The Impact of Knowledge Leakage Management on Innovative Performance: Field Studying Commercial Banks in Amman

أثر إدارة تسرب المعرفة على الأداء الإبداعي: دراسة ميدانية في البنوك التجارية في عمان

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Authorization

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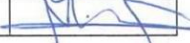
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(شكر وتقدير) . .

إلى مَنْ كانَتْ فِي العِلْمِ مَرْجِعِيْ . .

وللثَّقَافَةِ كُوْخُ أَدَبِيْ وَصَوْمَعِيْ . .

وقدِّيسِتِي وَمَثَلِيَ الأَعْلَى وَفِيْ التَّعَلُمِ مَنْبَعِيْ . .

إِلَى الأُسْتَاذَةِ الدُّكْتُورَة هِبَه حَسَنْ ناصِرُالدّين . .

إِلَى حِكْمَتِي فِي طَرِيقِ الحيرَة . . إِلَيْكِ يَامَنْ بِالشُّكْرِ جَدِيرَة . . إِلَيْكِ أَيُّها المُنِيْرَة . . إلى صَدِيقَتِي بَيَانْ . .

Dedication

وقالوا إما العلم إلا . . . مَضَاعَة وقت وزمانِ

فقلتُ وما أدراكُمُ لَعَمْري . . بأن العلم منارةُ الإنسانِ

أهدي رسالتي

إلى أسباب تكوني بما أكونه الآنَ، إلى نبع الحنان، والقلب الكبير، وسندي في هذه الحياة، إلى من تعلمت منهما الصبر والقوة، وأن يكون لي هدف في هذه الحياة، إلى شمسي وقمري..

إلى أمي وأبي...

إلى الذين كانوا في منحنيات دنياي السند، وفي ضعفي القوة والمدد، إلى من تعلمت منهم الصبر والجلد،

إلى أخواني وأخواتي..

إلى صديقتيَّ وأختيَّ.. وَمَنْ كانَتَا لِعيونيْ النُّورَ والضَيَّ، وَفيْ حرّ أَيَّاميْ، كانَتا الظّل والفيَّ،

إليكما (حياة وسوزان)..

إليك يا من لم تبخل يوما بنصحي والوقوف إلى جانبي، ومساندتي بفيض من العطف، وبث بي روح الكفاح والتحدي لأصل إلى ما وصلت إليه الآن..

إليك يا أخي الذي لم تلده أمي (أبو المهند) ..

إلى جبال المحامل العتيةً، إلى صناديد أزماتي، ومن كانوا لي لا عليَّ، إلى من أروني الحقائق جليَّة،

إلى أبناء أختي (المهند، معاذ، محمود)..

إلى رفيقات سلاح العلمْ ..

إلى من خطين معي في حرب الدرس والسلم، إلى صديقاتي الصدوقات بوفائهنَّ، إلى الرائعات بصداقتهنَّ ومحبتهنَّ،

(وسام، نور، العنود) ..

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The Impact of Knowledge Leakage Management on Innovative Performance: Field study in Commercial Banks in Amman

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Abstract

The study aims to investigate the impact of knowledge leakage management on innovative performance in commercial banks in Amman, Jordan. The data have been collected by using the questionnaire, which distributed to managers and head of departments working at (21) commercial banks in Amman. Out of (385) collected questionnaires, (379) were valid for statistical analysis, and (6) questionnaires were discarded due to large missing data. In addition, the study used the Statistical Package for Social Science (SPSS) for descriptive statistics. After confirming normality, validity, reliability and relationships between variables, multiple regressions conducted to test hypothesis. The results show that there is an agreement on high implementation of knowledge leakage management sub-variables and innovative performance among commercial banks in Amman. Additionally, there are relationships among knowledge leakage management sub-variables, as well as the relationships among innovative performance dimensions. Furthermore, there are relationships between knowledge leakage management sub-variables and innovative performance dimensions. Finally, there is relationship between knowledge leakage management and innovative performance. Results show that all knowledge leakage management sub-variables have effect on innovative performance at commercial banks in Amman. The dynamic capability was holding the highest effect, followed by technological knowledge variable, then knowledge leakage. The study recommends adopting knowledge leakage management in all industries, because it affects innovative performance.

Finally, the study recommends the management of commercial banks to develop appropriate solutions to avoid the risk of weaken performance caused by knowledge leakage and to provide more efforts to investigate the areas of the leakage in order to be effectively managed.

Keywords: Management of Knowledge Leakage; Innovative Performance; Commercial Banks in Amman, Jordan.

أثر إدارة تسرب المعرفة على الأداء الإبداعي: دراسة ميدانية في البنوك التجارية في عمان

إعداد

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إشراف

أستاذ/ دكتور هبة حسن ناصرالدين

الملخص

تهدف الدراسة إلى قياس أثر إدارة تسريب المعرفة على الأداء الإبداعي في السوق والخدمة في البنوك التجارية في عمان، حيث تم جمع البيانات من خلال الإجابة عن فقرات الاستبانة لعينة الدراسة العشوائية والتي تكونت من مدراء ورؤساء الأقسام في (21) من البنوك التجارية المسجلة في الجمعية الأردنية للبنوك (ABJ). حيث تم استرداد (385) استبانة، (379) استبانة كانت صالحة للتحليل الإحصائي، وتم استبعاد (6) استبانات وذلك لعدم صلاحيتها للتحليل بسبب فقدان الكثير من البيانات. تم اختبار فرضيات الدراسة باستخدام وسائل الإحصاء الوصفي وذلك باستخدام برنامج الحزمة الإحصائية للعلوم الاجتماعية (SPSS). توصلت الدراسة إلى وجود أثر لإدارة تسريب المعرفة في (تسرب المعرفة، القدرات الديناميكية، تكنولوجيا المعرفة) على الأداء الإبداعي.

أظهرت النتائج وجود اتفاق على التنفيذ العالي للمتغيرات الفرعية لإدارة تسرب المعرفة والأداء الإبداعي بين البنوك التجارية في عمان. وتظهر النتائج أن هناك علاقات بين المتغيرات الفرعية لإدارة تسرب المعرفة، أيضا هناك علاقات بين المتغيرات الفرعية للأداء الإبداعي. كما أظهرت النتائج أن العلاقة بين مجموع المتغيرات الفرعية لإدارة تسرب المعرفة وعناصر الأداء الإبداعي. وأخيرا، فإنه يوجد علاقة بين مجموع متغيرات إدارة تسرب المعرفة ومجموع عناصر الأداء الإبداعي. أظهرت النتائج أن جميع المتغيرات الفرعية لإدارة تسرب المعرفة تؤثر على جميع عناصر الأداء الإبداعي في البنوك

التجارية في عمان. وكانت القدرات الديناميكية الأعلى تأثير، تليها تكنولوجيا المعرفة، ثم تسرب المعرفة.

وقد أوصت الدراسة على تشجيع الإدارة العليا في البنوك على تطوير حلول ملائمة وذلك لتجنب مخاطر انخفاض الأداء الناجم عن تسرب المعرفة وتوفير المزيد من الجهود للتحقيق في مناطق التسرب وذلك ليقوم البنك بإداراتها بكفاءة.

الكلمات المفتاحية: إدارة تسرب المعرفة؛ الأداء الإبداعي؛ البنوك التجارية في عمان، الأردن.

Chapter One: General Framework

1.1 Introduction

Knowledge is considered a valuable asset to organizations and essential factor of economy; it may exist in different areas, databases, functions, processes, competencies, and obtained by experts. Moreover, managing this knowledge effectively and achieving the organization's ultimate goal of gaining the competitive edge, the organizations need to share their knowledge. Meanwhile, they must work very hard to maintain their knowledge especially in the appearance of advanced technologies, outsourcing and high level of global competition.

The dark side of do not properly maintain critical knowledge is the dilemma so called knowledge leakage, which might lead business environments to battling strongly to retaining the innovative performance especially for the pioneers. The world recently is full of companies that exchange knowledge to achieve their strategic objectives and enhance the innovative performance. The study has explored the phenomenon of knowledge leakage that focused on the aspects and concerns associated with knowledge flow inside and outside, which is involved with the success of innovation activities in commercial banks in Amman. In order to sustain the competitive advantage and market share; a key resource needed would be the knowledge; hence, the role of knowledge is involved in improving the performance and competitiveness of the economy.

On the other hand, the possible risk of knowledge leakage exposes a threat to organizational knowledge management (Annan Singh, 2012).The concept of knowledge leakage has been a significant subject of scholarly study in the

new era. Therefore, the motivation behind this study is based on the identification and characterization of knowledge leakage as well as more focusing on highlighting different areas of knowledge leakage and proposing ways of addressing these areas and their effects associated along with performance. Agudelo et al. (2016) refers to the knowledge leakage as the accidental or deliberate loss or unauthorized transfer of organizational knowledge intended to stay within a firm's boundary resulting in the deterioration of competiveness and industrial position of the organization.

Coraş & Tanţãu (2014) stated that innovation performance is the outcomes and the benefits generated through the process of innovation, the need to motivate the innovative performance comes from the idea that innovation has always been an accompaniment with business. It is represented as one of the best tool to maintain and enhance the economic development and to improve the competitiveness in local and global business environment. The earlier studies of the innovation field, demonstrated that innovative performance exists in five dimensions, namely; innovation in processes, innovation in products and services, market innovation, innovation behavior, and finally strategic innovation.

Many researchers identified different dimensions of innovation (Adaileh & Abualzeat, 2017). However, in this study it has been decided to observe two of these dimensions, which are (Market and Service) as they are considered prior to obtain great achievement in profit, and always linked to successful business. The innovation in the market as well as in the service provides a great opportunity for businesses to grow and expand into new areas of banking field.

The concept of knowledge leakage subject has recently become a significant matter, which has gained a great deal of attention in the academic and business worlds.

In the light of previous studies, this conducted recently the importance of analyzing and studying the knowledge leakage management. Accordingly, it becomes critical to measure the impact of managing this leakage on the businesses innovative performance on two dimensions, market and service. Therefore, this study comes to investigate the effect of managing the knowledge leakage among several areas on innovative performance at commercial banks.

1.2 Study Purpose and Objectives

This study aims to investigate the impact of knowledge leakage management on innovative performance; the purposes of this study are to:

- Investigate the impact of knowledge leakage management (knowledge leakage, dynamic capabilities, and technological knowledge) on innovative performance.
- Investigate the impact of knowledge leakage on innovative performance.
- Investigate the impact of dynamic capabilities on innovative performance.
- Investigate the impact of technological knowledge on innovative performance.

The study aims to show how banks management implements the Knowledge Leakage Management. Furthermore, provide recommendations to

the studied industry, other industries, and decision makers who have concerns about knowledge leakage management and innovative performance. Finally, provide a study related to knowledge leakage management research stream and open a discussion related to manage the knowledge leakage in other industries in Jordan.

1.3 Study Importance

The importance of this study is to develop a model to examine the effect of knowledge leakage management on innovative performance. Additionally, this would make a significant enhancement contribution for all variables, which focused on very critical dimensions that consisted of knowledge leakage and innovative performance.

Based on Annan Singh (2012), the importance of exploring and maintaining the risks related to managing knowledge and the relevance of incorporating this outline with the strategic management policy of the organization, which become a principal for success. Moreover, the study came from the importance of studying innovation environment that has become more complex and uncertain, which imposed innovative organizations, such as banking sectors to obtaining the necessitate knowledge externally as well as internally, for exchanging knowledge and resources.

Sharing knowledge help organizations to take advantages out of the knowledge integration and specialization; as a result, the innovative capacity could be increased, but the benefits achieved might be limited due to the leakage of knowledge.

On another hand, the study helped to understand what does managing knowledge leakage mean, and the importance of being aware of this issue in banking sector.

The results from this thesis revealed useful information, and provided good knowledge for commercial banks that might help and aid businesses to be more conscious and responsive toward the knowledge leakage phenomenon in the future. Finally, the study provided recommendations for future work based on data collected and accordingly the results of analysis.

