secure to use تطبيق الهاتف المحمول الخاص بالبنك آمن للاستخدام	1	2	3	4	5
	The bank mobile application secures payments يوفرتطبيق الهاتف المحمول الخاص بالبنك حماية للمدفوعات	1	2	3	4	5
	The bank mobile application uses a secure password يستخدم تطبيق الهاتف المحمول الخاص بالبنك كلمة مرور آمنة	1	2	3	4	5
	The bank mobile application protects data from theft يحمي تطبيق الهاتف المحمول الخاص بالبنك البيانات من السرقة	1	2	3	4	5
	The bank mobile application security terms are available to review شروط أمان تطبيق الهاتف المحمول الخاصة بالبنك متاحة للمراجعة	1	2	3	4	5
	Privacy: the degree to which a mobile phone application gets permission from users about their data and at the same time protects it from exposing or manipulate الخصوصية: الدرجة التي يحصل بها تطبيق الهاتف المحمول على إذن من المستخدمين بشأن بياناتهم وفي نفس الوقت تحميه من الكشف أو التلاعب					
	The bank mobile application preserves personal data يحتفظ تطبيق الهاتف المحمول الخاص بالبنك بالبيانات الشخصية	1	2	3	4	5
	The bank mobile application gets permission to use personal information يحصل تطبيق الهاتف المحمول الخاص بالبنك على إذن لاستخدام المعلومات الشخصية	1	2	3	4	5
	The bank mobile application protects information from exposure يحافظ تطبيق الهاتف المحمول الخاص بالبنك على المعلومات دون كشفها	1	2	3	4	5
	The bank mobile application protects location information يحمي تطبيق الهاتف المحمول الخاص بالبنك معلومات موقع المستخدم	1	2	3	4	5
	The bank mobile application protects personal messages يوفر تطبيق الهاتف المحمول الخاص بالبنك الحماية لرسائل المستخدم الشخصية	1	2	3	4	5
	Competitive Advantages: The uniqueness and difference in the (Time, Quality, Costs, reliability, and Innovation) increase the value of output and gain the benchmark between the competitors. الميزة التنافسية: التفرد والاختلاف في (الوقت والجودة والتكاليف والموثوقية والابتكار) والتي تؤدي الى زيادة قيمة المخرجات والحصول على المعيار بين المنافسين.					
	Cost: provide the same product or service at a lower cost.					

	التكلفة: تقديم نفس المنتج أو الخدمة بتكلفة أقل.					
	The bank reduces costs over time يقلل البنك من التكاليف بمرور الوقت	1	2	3	4	5
	The bank reduces servicing cycle time يقلل البنك من الوقت اللازم لتقديم الخدمة	1	2	3	4	5
	The bank develops an effective control system for cost يقوم البنك بتطوير نظام مراقبة فعال للتكلفة	1	2	3	4	5
	The bank manages various resources cost يدير البنك تكلفة الموارد المختلفة	1	2	3	4	5
	Quality: Providing what meets the expectations of the customer's requirements. الجودة: تقديم ما يلبي توقعات متطلبات العميل.					
	The bank assures product quality يضمن البنك جودة المنتج	1	2	3	4	5
	The bank provides services quality that is superior to the competition يقدم البنك خدمات بجودة تفوق المنافسين	1	2	3	4	5
	The bank controls service quality يراقب البنك جودة الخدمة	1	2	3	4	5
	The bank satisfies the customer requirements يحقق البنك رضى العملاء	1	2	3	4	5
	Speed: a quick response to meet customers' demands that does not affect the quality of service or product. السرعة: استجابة سريعة لتلبية طلبات العملاء بحيث لا تؤثر على جودة الخدمة أو المنتج.					
	The bank delivers services on time. يقدم البنك الخدمات في الوقت المحدد	1	2	3	4	5
	The bank follows a planned services schedule البنك يقدم خدماته ضمن مخطط سيرعملها	1	2	3	4	5
	The bank develops new services in time يطور البنك خدمات جديدة في الوقت المناسب	1	2	3	4	5
	The bank provides employees with continuous training at a suitable time. يوفر البنك للموظفين تدريبًا مستمرًا في الوقت المناسب	1	2	3	4	5
	Reliability: providing product/service to customers accurately and constantly while maintaining quality. الدقة: تقديم المنتج / الخدمة للعملاء بدقة وباستمرار مع الحفاظ على الجودة.					
	The bank adapts processes according to customer services يكيّف البنك العمليات وفقًا لخدمات العملاء	1	2	3	4	5
	The bank provides many different customer services يقدم البنك العديد من خدمات العملاء المختلفة	1	2	3	4	5
	The bank provides consistent services يقدم البنك خدماته بثبات	1	2	3	4	5
	The bank provides different kinds of services يقدم البنك أنواع مختلفة من الخدمات	1	2	3	4	5
	Innovation: the new idea to do the service that added value to the customer. الابداع: الفكرة الجديدة للقيام بالخدمة التي تضيف قيمة للعميل.					
	The bank conducts innovation training continuously يقوم البنك بتدريب الموظفين على الابتكار بشكل مستمر	1	2	3	4	5
	The bank uses customers' complaints to improve its services يستخدم البنك شكاوى العملاء لتحسين خدماته	1	2	3	4	5
	The bank uses the latest technology to serve customers يستخدم البنك أحدث التقنيات لخدمة العملاء	1	2	3	4	5
	The bank encourages employees to come up with new ideas يشجع البنك الموظفين على ابتكار أفكار جديدة	1	2	3	4	5
	The bank finds solutions to customer problems يجد البنك حلولاً لمشاكل العملاء	1	2	3	4	5