1.4 Study Problem and Questions

By interviewing different managerial positions in banking industry; especially with whom interested in innovation, the study has observed that many threats related to knowledge leakage have been recently raised due several reasons, obviously, bank's profits could be lost if knowledge has been leaked.

Referring to Durst et al. (2014) it has been described that whether organizations are aware of knowledge leakage directed via people, as well as the positive or negative consequences that can be resulted, they are still not fully acquainted by the concept of knowledge leakage nature and that required a profound understating of this phenomena.

According to Lotfi et al. (2013) surviving and competing in today's global economy and uncertain environment leads organizations for a strong needs to create, share and disseminate up-to-date and appropriate knowledge and information. Therefore, sharing knowledge is very important for the high level of competition between organizations. Unfortunately, on the other side this might lead to unwanted result, which is called knowledge leakage.

After reviewing previous studies related to knowledge leakage issue, the study found a lack in researches associated with knowledge leakage problem in different sectors. Adaileh & Abualzeat (2017) mentioned that studying knowledge leakage should be directed to other sectors. For instance, services sectors such as technology or banks. Knowledge leakage management could be arising in many areas and the most three cited areas were as following, the first one is the knowledge leakage specifically in the tacit and explicit knowledge; secondly is the area of the dynamic capabilities such as in knowledge intensity, R&D and core competencies, as well as the third, which delve the technological knowledge area.

Accordingly, the study will discover the banks' concerns, which have become recently beyond surviving only to sustain. Hence, it is lately battling to achieve uniqueness through innovative performance. A lot of money, time, and efforts have been invested to gain this objective using knowledge as one of the most valuable strategic assets.

In the light of what mentioned above, organizations need a precise answer for the following questions to avoid knowledge leakage: what kind of knowledge has the possibility to leak or loss? What are consequences of the leakage? Providing such answers is more challenging than it looks, as this issue has been observed in this study.

A model may help managers to depict the impact of managing knowledge leakage, which allow identifying the knowledge leakage activities and practices that brings harm and problems.

This study is trying to answer the below questions:

The main question:

- Does managing knowledge leakage impact innovative performance at commercial banks in Amman, Jordan?

According to knowledge leakage management components the main question can be divided into the following sub-questions:

- Does knowledge leakage impact innovative performance at commercial banks in Amman?
- Do dynamic capabilities impact innovative performance at commercial banks in Amman?
- Does technological knowledge impact innovative performance at commercial banks in Amman?

1.5 Study Hypothesis

This study tested the hypothesis according to the above questions and objectives as following:

H_o1: There are no impacts of Knowledge Leakage Management sub-variables (Knowledge Leakage, Dynamic Capabilities, and Technological Knowledge) on the innovative performance, at ($\alpha \leq 0.05$).

According to Knowledge Leakage Management sub-variables the main hypothesis can be divided into the following sub-hypotheses:

$H_o1.1$: There is no impact of Knowledge Leakage on the innovative performance, at ($\alpha \leq 0.05$).

$H_o1.2$: There is no impact of Dynamic Capabilities on the innovative performance, at ($\alpha \leq 0.05$).

H₀1.3: There is no impact of Technological Knowledge on the innovative performance, at ($\alpha \leq 0.05$).

1.6 Study Model

Figure (1): Study Model
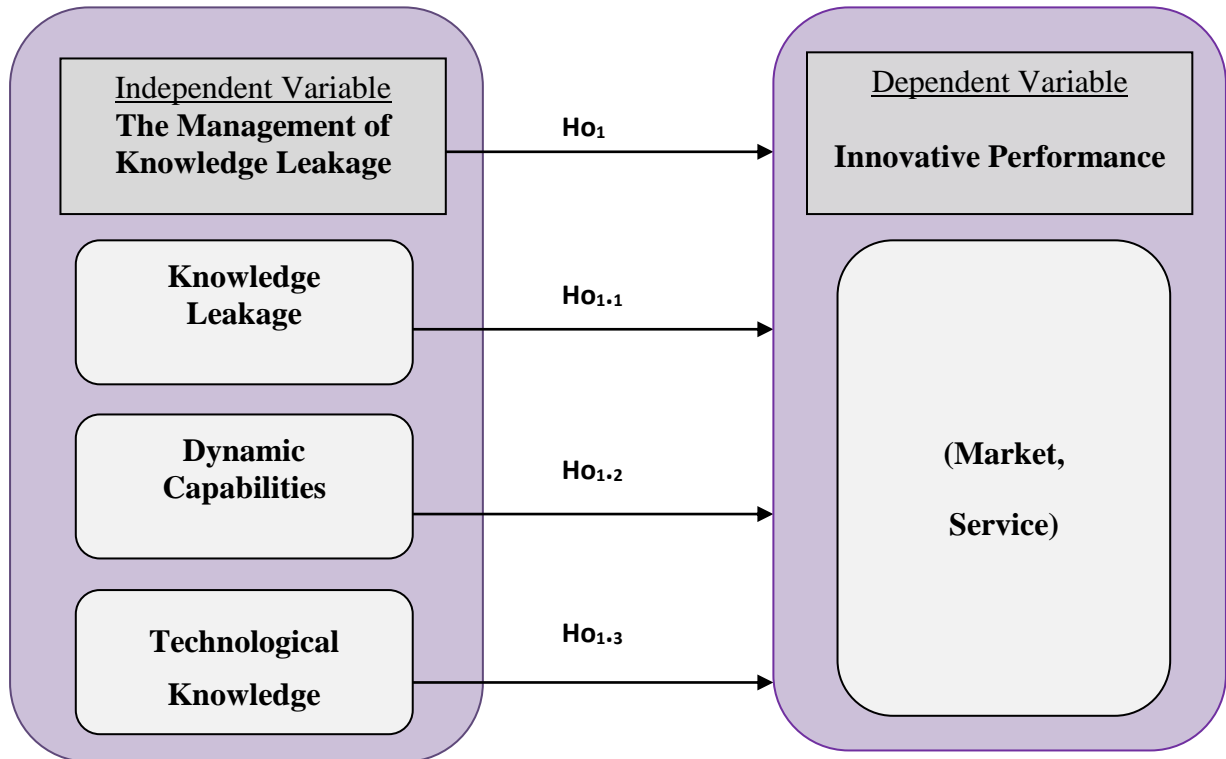
Sources: This model has been adopted based on the following studies: for independent variable: (Annansingh,2012; Nunes et al., 2006;Aladwan, 2017; Kaplinsky et al., 2006; Agudelo et al., 2016). For dependent variable: (Dhanaraj & Parkhe, 2006; Adaileh &Abualzeat, 2017).

1.7 Study Procedural Definitions

Knowledge Leakage Management: the process of managing and protecting knowledge to prevent the leakage of this knowledge to other parties through different areas for maintaining innovative performance.

Knowledge Leakage: the probability of knowledge that is critical to the organization being lost or leaked through the creation, acquiring, sharing and applying knowledge between employees and management to a competitor or unauthorized personnel whether intentionally or unintentionally.

Dynamic Capabilities: the capability of banks management to integrate, build and maintain knowledge related to internal competences in order to enhance the innovation environment.

Technological Knowledge: the risk of leaking knowledge owned by a bank through advanced technologies.

Innovative Performance: the use of an idea in a creative ways to improve the products, processes or procedures in order to increase the level of the performance specifically in market and services.

Innovation in Market: innovation in the market refer to the innovation related to the market research, advertising and promotion, as well as identifying new market opportunities and access to new markets in banking sector.

Innovation in Service: the definition of innovation in the service according to this study is defined as a novelty and significance of the new services offered by banking sector at the right time and to right population.

1.8 Study Limitations and Delimitations

There are number of limitations for this study:

Human Limitation: This study carried with top and middle management in Commercial Banks in Amman.

Place Limitation: This study has been conducted at commercial banks in Amman, Jordan.

Time Limitation: This study was conducted within the period between the first and the second semester of the academic year 2017/2018.

Scientific Limitation: The study has concerned by the knowledge leakage management sub-variables, which consisted of (knowledge Leakage, Dynamic Capabilities, Technological Knowledge) and their impact on innovative performance in tow dimensions (Market and Service).

Study Delimitation: This study was implemented at Commercial Banks in Amman, Jordan. The study results were restricted only at the management of Commercial Banks. The responses of other positions; hopefully would be a reflection of the psychological impression of the commercial banks management at that point of time.

Chapter Two: Theoretical Framework and Previous Studies

2.1 Introduction

The following chapter reviewed the related literature and previous relevant studies that are related to Knowledge Leakage Management and Innovative Performance. The last section contains an overview of the previous studies concerning the same research problem or has the same study variables.

2.2 Theoretical and Conceptual Framework

This section includes many aspects observed through past studies, which related to the variables knowledge leakage and innovative performance as well as their dimensions.

2.2.1 Definitions of Independent Variable (Knowledge Leakage Management):

Knowledge

First of all the studies captured the knowledge concept from King (2009) who mentioned that it is the knowledge embedded in business processes, activities, and relationships that have been created over time through the implementation of a continuing series of improvements. Nazick (2014) has defined knowledge as the facts, skills and understanding that person has gained, through learning or experience, which enhance the ability of evaluating context, making decisions, and taking actions.

Knowledge is commonly categorized in many various types; the most fundamental distinction is between "tacit" and "explicit" knowledge.

Kaplinsky et al. (2006) refers to tacit knowledge as ideas, procedures and routines, which are stuck in the minds of individual people, groups of people and organizations, which function through unconscious processes and informal interactions rather than as rules-based behavior, procedures and systems. Dewah (2013) suggested that tacit knowledge is the most important category of knowledge because it is used for innovation. On the other side, explicit knowledge has been defined by King (2009) as the knowledge exists in the form of words, sentences, documents, organized data, and computer programs and in other explicit forms. Nonaka (2008) referred to the process of converting tacit knowledge to explicit as it has a direct implication for many things. First of all, on how a company designing its organization managerial roles and responsibilities inside these organizations. The second thing, the structures and practices that translate a company's vision into innovative technologies and products.

Amongst business, there are two types of knowledge mentioned by Aladwan (2017) namely explicit and tacit knowledge, the first, refers to codified knowledge, such as that found in documents, while the second refers to non-codified and often personal or experience based knowledge. Ahmadi et al.(2014) stated that tacit knowledge is constructed gradually; so it requires a long time and should be avoided from wasting it. Moreover, Dalkir (2011) suggested in his book that conversion of tacit to explicit knowledge must be accomplished without significant loss of knowledge. Tacit and explicit knowledge should be seen as a sequence rather than as definitive points, and all knowledge is a mixture of tacit and explicit elements rather than being one of them or the other.

According to Farashahian & Abbasi (2013) a firm that effectively manages knowledge is likely to be considered a learning organization. Knowledge dissemination and responsiveness to knowledge are mentioned repeatedly as the most effective way to a gain competitive edge. Therefore, as mentioned by Aladwan (2017) it is very important for organizations to protect their knowledge, as that became a key asset for an organization. In addition, the nature of work has been changed significantly throughout the importance of intellectual work, which always confronting a significant increment. Moreover, knowledge provides a source of competitive advantage.

Knowledge is more than just information and data; it can be described as the fluid mix of framed experiences, values, contextual information and expert insight (Ahmad et al., 2014).

The study here had attended a great attention to knowledge; as it is critical to banks field, as leaking of knowledge might lead to a massive detriment in performance.

Knowledge Leakage Management:

A proper understanding of Knowledge Leakage will add value to organizational knowledge. Knowledge management is defined as the ability to link and to manage knowledge that captured or created from companies employees or from companies' external environment, and to share it with the right employees at the right time. The processes includes; knowledge creation, knowledge acquisition, knowledge sharing, and knowledge application (Aladwan, 2017).

The findings of Blücher & Karrbom (2014), recommended that the processes of management systems need to have a proper tools, such as

templates, checklists and guidelines. In addition, feedback tools for performing environmental tasks quickly include an effective search function to improve the accessibility, finally, encourage employees to enter suggestions and opinions, which will contribute to the knowledge sharing in the company. Furthermore, the employees have to obtain an adequate knowledge about sustainability in order to be able to use those tools and to be successful in sustainable management. According to King (2009), knowledge management involves processes that develop systems and methodologies to support each process and to motivate employees. These processes include; creation, refinement, storage, transfer, sharing, and utilization of the knowledge.

Almaani (2009) mentioned knowledge management as knowledge creation, knowledge application, knowledge sharing, knowledge storage and finally technological knowledge management. Moreover, the study would relate innovation to knowledge management as mentioned by Tidd et al. (2005), that innovation could enhance competitiveness; however, it involves a different set of management knowledge and skills from individuals of everyday business administration.

Knowledge is highlighted by Nunes et al. (2006) that could be better managed and stored within the organization and this probably result in greater innovation and profitability. Hence, based on Ilvonen (2018) knowledge management through creation, sharing and implementing process have been researched expansively and determined the intensive need for knowledge security and knowledge protection in order to avoid the leakage.

For this study, knowledge management can be defined as the ability to manage and protect knowledge through processes of creation, acquiring,

sharing and applying knowledge internal or external of commercial banks environment for maintaining innovative performance.

There are several of implications of knowledge leakage or as interchangeably used term knowledge loss; moreover knowledge leakage has either positive or negative implications; the negative one occur in some harmful sequences such as loss of competitive edge, decreased productivity and affects organizational performance negatively (Baporikar, 2017). This section dealt with the actual knowledge leakage, the three areas that involved in knowledge leakage management are:

Knowledge Leakage:

Information and knowledge leakage has been globally recognized by organizations since the incident of information leakage by Edward Snowden in 2013 (Hassan & Nasereddin, 2018). knowledge leakage is defined by Kaplinsky et al. (2006), as the probability of information or knowledge that is critical to the organization being lost or leaked to a competitor or unauthorized personnel whether intentionally or unintentionally. While Jiang et al. (2013) has defined the incident of knowledge leakage as the extent to which the focal firm's private knowledge is intentionally appropriated by or unintentionally transferred to the partners. Menkhoff et al. (2011) explained leaking knowledge as the change of knowledge from one domain into another. Moreover, Annan Singh (2012) define knowledge leakage as the probability of information or knowledge that is critical to the organization being lost or leaked to a competitor or unauthorized personnel whether intentionally or unintentionally.

Therefore, leakage is a key concern in organizations and an important subject of research. Ahmad et al. (2014) pointed out that leakage could have a variety of impacts on organizations including reputational damage, loss of revenue, costs arising from breaches of confidential agreements and loss of productivity.

Based on the value of knowledge as an important resource, required remaining the competitive edge as mentioned in the previous studies. Durst & Ferenhof (2014) addressed areas of knowledge reservoir where existing knowledge at the mercy of "Leakage" in order for managers to cope better with challenges related to knowledge leakage.

An organization maximizes the value it achieves through one of its most important assets that is knowledge and people are responsible to protect knowledge from leakage, but only a few companies have ones with responsibility to directly protect intellectual capital and innovation; their responsibilities according to Dalkir (2011) include goals such as repeat successes and share best practices as well as avoiding knowledge loss and leakage after organizational restructuring.

Knowledge leakage has two form recognized by Baporikar (2017) as voluntary or involuntary, which either have negative or positive impact on the organizations, voluntary leak of knowledge is linked to legal knowledge transfer and in the interest of the of the organizations, while the involuntary leak is linked to an authorized transfer or Loss determined by some circumstances, which effect organization. Annan Singh (2012) talked about one reason for leakage; as it might be occurred if knowledge management models failed to consider the protection of knowledge within the organization and across it boundaries. Therefore, it is recommended that once the risk

assessment process is completed, risk thinking on knowledge exposure and leakage should not be abandoned. Accordingly, Durst & Ferenhof (2014) have affirmed that knowledge leakage is categorized into knowledge, capability shortage and knowledge exposure.

Knowledge exposure concerns should be part of the continuous risk management approach from the beginning of a project until the outcomes are realized. Knowledge leakage risks should be continually assessed and monitored and whenever the contingency measurement is demanded.

Knowledge Loss:

Several authors have used the leakage expression in knowledge management and innovation researches as mentioned by Frishammar et al. (2015), while others have used another expressions, such as knowledge loss, knowledge fraud, exchanging information in an unbridled unmonitored and unregulated way, losing control of technological assets, also disproportionate or unilateral loss of organization's core capability or skill. Currently, knowledge is produced in a great quantity and spread around the globe at the most increasingly rate. There is not only an abundance of knowledge but also an increasing literature on the creation of new knowledge; also on the sharing knowledge issue and the productivity of new knowledge. There are various risks and disadvantages could exist because of the process sharing knowledge and the aspect, which has been largely absent from this debate, namely the loss of knowledge according to (Hassan & Nasereddin, 2018). Daghfous et al. (2013) have defined knowledge loss as the intentional or unintentional evaporation of knowledge that accumulates from learning and from individual and collective actions.

According to Menkhoff et al. (2011), knowledge loss does not always mean that the knowledge has been destroyed or lost entirely from the universe. Rather it may be leaked from system's perspective, this demonstrate that knowledge has been lost form the community or knowledge system. It is labeled here as leakage, a form of knowledge loss, which is perhaps less dramatic than knowledge destruction. The impact on the community is perhaps similar in that their access to the knowledge is potentially retrievable and does continue to exist in another knowledge system, with which knowledge sharing should still be possible. Thus, leakage is the least dramatic form of knowledge loss.

The results found by Janoszka & Skulska (2015), the study confirmed that firms are engaging activity of knowledge protection when their managements experience high levels of staff outflow, especially the majority of used mechanisms, which belong to supporting technologies and operational areas of knowledge protection. There are many impacts of knowledge loss on organizations; based on Joe et al. (2013), knowledge loss could affect an organization's credibility with their client, because a company might perform less well and this is happened due to the probability of low quality products, or any other reason that lead to the loss of clients, in addition, it lead to a tremendous decrease in revenue. Therefore the study suggested a solution to organizations by giving more efforts to establish effective knowledge management system. One of the countless benefits is that both old and young employees can transfer knowledge between them effectively and use it in an efficient way.

Risk of knowledge leakage is a significant problem recently mentioned by Agudelo et al. (2016) and increased as a part of knowledge sharing activities

due to the technological adoption in knowledge intensive organizations operating in extremely high competitive environments. Hence, organizations have increasing need for strategies to manage the leakage in order to mitigate this risk.

Dynamic Capabilities:

The concept of dynamic capabilities is built on the resources based view; Teece et al. (2017) has defined dynamic capabilities as the ability of firms to integrate, build, and reconfigure internal and external competences in order to deal with rapidly changing environments. Dynamic capabilities are considered by Rehman & Saeed (2015) as a perspective that emphasizes on the distinct resources of the firm, which leads to the sustainable competitive advantage. In addition, dynamic capabilities identified by the organizational need and external opportunity for change, seize opportunities by utilizing and restructuring internal resources (Žitkienė et al., 2015).

Basically, the accumulation of dynamic capabilities is contributing to innovation. Referring to Kaplinsky et al. (2006), dynamic capabilities are one of the areas that could be exposure to knowledge leakage. Dynamic capabilities highlighting core competence, productivity, knowledge intensity, Human resource management and R&D. Chigada & Ngulub (2015) informed that dynamic capabilities created through the acquisition, creation, sharing and retention of knowledge and eventually lead to increase the effectiveness of knowledge organization. This knowledge is intended to lead an organization to improve best practices in business. Furthermore, Chan et al. (2006) argued that dynamic capabilities and core competencies originated largely from the resource-based view of organizations.

External knowledge sharing often demands resources, firms are tend to learn how to improve the ability of acquiring knowledge in return for shared knowledge. Such interactions facilitate the development of core competencies necessary for innovation (Ritala et al., 2015). Nevertheless, it was posited by Frishammar et al. (2015) that an organization in a supply chain network may have a hiding agenda to leak knowledge and to weaken the focal firm; besides, organizations that directly connected to the focal firm may limit the flow of leaked knowledge to improve their own competitive position.

In summary, protecting knowledge in these areas in banks industry is necessitate reducing the risk of leaking knowledge to rivals and thus impacts the performance negatively.

Technological Knowledge:

Durst & Ferenhof (2014) associated knowledge leakage with technology and define it as the risk of loss of knowledge owned by a company through technologies. Rauscher (2009) discussed knowledge through technology as a special use of knowledge that runs through a wide range of human actions, this kind of knowledge is constructed through the use of advanced technological tool. According to Serna et al. (2017), the cost of every security problem in business is the average of US$2.8 million. Besides, organizations spend US$1.2 million on average to investigate and to assess breaches of information. From Astani et al.(2013) point of view, a significant number of employees from technological sensitive industries, such as banking, connecting their mobile devices to unsecured public Wi-Fi networks (i.e., technological context, environmental context), which exposes the device to

the security vulnerabilities of those networks and may be used as a mean to leak knowledge.

According to Agudelo et al. (2016), technical factors include many things, such as infrastructure, shared technology, and system integration, technology services inside and outside the organization. In addition, it is obvious that although the technical capabilities facilitate the conditions for knowledge accumulation, it can also make a challenge for knowledge protection due to the excessive reliance on technical controls to protect organizational knowledge assets, which may lead to make the security a very hard task. Based on Serna et al. (2017), recent literature also is showing how organizations are struggling with leakage of sensitive organizational information through different ways, such as social media, cloud computing and portable data devices. Although much of the literature has focused on technical aspects of leakage (i.e., data and information), limited papers have been conducted on knowledge leakage particularly through new electronic technologies. While the use of these technologies facilitated various processes, it comes at a high security cost. Furthermore, sharing knowledge activities through using of such devices by employees caused problems for confidentiality. Challenges in confidentiality occur as a result of employee's security misbehaviors. Therefore, the focus should shift from technological issues (example firewall and antivirus) and formal issues (for example: policies, standards and procedures) controls to humanity factors.

2.2.2 Definitions of Dependent Variable (Innovative performance)

Innovation:

Today's environment is characterized as unpredictable and unstable, businesses must continuously change and adapt to survive. New ideas, strategies, process, and the most important things new market, products and services lead to innovation in order to keep up with volatility. Innovation is the application of new and improved ideas, procedures, goods, services and processes that bring new utility or quality used in the application (Mataradzija et al., 2013).

Many authors in literature have defined Innovation. Most of the definitions share the same characteristics and might vary slightly in some details. Cocco & Quttainah (2015) described innovation as the design, invention, development or implementation of new or altered products, services, processes, systems, organizational structures, or business models for creating new value for customers and financial returns for the firm. Innovation can be defined also as the adoption of a new idea or behavior in the products, services, systems, policies and programs of the organization in order to adapt to the environment and to maintain effectiveness and competiveness (Almadani & Andersson, 2016). Simultaneously, the researchers mentioned that innovation is a core feature in the culture of the new innovative competitors, which distinguish them from traditional banks.

Forés & Camisón(2016) divided innovation into two categories, radical and incremental. Radical innovation results in fundamental changes in the processes, products, structures technologies and methods of the organization

while Incremental innovation results in the refinement of theses aspects of the organizations.

According to Sprenzel (2015), value innovation is the key to generate new competences especially for banks as they have a central economic role and decades of experience in this matter. Yiadom (2012), innovation takes time to spread through the social system and innovation dissemination process is a new idea becoming widespread from its source of invention or creation to its ultimate users or adopters.

Innovative Performance:

Knowledge is an essential instrument for Innovative performance. There are many aspects for keeping knowledge from leak or lost in order to maintain innovativeness. Based on Dalkir (2011), people responsible for knowledge to ensure maximizing the value of organization; few companies have jobs with this responsibility including titles as director of intellectual capital or director of innovation; their responsibilities contribute to many goal such as improving innovation and the commercialization of idea as well as avoiding knowledge loss or leakage after organizational restructuring. Additionally, Hagedoorn & Cloodt (2003) mentioned that it certainly appears that research and development expenditures patents and new product announcements are the most appropriate indicators of innovative performance. Hanifah et al. (2017) have defined Innovative Performance as the use of an ideas or creativity to improve the products, processes, procedures that increase the significance, usefulness and performance of the products and services.