جمعية البنوك في الأردن
Association of Banks in Jordan

الرقم: 42/ ٢٠٠
التاريخ: 2022/5/10

السادة البنوك الأعضاء المحترمين

الإدارة العامة

الموضوع: تسهيل مهمة باحث

تحية طيبة وبعد،

إشارة إلى الكتاب الوارد للجمعية من جامعة الشرق الأوسط (مرفق) بتاريخ 2022/5/8، والمتعلق بطلب تسهيل مهمة الطالبة تانيا عصام فنوش تخصص إدارة أعمال/كلية الأعمال، وذلك للحصول على البيانات اللازمة وجمع المعلومات الخاصة بدراستها بعنوان "أثر تطبيقات الهاتف البنكية في تحقيق الميزة التنافسية للبنوك التجارية الأردنية" وذلك للحصول على درجة الماجستير.

نرجو التكرم بالنظر في إمكانية مشاركة بنككم الموقر في الدراسة المذكورة أعلاه وحسب ما ترونه مناسباً.

شاكرين لكم حسن تعاونكم.

وتفضلوا بقبول فائق الاحترام،

د. ماهر المحروق

المدير العام

مرفق: الكتاب الوارد من جامعة الشرق الأوسط

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جـامـعـة الـشرق الأوسـط
MIDDLE EAST UNIVERSITY
Amman - Jordan

مكتب رئيس الجامعة
Office of the President

الرقم: د ر/خ/1599
التاريخ: 2022/5/8

لمن يهمة الامر

تحية طيبة وبعد

لغايات توفير وربط أسس التعاون مع خدمة المجتمع المحلي؛ نرجو التكرم بالموافقة على تقديم التسهيلات الممكنة لطالبة الماجستير تانيا عصام فنوش، ورقمها الجامعي (402010076)، المسجلة في تخصص ادارة الاعمال / كلية الأعمال في جامعة الشرق الأوسط، والتي تتولى القيام بإعداد دراسة بحثية أكاديمية في رسالتها المعنونه بـ " أثر تطبيقات الهاتف البنكية في تحقيق الميزة التنافسية للبنوك التجارية الاردنية "، علماً بأن المعلومات سيتم استخدامها لأغراض البحث العلمي وبصورة سرية.

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عطوفة المدير العام لجمعية البنوك الأردنية المحترم

تحية طيبة وبعد

لغايـات تـوفير وربـط أسـس التعـاون مـع خدمـة المجتمـع المحلـي؛ نرجـو التكـرم بالموافقـة علـى تقديم التسـهيلات الممكنـة لطالبـة الماجسـتير تانيـا عصـام فنـوش، ورقمهـا الجـامعي (402010076)، المسـجلة فـي تخصـص ادارة الاعمـال / كليـة الأعمـال فـي جامعـة الشـرق الأوسـط، والتـي تتـولى القيـام بإعـداد دراسـة بحثيـة أكاديميـة فـي رسـالتها المعنونـه بـ " أثـر تطبيقـات الهـاتف البنكيـة فـي تحقيـق الميـزة التنافسـية للبنـوك التجاريـة الاردنيـة " ، علمـاً بـأن المعلومـات سـيتم اسـتخدامها لأغـراض البحـث العلمـي وبصـورة سرية.

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