The importance and critical role of innovative performance in organizations has been mentioned by Tidd et al. (2005) according to them; innovative firms,

which are able to use innovation to improve their processes or to differentiate their services, measured in terms of market share, profitability, growth or market capitalization. Innovative performance has many dimensions; the two common dimensions of innovative performance are market and service.

Market:

Competitors may introduce new products, which represent a major threat to existing market positions. In all these ways firms need capabilities to respond through product innovation (Tidd et al., 2005). According to Adaileh & Abualzeat (2017) Innovation in the market, refer to the innovation related to the market research, advertising and promotion, as well as identifying new market opportunities and access to new markets. It has been noted that a firm that is able to create more value than its rivals has a competitive advantage. Moreover, value creation is reliant on the firm's ability to innovate successfully (Adner & Kapoor, 2010). Generating innovations with commercial value is attracting the attention of competitors, who are trying to enter the same markets or imitate the innovation; accordingly, firms indeed may produce protective mechanisms in order to prevent or limit the imitation of its core knowledge assets and innovations (Olander et al., 2014).

Maintaining knowledge must take into consideration as Almadani & Andersson (2016) mentioned that the internal market function of Banks enables the transfer of knowledge, which is considered as an important factor for successful innovations.

Service:

Innovation in services is a complex and multidimensional subject that analyzed though different context, perspectives, and need for strategies that

largely depend on unpredictable changes of customer's demand or through direct usage of assets (Žitkienė et al., 2015). The definition of innovation in the service in this study is as a novelty and significance of the new services offered to the market at the right time (Adaileh & Abualzeat 2017).

Some traditional banks are stuck in their old ways, and have ignored superior new alternative services. This could lead them to lose the competition as Yiadom (2012) noted that banking domain is one of the most competitive market in the world over, so new services are used as important instruments although they certainly contain risks. Innovative banking products and services must be convenience, reliable, secure and ease to use. Moreover, Yiadom (2012) posited that there have been immense innovations in Banks sector due to the entry of private banks into the market and the expansion of branches of existing banks. As well as the development of new technologies to deliver financial services, such as Automated Teller Machines (ATMs), Electronic Funds Transfer at Point of Sale (EFTPOS) and other stored value cards. Furthermore, Tidd et al. (2005) revealed that new products help capture and retain market shares, and increase profitability in those markets.

Innovative service introduction is very risky, this require firms to cooperate for research and development R&D. Firm may leak directly or indirectly to supplier ever competitors (Ji &Yang, 2010). Being able to offer better service (faster, cheaper and higher level of quality) has been seen broadly as a source of competitive edge. For example the first bank that offer automated telling machinery (ATM) service developed a strong market position and considered as a technology leader (Tidd et al., 2005).

2.3 Relationships between Variables

Some studies examined the relationship between one of knowledge leakage management sub-variables (Knowledge Leakage, Dynamic Capabilities, Technological Knowledge) with innovative performance dimensions. However, few researchers studied the relationship between knowledge leakage and innovative performance, for example. Adaileh & Abualzeat (2017) focused on investigating the impact of knowledge sharing across the on the innovative Performance taking into account the role of knowledge leakage of significant business process in organizations. Gulías et al. (2018) have explored whether the knowledge leakage decided the innovative performance, regional level, technological level, production level, and human capital level have been considered. The relationship between knowledge leakage and innovative performance is investigated in several studies in the conceptual framework of producing knowledge through primarily accumulative dynamic capabilities also through technologies. The main idea is that knowledge leakage may offer additional know-how to organizations that are able to understand such knowledge and add it with internal already existing knowledge. Annan Singh (2012) used a case study approach to investigate the risks of Knowledge Leakage could be occurred during the process of managing the process whether deliberately or accidentally. Olander et al. (2014) mentioned Reasons for choosing mechanisms to protect knowledge and innovations and the study identified statistically significant relationships between the protection need and firms' strategy. The results indicated that there is inconsistency in the use of mechanisms when there is a specific motivation for the need of knowledge protection, and when the organizations are confronting difficulties related to protection issues.

One of the previous study showed that knowledge leakage could induce the relationship between knowledge leakage and innovative performance. In a recent study, Arvanitis et al. (2016) investigated the relationship between knowledge leakage and innovation performance and the results demonstrated that the possibility of introducing a product innovation is negatively associated with technological leakage, opposite of the other studies findings.

Based on Adaileh & Abualzeat (2017) finding, which indicated that some of knowledge leakage has the probability to be beneficial to companies and may have a positive impact, especially when sharing knowledge with customers and competitors in order to develop innovation in different markets and services.

2.4 Previous Studies

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

Hagedoorn & Cloodt (2003) study entitled **"Measuring innovative performance: is there an advantage in using multiple indicators?",** explored the loss of organizational knowledge during organizational change processes from a knowledge perspective and the measurement of innovative performance of companies. The paper studies the innovative performance of a large international sample covers approximately 1200 companies in four high-tech industries, using a variety of indicators. These indicators range from R&D inputs, patent counts and patent citations to new product announcements. The study found that a composite construct based on these four indicators clearly catches a latent variable innovative performance.

Treleaven & Sykes (2005) study entitled **"Loss of organizational knowledge from supporting clients to serving head office",** investigated the loss of organizational knowledge during organizational change processes from a knowledge perspective. The investigations demonstrate how practices of financial management are displacing organizational knowledge of practitioners. An example is given of how organizational knowledge is vulnerable to be insignificant, and thus loss. It is concluded that these losses of organizational knowledge are the effects of reorganizing around corporate managerial level without attention to different evaluations of significance.

Ji& Yang (2010) study entitled **"The impact of private information leakage on innovative product introduction",** explored that incumbent's private demand forecast information and core component development knowledge via supplier to entrant. The finding demonstrate that when incumbent demand forecast information is leaked to entrant, entrant ability to evaluating demand information impact incumbent decision only when proportion of price of entrant to incumbent lower than some threshold. That is, entrant sell price is lower, it is more beneficial for incumbent; On the other hand, when incumbent core component development knowledge is leaked to entrant, entrant ability to parsing development knowledge influence incumbent decision only when proportion of entrant cost to incumbent cost higher than some threshold, furthermore, incumbent profits decrease in this cost ratio when this ratio higher than some threshold. Finally, it has been discovered that leakage of these two types of information has opposite impact on incumbent. The result shows that information leakage may result in negative environmental externality because counterfeiters quality of imitation

product is inferior, customer may discard product that not well satisfy requirement.

Annan Singh (2012) study entitled **"Exploring the Risks of Knowledge Leakage",** aimed to explore the risk of knowledge leakage and determine whether risks identified from the case study are a true representation of perceptions in the sector. The tool used was a postal questionnaires, which been sent to SMEs and targeted a wide group within the organization with different job functions. 300 companies were selected as matching the criteria of designing and developing 3D models. The results of the study shows that even the best laid KMP policy or framework can be source of KL due to the absence of an integrated risk management approach.

Daghfous et al. (2013) study entitled **"Understanding and managing knowledge loss",** explored the drivers and impacts of knowledge loss explored as well as associated retention strategies within manufacturing and service operations. The author follows a multiple case study approach with theoretical sampling of manufacturing and service firms. The results of this study suggest that organizations should retain and diffuse architectural knowledge, improve strategic coordination among units, develop existing capabilities through different networking strategies and more effective networks, and transform these capabilities into effective organizational routines to mitigate knowledge loss and increase knowledge retention. Meanwhile, relying solely on standard operating procedures, information systems, and codification of knowledge in databases could undermine knowledge retention and lead to knowledge loss.

Joe et al. (2013) study entitled **"Knowledge loss when older experts leave knowledge-intensive organizations",** purpose was to describe the different concepts of valuable knowledge that are perceived to be lost when an older expert departs from a knowledge-intensive organization. A multiple case research methodology has been used and interviews involving 17 participants from five small to medium enterprises. The paper finds five concepts of valuable knowledge have emerged from the interviews: subject matter expertise; knowledge about business relationships and social networks; organizational knowledge and institutional memory; knowledge of business systems, processes and value chains; and knowledge of governance.

Ahmed et al. (2014) study entitled **"Protecting organizational competitive advantage: A knowledge leakage perspective",** observed the strategic management literature and emphasizes the importance of protecting organizational knowledge and information, especially in terms of maintaining competitive advantage. Several mechanisms have been created from the literature that organizations could deploy to protect their knowledge and information. Mechanisms were deployed in 11 knowledge intensive organizations. The study revealed unexpected findings: first, there was no evidence of a systematic and comprehensive management approach to the identification and protection of knowledge assets. Approaches were often randomly operated in a bottom-up manner with much of the responsibilities assigned to individual employees and knowledge owners. The second thing, concerns about confidentiality of organizations' operational data for example client details, often out of the managerial attention to protecting organizations' own knowledge and information assets. Accordingly, several implications

have outlined for future research, including the need for more comprehensive frameworks to concentrate on knowledge leakage from a strategic perspective.

Durst & Ferenhof (2014) **"Knowledge Leakages and Ways to Reduce Them in Small and Medium-Sized Enterprises (SMEs)",** aimed to address knowledge leakages in small and medium-sized enterprises and conduct a framework to properly manage their knowledge in order to address this challenge and finds ways to reduce the danger of knowledge leakages. The framework highlights six areas of knowledge leakage, the key drivers of knowledge leakage (suppliers, customers, competitors, non-competitive organizations, human resources). Items could be tested within a sample of small firms and a sample of medium-sized firms as well as in different sectors. One of the results indicated that avoiding Knowledge leakage is not simple in many situations, for example if an innovative or an integrated product is developed. The paper's findings may enable an increased awareness towards the areas where existing knowledge is at the mercy of "leakage". This can assist managers of SMEs to better cope with risks related to knowledge leakage and, therefore, better exploit the limited knowledge base available.

Rehman & Saeed (2015) study entitled **"Impact of Dynamic Capabilities on Firm Performance: Moderating Role of Organizational Competencies",** the phenomenon of organizational performance with the lens of dynamic capabilities observed by this study, which investigates the impact of dynamic capabilities on organizational performance, taking organizational competencies as moderating variable. The research posits that dynamic capabilities have a direct impact on the organizational performance of the firm. It also confirms that organizational competencies have positive moderating role in relationship of organizational performance and dynamic

capabilities. This implies that the direct relationship between dynamic capabilities and performance is significant.

Ritalaet al. (2015) study entitled **"Knowledge sharing, knowledge leaking and relative innovation performance",** focused on the effect of external knowledge sharing on firm's innovation performance, which taking into account the accidental and intentional leakages of business-critical knowledge. The topic of the study is important due to the growing complexity and the progressively networked nature of innovation. The findings demonstrate that firms that reciprocally share knowledge with external partners for their own innovation purposes must be especially aware of the potential for knowledge leakage and the harm such leakage can cause. By engaging in external knowledge sharing, firms increase the risk that confidential knowledge might accidentally or intentionally leak to those outside the firm's boundaries.

Agudelo et al. (2016) study entitled **"Mitigating Knowledge Leakage Risk in Organizations through Mobile Devices: A Contextual Approach",** a theoretical conceptual model provided to identify the determinants that influence knowledge leakage risk (KLR) through the use of mobile devices and also to present how such factors inform organizational KLR mitigation strategies to safeguard associated with leakage incidents. This study is the first attempt to view KLR through mobile devices in organizations from a mobile usage perspective using a contextual approach combining human, enterprise and technological dimensions, by analyzing the determinants that influence the knowledge leakage risk through mobile devices in organizations. Addressing not only technological aspects but also human and organizational aspects, the proposed model presents a better way to design mitigation strategies and leakage risk controls.

Aladwan (2017) study entitled **"The Impact of Knowledge Management Processes on Workforce Agility: An Empirical Investigation at Pharmaceutical Companies in Jordan"**, investigated the impact of knowledge management (KM) processes (creation, acquisition, sharing, and application) on the workforce agility (proactive, adaptive, and flexible). The study used questionnaire to collect data. The study finds that there is a high agreement with KM processes and workforce agility in pharmaceutical companies in Jordan. The author recommended that companies have to adopt top level management for KM processes companies should encourage them to apply KM processes through various training programs. In addition, companies should prepared different training programs for top-level management to enhance their abilities, knowledge and skills.

Adaileh & Abualzeat (2017) study entitled: **"Impact of Knowledge Sharing and Leakage on Innovative Performance"**, investigated the impact of knowledge sharing across the supply chain on the innovative capabilities (Innovative Performance), considering the role of knowledge leakage of significant business process in organizations. Questioner used as a tool and has been sent by e-mail another tool was the directly interviewing people. Samples include executives, organizational unit managers, operations managers and staff, in addition to the owners and an appropriate sample of 600 industrial companies from different areas in Saudi Arabia's cities. Finally, finding indicated that knowledge leakage negatively mediate the positive impact of knowledge sharing on innovation performance, and some of leakage may be beneficial and have a positive impact, especially when sharing knowledge with customers and competitors in order to develop market innovation.

Ilvonen et al. (2018) study entitled: **"Towards a Business-Driven Process Model for Knowledge Security Risk Management Knowledge"**, suggested a proposed model that works as a tool for the sense making process. Security risk management is a sense making process that should be carried out by managers, this study is aiming to answer the question "How can organizations manage knowledge risks in a business driven way?" The paper discuss that knowledge security risks should be managed in sense making process and systematic communication, instead of risks and business benefits being traditionally evaluated in separate functions of organizations. Different functions do not automatically communicate with each other in knowledge security issues, and need a framework in order to successfully do this. From this perspective, the author has introduced a model that takes the importance of business needs in knowledge security management and discusses it in different ways. The model share in the new literatures, because knowledge perspective is hardly taken into consideration in information security reviews, also the business perspective is not considered in existent knowledge security risk management models that were analyzed in this paper.

2.5 Distinctive Features of the Current Study

This study might be considered as the first study to research the impact of knowledge leakage management on innovative performance at commercial banks in Amman, Jordan.

Knowledge leakage management concept: The current study expects that it will raise consciousness about the role function of Knowledge leakage management on achieving innovative performance at commercial banks in Amman, Jordan.

Purpose: Most of the previous studies were undertaken to measure and manage knowledge leakage from the security point of view, and to enhance the company's knowledge management key experiences. Few studies were executed to study the effect of knowledge leakage management (knowledge leakage, dynamic capabilities, and technological knowledge) on achieving innovative performance (market and service).

Environment: Most previous studies have been implemented in various countries outside the Arab region. The current study will be executed in Jordan, as one of the Arab region countries.

Industry: Few studies concerning knowledge leakage management carried out on service industry. The current study is dedicated to commercial bank industry only.

Methodology: Most previous studies were found in annual reports of various companies and industries. The current one is based on perception.

Variables: Most of previous studies and researches take one element of knowledge leakage management, but in this research three elements were taken; (knowledge leakage, dynamic capabilities, and technological knowledge).

Population: Most previous studies took samples from population, but in this study population of are all the commercial banks in Amman, Jordan, all these banks are targeted, therefore there is no need for sampling.

Comparison: The current study will contrast the outcomes of this study with the outcomes of previous studies mentioned earlier to shed the light on similarities and differences that probably might be there

Chapter Three: Study Methodology (Method and Procedures)

3.1 Introduction

In this chapter the study describes the methodology that have been followed in the study, furthermore, the study population and sample has been presented, then the data collection tools, reliability and validity were illustrated. At the end of the chapter, the study variables and statistical tools have been explained.

3.2 Study Methodology

The study used the descriptive and the cause-effect methods to test the sample. In addition, it aims to study the impact of Knowledge Leakage Management (Knowledge Leakage, Dynamic Capabilities, Technological Knowledge) on achieving Innovative Performance (Market and Service) at Commercial Banks in Amman, Jordan. This study begins with literature review and expert's interviews to develop model and measurement tool. The data is collected by questionnaire, which is developed for this study. Then after checking the collected questionnaires, they have been coded against SPSS. Normality, validity and reliability were tested, then the correlation between variables was checked and multiple regressions used to test the hypothesis.

3.3 Study Population

The population of this study consists of the total of (21) commercial banks in Amman (National and Foreign Banks), which are registered in Association of Banks in Jordan (ABJ) by December 2016.

3.4 Study Sample

The study will target all commercial banks, which negate the need for sampling. Moreover, the units of analysis consist of all managers working at commercial banks in Amman, Jordan.

3.5 Data Sources

For this study, data collected from two sources: secondary and primary sources. Secondary data collected from Books, journals, theses, articles, dissertation and worldwide web used to write theoretical framework of this study Primary data collected via questionnaire, which based on literature review and expert interviews, and developed based on referee committee.

The Questionnaire:

The questionnaire was divided into three sections, which include demographic variables that intended to collect some demographic data about research participants, the other sections concerning questions about knowledge leakage management sub-variable, and innovative performance dimensions.

In this study, both primary and secondary data were used. The data collected for testing model through questionnaire that has been constructed by three sections.

Section One:

Demographic information, it was collected with close-end questions, through five characteristics, which include gender, age, education, job title and years of experience in the bank.

Section Two:

This section measured the knowledge leakage management through (3) sub-variables (Knowledge Leakage, Dynamic Capabilities, and Technological Knowledge), knowledge leakage management measured on Likert-scale ranging from 1 (Poor) to 5 (Excellent) by 24 items.

Section Three:

This section measured the innovative performance through (2) dimensions (Market and Service), innovative performance measured by the five-point ranging from 1 (Poor) to 5 (Excellent). Five-point Likert-type scale used to measure all variables items as shown in table (3-1) by 12 items

Table (3-1): Likert-Scale Used with Variables

Poor	Fair	Good	Very Good	Excellent
1	2	3	4	5

3.6 Data Analysis Methods:

To actualize this study, all the commercial banks in Amman were targeted; the questionnaires were sent appropriately to the concerned sections within each bank. (420) questionnaires were distributed equally, a total of (385) questionnaires were retrieved, and (6) were discarded due to large missing data. Accordingly, no more than (379) responded questionnaires were valid for the study data analysis, which means 90.2% of distributed questionnaires were valid.

Study Validity

Two methods used to confirm validity of the study tool: content validity and face validity. For content validity, multiple sources of literatures have

been used such as books, journals, articles, thesis, dissertations, and worldwide websites. While for face validity the study has been presented the questionnaire instrument to (10) academic reviewers from Middle East University and other different Jordanian universities based on the appendix (3), they have the experience in the field of this study, especially in business management, E-Business, as well as the scientific research in order to provide a coherent research instrument. Some items were updated and reformulated to become more accurate to enhance the research instrument, while others were dropped based on the valuable comments and recommendations received by the domain experts.

Study Reliability

To measure the internal consistency and reliability of this study's constructs; the Cronbach's alpha (α) measurement was used. Table (3-2) demonstrated that Cronbach's alpha value range between (77.6 and 86.9). Therefore, the reliability of the instrument is very good as (α) of the whole variables is higher than (77.6).

Table (3-2): Internal Consistency Coefficients (Cronbach's Alpha)

No	Variables	Items	Cronbach's Alpha
1	Knowledge Leakage	1 - 9	78.1
2	Dynamic Capabilities	10 - 18	79.7
3	Technological Knowledge	19 - 24	77.6
4	Market	25 - 30	86.9
5	Service	31 - 36	82.0

3.7 Demographic Description of the Study Sample

This section aims to demonstrate the demographic information of the study sample based on different respondents' characteristics such as: gender, age, educational qualification, job title and years of experience in current bank.

1) **Gender:** table (3-3) shows that the highest category is for (Male) by frequency (253) - percentage of (66.8%), in the contrary, the lowest category is (Female) by frequency (126) - percentage (33.2%).

Table (3-3): Gender Description

Variable	Categories	Frequency	Percentage
Gender	Male	253	66.8
	Female	126	33.2
	Total	**379**	**100%**

2) **Age:** table (3-4) shows that the sample that ranged (Less than 28) was the percentage of (10.8%) by frequency (41),then the age between (28 – 39) at the percentage of (35.1%) by frequency (133), and the age between (39 – 48) at the percentage of (41.4%) by frequency (151), and the age between (49 - 58) at the percentage of (11.6%) by frequency (44), finally, the sample range Aged (More than 58 years old) was at the percentage of (1.1%) by frequency (4). The above table leads the study to identify that the most of the study sample were young people and still they were able to evaluate the knowledge leakage consequences toward the performance.

Table (3-4): Age Distribution

Variable	Categories	Frequency	Percentage
Age	Less than 28	41	10.8
	28 – 39	133	35.1
	39 – 48	157	41.4
	49 – 58	44	11.6
	More than 58 years	4	1.1
	Total	**379**	**100%**

3) **Education**: table (3-5) shows that the highest sample was (Bachelor's Degree) at the percentage of (67.0%) by frequency (254), then (High Diploma) at the percentage of (5.5%) by frequency (21), then (Master's Degree) at the percentage of (5.8%) by frequency (70), and (PhD Degree) at the percentage of (6.2%) by frequency (22). Finally, the (Other) was the lowest educational category at the percentage of (2.5%) by frequency (9). Obviously, results describes that the study sample has a good level of education and they can fill in the questionnaire objectively, also they can evaluate the impact of knowledge leakage on innovative performance dimensions.

Table (3-5): Respondents Education

Variable	Categories	Frequency	Percentage
Education	Bachelor's Degree	254	67.0
	High Diploma	21	5.5
	Master's Degree	70	18.5
	PHD Degree	22	5.8
	Other	12	3.2
	Total	**379**	**100%**

4) **Job Title**, table (3-6) shows the descriptive analysis for the position within commercial banks. However, the category of (Executive Manager) was at the percentage of (3.7%) by frequency (14), then the lowest category (General Director) at the percentage of (2.9%) by frequency (11), and the category of (Administrator Manager) at the percentage of (14.2%) by frequency (54), and the highest category (Head of Section) at the percentage of (46.7%) by frequency (177). Finally, the percentage of (32.5%) is holding other positions in commercial banks by frequency (123). This proves that those who have the authority are best evaluating the impact of knowledge leakage on innovative performance.

Table (3-6): Respondents Job Title

Variable	Categories	Frequency	Percentage
	Executive Manager	14	3.7
	General Director	11	2.9
Job Title	Administrative Manager	54	14.2
	Head of Section	177	46.7
	Other	123	32.5
	Total	**379**	**100%**

5) **Years of Experience in Banks**, table (3-7) shows the first category (Less than 5 years) at the percentage of (11.1%) by frequency (42), then (5 – 14 years) at the percentage of (36.1%) by frequency (137), then (15 – 20 years) at the percentage of (42.7%) by frequency (162). Finally, the last category (More than 20 years) at the percentage of (10.0%) by frequency (38)**.**

Table (3-7): Respondents Experience

Variable	Categories	Frequency	Percentage
	Less than 5 years	42	11.1
	5 – 14 years	137	36.1
Experience	15 – 20 years	162	42.7
	More than 20 years	38	10.0
	Total	**379**	**100%**

Chapter Four: Data Analysis and Hypothesis Testing

4.1 Introduction

This chapter includes descriptive statistical analysis; correlation between variables; and multiple regressions to test the impact of Knowledge Leakage Management on Innovative Performance at Commercial Banks in Amman.

4.2 Description of Statistics of the Study Variables

This section includes Description of Statistics, which contain the arithmetic mean, and standard deviations as well as the level of importance. The level of responses of study sample and the importance of items will be measured at three levels due to the following Interval Length according to (Sekaran & Bougie, 2013):

(Highest Value – Lowest Value) / Number of Levels of the Interval Length =

(5-1) / 3 = 4/3 = 1.33

- The low degree (From 1 to 2.33)

- The medium degree (From 2.34 to 3.66).

- The high degree (From 3.67 to 5).

a) Descriptive Analysis of the Independent Variable

Table (4-8) shows that the means of knowledge leakage management sub-variables range between 3.86 and3.94, with standard deviations range between 0.44and 0.48. The average mean for all knowledge leakage management sub-variables is (3.94) with standard deviation of (0.25). The knowledge leakage rated highest mean, followed by technological knowledge and finally,

dynamic capabilities. This means that knowledge leakage management is very important issue at commercial banks in Amman, where t=299.59>1.96.

Table (4-8): Mean, Standard Deviation, Ranking and Importance for "Knowledge Leakage Management"

No	Dimension	Mean	St.D.	t-Value	Sig	Rank	Importance
1	Knowledge Leakage	3.94	0.44	41.21	0.00	1	High
2	Dynamic Capabilities	3.86	0.46	36.09	0.00	3	High
3	Technological Knowledge	3.93	0.48	37.59	0.00	2	High
Knowledge Leakage Management		3.94	0.25	299.59	0.00	-	High

T-tabulated=1.96

Knowledge Leakage:

Table (4-9) shows the statists of "Knowledge Leakage", the means range from 3.64to4.20, with standard deviations range from 0.61 to 0.82.

Table (4-9): Mean, Standard Deviation, Ranking and Importance for "Knowledge Leakage"

No	Statement	Mean	St.D.	t-Value	Sig	Rank	Importance
1	Bank faces information leakage through identifying new knowledge.	3.93	0.81	22.18	0.00	5	High
2	Bank experiences information leakage through implementing knowledge.	3.93	0.74	24.30	0.00	5	High
3	Bank faces leakage during codifying knowledge.	4.20	0.73	31.70	0.00	1	High
4	Knowledge leakage occurred through staff layoff.	4.05	0.61	33.35	0.00	2	High
5	Employees could share confidential information related to business with external parties.	3.88	0.75	22.82	0.00	7	High
6	Employees share knowledge related to business innovation with external parties.	3.89	0.75	23.15	0.00	6	High
7	Employees have easy access to their colleagues' knowledge bases.	3.64	0.81	15.32	0.00	8	Medium
8	Bank invites outside members to participate in training programs.	4.03	0.70	28.66	0.00	3	High
9	Employees share their experiences with external partners.	3.97	0.82	22.82	0.00	4	High
Knowledge Leakage		3.94	0.44	41.21	0.00	-	High

T-tabulated=1.96

The domain standard deviation is 0.21, which considered good, and indicates that variance is low and the responses are closed to each other. The average mean for "Knowledge Leakage" reached 3.94 with standard deviation of 0.44, this means that commercial banks in Amman consider knowledge leakage of high importance, where t-value=41.21>1.96.

Dynamic Capabilities:

Table (4-10) shows the statists of "Dynamic Capabilities" where the study observes that the means range from 3.73 to 4.04, with standard deviations range from 0.52 to 0.67.

Table (4-10): Mean, Standard Deviation, Ranking and Importance for "Dynamic Capabilities"

No	Statement	Mean	St. D.	t-Value	Sig	Rank	Importance
10	Competencies are improved through transferring employees across internal divisions.	3.96	0.62	29.89	0.00	4	High
11	Management discusses strength and weakness points with competitors.	3.82	0.62	25.27	0.00	7	High
12	Pricing is regularly monitored by rivals.	4.01	0.60	32.39	0.00	2	High
13	Bank controls sharing knowledge of reconfiguring firm's assets structure.	4.04	0.58	34.42	0.00	1	High
14	Sharing R&D department ideas with external parties is managed.	3.97	0.63	29.91	0.00	3	High
15	Bank manages sharing ideas with employees through decision-making process.	3.89	0.52	32.79	0.00	5	High
16	Exchanging knowledge amongst Supply-Chain participants is managed.	3.86	0.63	26.30	0.00	6	High
17	Bank manages sharing knowledge of intellectual property repositories.	3.73	0.63	22.25	0.00	8	High
18	Bank has an external collaborative to handle the capacity expansion.	3.74	0.67	21.25	0.00	9	High
	Dynamic Capabilities	3.86	0.46	36.09	0.00	-	High

T-tabulated=1.96

The domain standard deviation is 0.15, which considered good, and indicates that variance is low and the responses are closed to each other. The average mean for "Dynamic Capabilities" reached 3.86 with standard deviation of 0.46, this means that commercial banks in Amman consider dynamic capabilities of high importance, where t-value=36.09>1.96.

Technological Knowledge:

Table (4-11) below shows the statists of "Technological Knowledge" item of responses, the study observes that the means range from 3.73 to 4.03, with standard deviations range from 0.71 to 0.83.The domain standard deviation is 0.12, which considered good, and indicates that variance is low and the responses are closed to each other.

Table (4-11): Mean, Standard Deviation, Ranking and Importance for "Technological Knowledge"

No	Statement	Mean	St. D.	t-Value	Sig	Rank	Importance
19	Bank management has clear policies to control exchanging e-mails.	4.01	0.82	23.90	0.00	3	High
20	Bank experiences leakage through using technologies to submit Reports.	3.91	0.80	22.10	0.00	4	High
21	Bank controls the incident of leakage through using technologies to submit confidential documents.	4.03	0.83	24.06	0.00	1	High
22	Employees are prohibited to build blogs through intranet.	3.90	0.71	24.56	0.00	5	High
23	Employees are prohibited to access systems from outside offices.	4.02	0.81	24.45	0.00	2	High
24	Bank involves technologies in developing problem-solving strategies.	3.73	0.83	16.92	0.00	6	High
	Technological Knowledge	3.93	0.48	37.59	0.00	-	High

T-tabulated=1.96

The average mean for "Technological Knowledge" reached 3.93 with standard deviation of 0.482this means that commercial banks in Amman

consider Technological Knowledge of high importance, where t-value=37.59>1.96.

b) Description of the Independent Variable

Table (4-12) shows that the mean of innovative performance dimensions range between 3.81 and3.90, with standard deviations range between 0.47and 0.47. Initially, the average mean for all innovative performance dimensions is 3.85with standard deviation of 0.43.

Table (4-12): Mean, Standard Deviation, Ranking and Importance for "Innovative Performance"

No	Dimension	Mean	St. D.	t-Value	Sig	Rank	Importance
1	Market	3.90	0.47	37.54	0.00	1	High
2	Service	3.81	0.47	33.34	0.00	2	High
	Innovative Performance	3.85	0.43	172.45	0.00	-	High

T-tabulated=1.960

This means that innovative performance is very important at commercial banks in Amman, where t=172.45>1.96. The service has rated the highest mean, and then followed by market.

Market:

Table (4-13) shows statistics of "Market" item of responses, the study observes that means range from 3.76 to 4.08, with standard deviations, range from 0.67to 0.94.The domain standard deviation is 0.27, which considered good, and indicates that variance is low and the responses are closed to each other. The average mean for "Market" reached 3.90 with standard deviation of 0.470, which mean that there is an agreement among respondents on high importance of these items. This means that commercial banks in Amman consider market of high importance, the T-tabulated shows a high value where t-value= 37.54>1.96.

Table (4-13): Mean, Standard Deviation, Ranking and Importance for "Market"

No	Statement	Mean	St. D.	t-Value	Sig	Rank	Importance
25	Adoption of technological innovations in bank business solutions amongst competitors.	3.81	0.80	19.61	0.00	4	High
26	Using innovative advertising ideas for new services.	4.08	0.67	30.99	0.00	1	High
27	Adoption of an innovative marketing program to promote the competitive position in the marketplace.	3.76	0.74	19.98	0.00	5	High
28	Responding to changes of client's need.	3.91	0.81	21.76	0.00	3	High
29	Ensuring clients satisfaction.	3.98	0.76	25.11	0.00	2	High
30	Solving client problem in an innovative ways.	3.91	0.94	18.72	0.00	3	High
	Market	3.90	0.47	37.54	0.00	-	High

T-tabulated=1.96

Service:

Table (4-14) shows the statistics of "Service" item of responses. The study observes that the Mean ranges from 3.54 to 3.70 with standard deviation ranges from 0.59 to 0.99.

Table (4-14): Mean, Standard Deviation, Ranking and Importance for "Service"

No	Statement	Mean	St. D.	t-Value	Sig	Rank	Importance
31	Improvement of services in comparison with the previous.	3.57	0.99	11.11	0.00	5	Medium
32	Using latest technologies to introduce services.	3.54	0.98	10.67	0.00	6	Medium
33	The novelty of services in marketplace.	3.64	0.81	15.44	0.00	4	Medium
34	Delivering cutting-edge services in comparison with rivals.	3.70	0.83	16.34	0.00	3	High
35	Diversification of services.	4.21	0.59	40.03	0.00	2	High
36	Quality of bank's services	4.26	0.61	39.91	0.00	1	High
	Service	3.81	0.47	33.34	0.00	-	High

T-tabulated=1.96

The domain standard deviation is (0.40), which considered good, and indicates that variance is low and the responses are closed to each other. The average mean for "Service" reached (3.81) with standard deviation of (0.47)

this means that the commercial bank in Amman consider market of high importance, where t-value= 33.34>1.96.

4.3 Relationships between Variables

Table (4-15) shows that there are relationships among knowledge leakage management sub-variables, where (r) ranging between -0.01 and 0.13.The technological knowledge shows a negative correlation with knowledge leakage. Moreover, there are relationships between innovative performance dimensions are also, where (r) ranges between 0.08 and 0.62. Furthermore, the dimensions of the independent variable (Innovative Performance) in market and service show that there is a negative correlation with knowledge leakage.

Table (4-15): Bivariate Pearson Correlation (r) Matrix between Independent and Dependent Variables.

No		1	2	3	4	5	6	7
1	Knowledge Leakage							
2	Dynamic Capabilities	0.13**						
		0.00						
3	Technological Knowledge	-0.01	0.10*					
		0.84	0.03					
4	**Knowledge Leakage Management**	0.54**	0.40**	0.68**				
		0.00	0.00	0.00				
5	Market	-0.16**	0.09	0.27**	0.10*			
		0.00	0.07	0.00	0.04			
6	Service	-0.17**	0.12*	0.21**	0.08	0.62**		
		0.00	0.01	0.00	0.12	0.00		
7	**Innovative Performance**	-0.18**	0.12*	0.27**	0.11*	0.88**	0.88**	
		0.00	0.01	0.00	0.03	0.00	0.00	

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

The table also shows that there are relationships among knowledge leakage management sub-variables and innovative performance dimensions, since (r) ranging from -0.01 to 0.88. Finally, there are relationships between knowledge

leakage management and innovative performance dimensions, where (r) equal 0.11.

4.4 Hypothesis Testing

Multiple regressions are used to test the effect of knowledge leakage management on achieving innovative performance at commercial banks in Amman. After confirming validity, reliability and relationships between variables, the following tests were carried out to be able to use multiple regressions; normality and multicollinearity (Sekaran & Bougie, 2013).

Normal Distribution of Study Variables (Histogram):

The histogram in the figure (4-2) shows that the data are normality distributed, so the residuals does not affect the normal distribution.

Figure (4-2): Normality Test
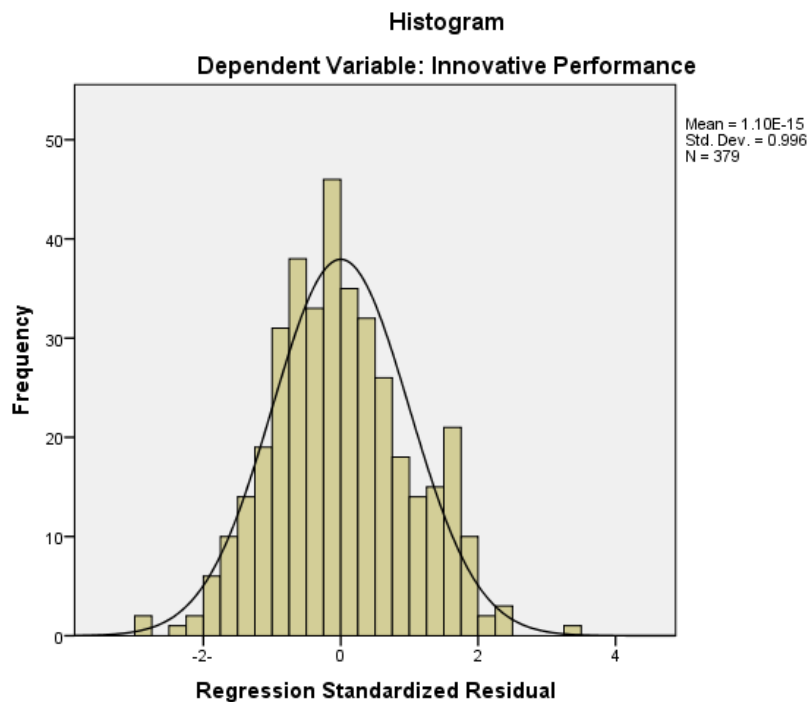
Multi-Collinearity Test:

Multicollinearity was detected by using the Tolerance and Variance Inflation Factory (VIF) test for each of the study independent variables, taking into account that Tolerance value should be more than 0.2 and the VIF value should be less than 10. Table (4-16) is illustrating the results of tests mentioned above.

Table (4-16): Multicollinearity: VIF, Tolerance test

Independent Variables	Tolerance	VIF
Knowledge Leakage	0.980	1.020
Dynamic Capabilities	0.969	1.032
Technological Knowledge	0.988	1.013

It is evident from the above table that the Variance of Inflation (VIF) values for all variables are less than (10) and range from (1.013 to 1.032), and tolerance values ranged from (0.969 to 0.988), which is higher than 0.2. The data were confirmed by normal distribution where all significant values were greater than (0.05).

The Main Hypothesis:

(H_o1): There are no impacts of Knowledge Leakage Management sub-variables (Knowledge Leakage, Dynamic Capabilities, and Technological Knowledge) on the innovative performance, at ($\alpha \leq 0.05$).

To test this hypothesis, and to detect the impact of knowledge leakage management sub-variables on innovative performance atcommercial banks in Amman, Jordan, the study used the multiple regression analysis as shows in table (4-17) below:

Table (4-17): Multiple Regression Analysis of the impact of Knowledge Leakage Management (Knowledge Leakage, Dynamic Capabilities, and Technological Knowledge) on Innovative Performance.

Independent Variable	Model Summary			ANOVA		Standardized Coefficients	Coefficients	
	r	R^2	Adjusted R^2	"F" Value	"F" Sig	Beta	"T"	"T" Sig
	0.35	0.12	0.11	17.58	0.00			
Knowledge Leakage						-0.20	-4.13	0.00
Dynamic Capabilities						0.12	2.51	0.01
Technological Knowledge						0.25	5.28	0.00

*Dependent variable: Innovative Performance

Table (4-17) shows that when regression the three independent variables of knowledge leakage management together against dependent variable innovative performance. The model is fit for further analysis, where R^2 is 12% shows the fitness of the model for multiple regressions, and explains the variance of independent variable on dependent variable, since R^2 is 12%. Then the independent variable can explain 0.12% of variance on dependent variable, where (R^2=0.12, F=17.58, Sig.=0.00).Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which states that knowledge leakage management sub-variables (Knowledge Leakage, Dynamic Capabilities and Technological Knowledge) impact innovative performance at commercial banks, at α≤0.05.

Sub-hypotheses:

Table (4-17) also shows the effect of each Knowledge Leakage Management sub-variables on Innovative Performance.

H$_o$1.1: There is no impact of Knowledge Leakage on the innovative performance, at ($\alpha \le 0.05$).

Table (4-17) shows that there is a negative impact of knowledge leakage on Innovative Performance (Beta= -0.20, t= -4.13, sig. = 0.00, p>0.05.). The statistical numbers stated a negative impact from the leakage on innovative performance, which could be logically approved since the leakage has an obvious negative effect on innovation in markets and services.

Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which states that knowledge leakage is negatively affects innovative performance at commercial banks, at α≤0.05.

H$_o$1.2: There is no impact of Dynamic Capabilities on the innovative performance, at ($\alpha \le 0.05$).

Table (4-17) shows that there is a positive impact of Dynamic Capabilities on Innovative Performance, since (Beta= 0.12, t= 2.51, sig. =0.00, p>0.05.)

Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which states that Dynamic Capabilities are positively affects Innovative Performance of commercial banks, at α≤0.05.

H$_o$1.3: There is no impact of Technological Knowledge on the innovative performance, at ($\alpha \le 0.05$).

Table (4-17) shows that there is a positive impact of Technological Knowledge on Innovative Performance, since (Beta= 0.25, t= 5.28, sig. = 0.01, p>0.05.)

Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which states that Technological Knowledge is positively affect Innovative Performance of commercial banks, at $\alpha \leq 0.05$.

In brief, the multiple regressions analysis shows that the knowledge leakage management sub-variables together affect the innovative performance, where (R^2=0.12, F=17.58, Sig. =0.00). In addition, it shows that all the three sub-variables affect innovative performance, where Technological Knowledge is having the highest effect, followed by dynamic capabilities, then knowledge leakage with a negative effect.

Chapter Five: Results Discussion and Recommendation

5.1 Introduction

The study in this thesis studied several issues related to knowledge leakage management caused through many areas with quantitative methods. Furthermore, a conceptual model has been proposed of knowledge leakage management and its impact on innovative performance in market and services. With this conceptual model, banks, which hold highly confidential knowledge can represent and understand the possibility of knowledge leakage issues more clearly. The quantitative approach gives the ability to help banks to classify confidential knowledge, evaluate and mitigate the risk of potential knowledge leakage. It is an interesting and challenging research topic to control knowledge leakage through the areas of (Knowledge Leakage, Dynamic Capabilities and Technological Knowledge).

5.2 Results Discussion

In the light of the data analysis and responses that described in previous chapter, results are discussed and compared with other studies as following:

Based on the results of investigating the impact of knowledge leakage management in (Knowledge Leakage) on innovative performance, there is high level of agreement on "Knowledge Leakage", from the study sample perspective. The result is compatible with Ilvonen et al.(2018) pointed to the creation, codifying, and applying of knowledge as an essential source of the competitive advantage and business opportunities for nearly every organization. There is a little literature on protecting knowledge issues through knowledge Leakage, but in this study, there has been an argument that

knowledge security risks should be managed in a systematic process to avoid leakage. Moreover, the study has a high degree of developing knowledge leakage for knowledge protection.

There is a high level of agreement on "Dynamic Capabilities", from perspective among model of this thesis. The results were compatible with Teece (2017) study, which presented the dynamic capabilities systems and several methods to analyze the distinctiveness of organizations and the sources of competitive advantage. The study revealed that the ease of coordination inside firms as well as through the market, lead to increase worries about the leakage of valuable knowledge.

In addition there is a high level of agreement on "Technological Knowledge", from perspective among samples of this thesis. Results were consistent with Serna et al. (2017), which found that many of the strategies are related to the human as well as technical factors. However, in organizations, the managers of security and knowledge realized the differences and they focus now on shifting from the technical issues to the humanity factors. Furthermore, it proposed to increase employees' awareness and understanding of the way they interact with other people, their computing systems and mobile devices could either improve or reduce the effectiveness of a security programs.

Moreover, the study shows a high degree of agreement on "Market" from perspective among samples of this thesis. Results were consistent with Adaileh & Abualzeat (2017) study finding, which stated that knowledge leakage negatively mediate the positive impact of knowledge sharing on market innovative performance. There is a high degree of agreement on

"Service", from perspective among sample of study. This result consistent with Adaileh & Abualzeat (2017), study finding, which stated that knowledge leakage negatively mediate the positive impact of knowledge sharing on products and services innovative performance.

5.3 Study Conclusion

Based on the statistical results, the following points may consider as conclusion:

There are an increasingly consensus among the commercial banks regarding the impact of knowledge leakage management on innovative performance.

Results shows that managers and head of departments at commercial banks in Jordan believe on the importance of being aware of knowledge leakage management (knowledge Leakage, dynamic capabilities, technological knowledge) in order to sustaining innovative performance dimensions (market and service).

Results show that there is a high agreement with Knowledge Leakage and Innovative Performance in commercial banks in Jordan.

Results show that there is obviously a positive impact of knowledge leakage management on the innovative performance, which might control an integral part of business.

5.4 Study Recommendation and Future work

Based on the current results and the study suggest the following recommendations:

Recommendations for management at Commercial Banks in Amman, Jordan:

The current study recommends that Knowledge Leakage Management elements may affect the bank's Innovative Performance at Commercial Banks in Amman, Jordan.

The current study recommends that it is essential in knowledge leakage studies to assure the respondents with a full of confidentiality and anonymity in order to smooth the progress of receiving nonbiased responses and to increase the level of privacy.

The current study recommends a better understanding of business strategies and operations would help to develop solutions for banks to avoid the danger of performance troubles caused by knowledge leakage. Besides, knowledge leakage and the ways proposed to reduce the experienced risk should be sensitive to the real world issues.

The current study recommends exploring how partners that are not directly connected to the bank may exploit leaked knowledge. In case a bank acquired knowledge from partners, what incentives might it have to share the knowledge with another bank?

The current study recommends that areas of knowledge leakage should be tested for relevance and suitability in different sectors and positions in commercial banks, for example, the items could be tested in more different dimensions.

The current study recommends continuous training for employees including the management to raise the awareness of security issues even in the appearance of advanced technical measurement, because weakness links might happened through inevitably employees who either maliciously or

through ignorance are not implementing the security procedures. Having sufficient training is essential for achieving the value from all that protected hardware and software.

Recommendations for Academician and Future Research:-

The implementation of knowledge leakage management at commercial banks in Amman will undoubtedly contribute to enriching and rising awareness and the importance of this study to other studies.

This study will open new perspectives for studies who are interested in knowledge leakage management, which may contribute in further development in this new aspect.

It is strongly recommended for future studies on how banks can evaluate the expected positives of knowledge exchange against the expected negatives of knowledge leakage.

This study is recommending new studies to focus on knowledge leakage subjects in lighting of the proposed areas of knowledge leakage in this study.

Additionally, the study recommends others to conduct more studies and researches in the field of innovative performance in the future.

The current study strongly recommends future researches upon this filed to use the same modeling except with larger sample.

Finally, recommend to apply this model on another population in different industries such as telecommunications companies.

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Appendix (1)

The Questionnaire in English

Dear Sir, Madam,

    This questionnaire is part of a study being conducted by Middle East University in Amman, Jordan. The goal of the study is to investigate **"The Impact of Knowledge Leakage Management on Innovative Performance in Market and Service"**.

    In this regard, the study has developed a questionnaire to learn more about the impact of knowledge leakage on innovative performance in Jordanian Commercial Banks. To gain an accurate understanding of areas of leakage, which might impact the innovation performance in Market and service; it is critical to hear from both managers and employees who are using banking systems. Knowledge we gain from your responses will help the study to complete her thesis where needed and requested.

All information you provide will be kept strictly confidential for the university purposes.

Your responses would be highly appreciated.

Researcher Name   **Supervised by**

Ahlam Yousef Hassan   Prof. Hebah H. O. Nassirddin

First Section: Demographic Variables

Gender

☐ Male ☐Female

Age

☐Less than 28 ☐28-38 ☐ 39-48 ☐49-58 ☐More than 58 years old.

Educational Qualification

☐ Bachelor's Degree ☐ High Diploma
☐ Master's Degree ☐ PHD Degree
☐ Other (kindly mention)……………..

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: Knowledge Leakage Management:

1- Knowledge Leakage 2- Dynamic Capabilities 3-Technological Knowledge

#	Statements	Poor	Very Good	Good	Fair	Excellent
1- Knowledge Leakage						
1.	Bank faces information leakage through identifying new knowledge.					
2.	Bank experiences information leakage through implementing knowledge.					
3.	Bank faces leakage during codifying knowledge.					
4.	Knowledge leakage occurred through staff layoff.					
5.	Employees could share confidential information related to business with external parties.					
6.	Employees share knowledge related to business innovation with external parties.					
7.	Employees have easy access to their colleagues' knowledge bases.					
8.	Bank invites outside members to participate in training programs.					
9.	Employees share their experiences with external partners.					

#	Statements	Poor	Very good	Good	Fair	Excellent
2- Dynamic Capabilities						
10.	Competencies are improved through transferring employees across internal divisions.					
11.	Management discusses strength and weakness points with competitors.					
12.	Pricing is regularly monitored by rivals.					
13.	Bank controls sharing knowledge of reconfiguring firm's assets structure.					

14.	Sharing R&D department ideas with external parties is managed.					
15.	Bank manages sharing ideas with employees through decision-making process.					
16.	Exchanging knowledge amongst Supply-Chain participants is managed.					
17.	Bank manages sharing knowledge of intellectual property repositories.					
18.	Bank has an external collaborative to handle the capacity expansion.					
3- Technological Knowledge						
19.	Bank management has clear policies to control exchanging e-mails.					
20.	Bank experiences leakage through using technologies to submit Reports.					
21.	Bank controls the incident of leakage through using technologies to submit confidential documents.					
22.	Employees are prohibited to build blogs through intranet.					
23.	Employees are prohibited to access systems from outside offices.					
24.	Bank involves technologies in developing problem-solving strategies.					

Third Section: Innovative Performance: 1- Market 2- Service

1- Market					
To what extent do you evaluate your bank's innovative performance regarding:	Poor	Very good	Good	Fair	Excellent
25. Adoption of technological innovations in bank business solutions amongst competitors.					
26. Using innovative advertising ideas for new services.					
27. Adoption of an innovative marketing program to promote the competitive position in the marketplace.					
28. Responding to changes of client's need.					
29. Ensuring clients satisfaction.					
30. Solving client problem in an innovative ways.					
2- Service					
To what extent do you evaluate your bank's innovative performance regarding:	Poor	Very good	Good	Fair	Excellent
31. Improvement of services in comparison with the previous.					
32. Using latest technologies to introduce services.					
33. The novelty of services in marketplace.					
34. Delivering cutting-edge services in comparison with rivals.					
35. Diversification of services.					
36. Quality of bank's services					

Appendix (2)

The Questionnaire in Arabic

السيد الفاضل / السيدة الفاضلة

تحية طيبة وبعد :

تجري الباحثة دراسة حول "أثر إدارة تسرب المعرفة على الأداء الإبداعي" دراسة ميدانية في البنوك التجارية العاملة في الأردن ضمن مدينة عمان. وتعد جزء من متطلبات الحصول على شهادة الماجستير في الأعمال الالكترونية من جامعة الشرق الأوسط. وبوصفكم صناع القرار ومتخذيه في البنوك من موقعكم الإداري والمتعايشين مع طبيعة العمل وإجراءاته فأنتم الأصلح على تزويد الباحثة بالمعلومات الواقعية والصحيحة، ومن هذا المنطلق تتوجه إليكم بالاستبانة المرفقة، راجيا قراءتها بتمعن والإجابة عن فقراتها بوضع إشارة (√) في المربع الذي يعكس رأيك والمقابل لكل فقرة.

إن الباحثة تأمل بتقديم العون لها لإعداد دراسة تتسم بالموضوعية من جهة، وتطوير أداء بنوككم من جهة أخرى، علما بأن المعلومات الواردة في الاستبانة هي فقط لأغراض البحث العلمي وسيتم التعامل معها بسرية تامة.

مع جزيل الشكر والتقدير.

اسم المشرفة: اسم الباحثة:

أ. د. هبة حسن ناصرالدين   **أحلام يوسف حسن**

أولا: المتغيرات الديمغرافية:

يرجى اختيار الإجابة المناسبة عن طريق وضع إشارة (√) في المكان المناسب:

1- الجنس:

أنثى ☐   ذكر ☐

2- العمر:

☐ 28 – 38   أقل من 28 ☐

☐ 49 – 58   39 - 48 ☐

                             58 فما فوق. ☐

3- المؤهل العلمي:

دبلوم عال ☐   بكالوريوس ☐

☐   دكتوراه   ماجستير ☐

غير ذلك يرجى التحديد........................ ☐

4- المسمى الوظيفي:

مدير عام ☐   مدير تنفيذي ☐

رئيس قسم ☐   مدير إدارة إشرافيه ☐

غير ذلك يرجى التحديد........................ ☐

5- سنوات الخبرة العملية في البنك:

من 5 إلى 14 سنوات ☐   أقل من 5 سنوات ☐

أكثر من 20 سنة. ☐   من 15 إلى 20 ☐

الرقم	الفقرة	ضعيف	مقبول	جيد	جيد جدا	ممتاز
إدارة تسريب المعرفة (تسرب المعرفة، القدرات الديناميكية، المعرفة التكنولوجية)					
تسرب المعرفة					
1.	يواجه البنك تسريباً للمعلومات عند تحديد احتياجاته من المعارف الجديدة.					
2.	يواجه البنك تسريباً للمعلومات في أثناء تطبيق المعارف.					
3.	يواجه البنك تسريب للمعلومات في أثناء تدوين المعارف.					
4.	يحدث تسريباً للمعارف عند فصل الموظفين.					
5.	من الممكن أن يشارك موظفو البنك معلومات سرية تتعلق بالعمل مع أطراف خارجية.					
6.	يشارك موظفو البنك المعرفة التي تتعلق بالإبداع في مجال الأعمال مع أطراف خارجية.					
7.	هنالك سهولة للوصول إلى قواعد المعرفة الخاصة بالزملاء.					
8.	يستدعي البنك أعضاء خارجيين للمشاركة في البرامج التدريبية الخاصة بالمعرفة.					
9.	يشارك موظفو البنك خبراتهم مع أطراف خارجية.					
القدرات الديناميكية					
10.	يحدث تطوير لإدارة الكفايات من خلال تنقل الموظفين بين الأقسام الداخلية.					
11.	تناقش الإدارة نقاط القوة والضعف مع المنافسين.					
12.	تتم مراقبة الأسعار بشكل دوري من قبل المنافسين.					
13.	يتحكم البنك بمشاركة المعارف التي تتعلق بإعادة تشكيل هيكلة أصول الشركة.					
14.	يقوم البنك بإدارة مشاركة أفكار قسم البحث والتطوير مع الأطراف الخارجيين.					
15.	تتم إدارة مشاركة الأفكار مع الموظفين أثناء عملية صنع القرار.					
16.	يقوم البنك بإدارة تبادل المعارف بين أعضاء سلسلة التوريد.					
17.	يقوم البنك بإدارة مشاركة المعارف الخاصة بمخازن الملكية الفكرية.					
18.	يوجد تعاون مع أطراف خارجيين لإدارة تطوير القدرات.					
المعرفة التكنولوجية					
19.	لدى إدارة البنك سياسات واضحة للتحكم بتبادل البريد الإلكتروني.					
20.	يحدث تسريب للوثائق السرية في البنك أثناء عملية التواصل عبر استخدام وسائل التكنولوجيا.					
21.	يقوم البنك بضبط أي حادثة لتسرب التقارير السرية أثناء عملية الاتصال عبر استخدام وسائل التكنولوجيا.					
22.	يمنع الموظفين من عمل مدونات الكترونية عبر الانترانت (الشبكة الداخلية).					
23.	يمنع الموظفين من الوصول إلى النظام من خارج المكاتب.					
24.	يسعى البنك لتضمين التكنولوجيا خلال تطوير استراتيجيات حل المشكلات.					
الأداء الإبداعي (السوق، الخدمة)					
السوق					
إلى أي مدى تقيم الأداء الإبداعي للبنك من حيث:		ضعيف	مقبول	جيد	جيد جدا	ممتاز
25.	اعتماد الابتكارات التكنولوجية في حلول الأعمال البنكية بين المنافسين.					
26.	استخدام الأفكار الإبداعية للإعلان عن المنتجات والخدمات الجديدة.					
27.	اعتماد البرامج التسويقية الإبداعية لرفع المركز التنافسي في السوق.					
28.	الاستجابة للتغيرات التي تطرأ على احتياجات العملاء.					

					التأكد من رضا العملاء.	**29.**
					حل مشكلات العملاء بطرق إبداعية.	**30.**
الخدمة						
					تطوير الخدمات مقارنة بما سبق.	**31.**
					استخدام أحدث التكنولوجيا لتقديم والخدمات.	**32.**
					حداثة الخدمات في السوق.	**33.**
					تقديم الخدمات المتطورة بالمقارنة مع المنافسين.	**34.**
					تنوع الخدمات.	**35.**
					جودة الخدمات.	**36.**

Appendix (3)

Professors' Questioner Jury

NO.	Professor Name	University
1	Prof. Osama Rababa'a	Middle East University
2	Prof.Ahmad Ali Saleh	Middle East University
3	Prof.Sameer Aljabali	Middle East University
4	Prof. Taleb Warad	Middle East University
5	Prof. Abbass Al Shariefi	Middle East University
6	Prof. AbdulhafizSalamah	Middle East University
7	Prof. Hana'a Al Hunaiti	The World Islamic Science &Education University
8	Dr. Mohhamed AL-Adaileh	Middle East University
9	Dr. Mohammad Ma'aytah	Al Balqa Applied University
10	Dr. Dojanah Al Nabulsi	Al Balqa Applied University

Appendix (4)

List of Members of Association of Banks in Jordan

#	Bank's Name	Arabic Name	No. of Branch	No. of Staff
1	Bank of Jordan	بنك الأردن	46	1385
2	ABC Bank	بنك ABC	19	440
3	City Bank	سيتي بنك	2	62
4	Jordan Kuwait Bank	البنك الأردني الكويتي	43	1001
5	Invest Bank	البنك الاستثماري	9	488
6	Ahli Bank	البنك الأهلي	34	1186
7	Jordan Commercial Bank	البنك التجاري الأردني	16	613
8	Arab Bank	البنك العربي	50	2800
9	Egyptian Arab Land Bank	البنك العقاري المصري العربي	7	290
10	National Bank of Kuwait	بنك الكويت الوطني	3	108
11	National Bank of Abu Dhabi	بنك أبو ظبي الوطني	2	53
12	Bank al Etihad	بنك الإتحاد	31	944
13	Housing Bank	بنك الإسكان للتجارة والتمويل	60	1814
14	Arab Jordan Investment Bank	بنك الاستثمار العربي الأردني	14	660
15	Rafidain Bank	مصرف الرافدين	2	24
16	Cairo Amman Bank	بنك القاهرة عمان	37	1121
17	Standard Chartered Bank	بنك ستاندرد تشارترد	4	178
18	Societe General Bank Jordan	بنك سوسيته جنرال	12	239
19	Bank Audi	بنك عودة	12	274
20	Capital Bank	بنك المال الأردني	8	551
21	BLOM Bank	بنك لبنان والمهجر	11	327
		Total	**422**	**14,558**

Appendix (5)

MEU's Letter

MEU جـامـعـة الـشـرق الأوسـط
MIDDLE EAST UNIVERSITY

Amman - Jordan

مكتب رئيس الجامعة
President's Office

الرقم : در/خ/25/1384
التاريخ: 2018/3/26

السيد مدير بنك الأردن المحترم

عمان – المملكة الأردنية الهاشمية

تحية طيبة وبعد،

أرجو التكرم بالموافقة على تسهيل مهمة الطالبة أحلام يوسف حسن سالم، ماجستير/ أعمال الكترونية ورقمها الجامعي (401610092)، وذلك لإجراء مقابلة وتوزيع استبانة على مدراء البنوك التجارية الأردنية في عمان لإتمام الرسالة المعنونة "أثر تسرب المعرفة على الأداء الإبداعي".

راجياً الإيعاز لمن يلزم بتقديم كل التسهيلات الممكنة لها، علماً بأن المعلومات التي ستحصل عليها ستبقى سرية ولن تستخدم إلا لأغراض البحث العلمي فقط.

شاكرين ومقدرين لكم حسن تعاونكم واهتمامكم.

وتفضلوا بقبول فائق الاحترام...

رئيس الجامعة
25.3.2018
أ.د. محمد محمود الحيلة

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