

Information Technology Risk Management (ITRM) in Egyptian Hotels: Drivers versus Boundaries

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Information technology risk management can simply be defined as the process of identifying, evaluating, selecting, and implementing actions to reduce risk to guests and hotel assets. The goal of risk management is represented in integrating actions that reduce or prevent information risks while taking into consideration ethical, political, social, cultural, and legal side. Information technology has become an essential part of hotel operations. Therefore, the need for obtaining information risk management is emerging. It is difficult to imagine a hotel operating and competing on the market without this process, for both customers and merchants, they bring threats of information vulnerability and security breaches at the same time. The hotel industry has been very attractive for hackers because of traditionally low computer and network security practices employed by hotels. Giving the fact that hoteliers have the responsibility of protecting their customers, they should view information technology risk management as an invaluable and expected guest service. Owing to this, information security risk management issues should be properly addressed in hotels. The study investigates the antecedents of hotel ITRM adoption and how this affects the hotel market share. The study used a questionnaire to collect data from 257 hotel employees to perceive their opinions of the Egyptian hotel ITRM adoption. It has employed structural equation modelling to measure the effect of the antecedents of hotel ITRM and its effect on hotel market share. The study revealed very useful results in the way it evaluated employees' perceptions of hotel ITRM adoption and depicted the factors that hotels have succeeded to offer to support ITRM and attract customers.

KEYWORDS: Information Technology, Risk Management, Information Technology Risk Management, Hotels, Egypt

INTRODUCTION

Hassadoust, F., and Farzaneh, (2011) indicated that globalization is causing markets to become more competitive, dynamic, and customer driven; customers are demanding more variety, better quality, greater reliability and more efficient delivery. The drive to move a product to the right place at the right time and at the lowest cost requires improved efficiencies, not only within the enterprise, but also on the entire supply network as well. Competition is no longer local but global, as companies are looking for ways to reduce their cost, while at the same time making every effort to enhance the quality of their products and in the long run satisfy customers' demand (Tsai, et al, 2009).

Camison, (2000), agreed with Cobanoglu et al., (2001) that the hotel industry has placed great emphasis on the provision of quality service to its customers. With the maximizing demand for intensive information from guests and hoteliers, hotels have used computer-based IT facilities to minimize costs, enhance operational efficiency, and improve services quality. The implementation of IT in their work, hotel managers anticipate that the profit margins and financial returns will be maximized (Hassadoust, and Farzaneh, 2011). According to Main, (2002) IT starts and ends with quests in a hotel. Collins, and Cobanoglu, (2008) cleared that the investment in IT thus benefits the hotel if it enables customers to have better experience and the hotel staff to work more efficiently to better assist customers. Likewise, Bilgihan et al, (2011) identified Information technology (IT) as one of the main sources of sustainable competitive advantage in the hotel industry, especially in an environment where customers' expectations and needs are changing considerably, Thus identifying and adopting the right technology become very important for hotels.

Jake and Daniel, (2010) showed that Information can exist in many forms, it can be stored electronically, transmitted by post using electronic means, written or printed on paper, shown on movies, or spoken in

talking. Whatever the form of information, it should always be suitably protected. The IT organization typically manages the shared infrastructure of the enterprise, such as the servers, mainframes, data warehouses, networks, and intranets and, as such, operates as the custodian for a large portion of the corporate information content including possible information belonging to customers e.g., addresses, credit card numbers, telephone numbers. These information participants, including end users, need to strive to ensure that their information assets are protected (Stanton et al, 2005).

Suhong, and Binshan, (2006) indicated that IT has become the backbone of commerce. It supports the company's operations, relates businesses to the customers they serve. International Data Corporation, (2007) showed that recent rapid development of information technology created a foundation for information systems, wide application throughout the hotel industry. Jake and Daniel, (2010) identified that using information systems effectively, the establishment of database systems and efficient management of information derived from databases have become increasingly important. At the same time, greater concerns for information security have arisen along with protecting databases and information processing from risks. Today, the common phenomena of breaches of information security have also threatened various business activities. Accordingly, companies have maximized their investment in ITRM, and one recent forecast indicates that the global market for information security shows a trend toward increased attention to development, approximately 15% annual growth through 2011 and over \$71.8 billion in sales. The reason for the increased investment in IT security is the rising number of noticeable and foreseeable threats to archived data, customer information, and thus business interests (Mohd et al, 2007).

Pongsak, and Sunil, (2007) cleared that hotels become more and more dependent on their computer-based information systems, which play a vital role and important part in the hotel operations, there needs to be a greater awareness and concern about information systems security (Law, and Hsu, 2006). Lim, (2008) indicated that information has become one of the main resources of many hotels. Information security appears on the list of critical success factors of most major hotels (Hassadoust, and Farzaneh, 2011). O'Connor, (2007) assured that there are three fundamental qualities of information which are vulnerable to risk and which, therefore, need to be protected at all times, these qualities represented in confidentiality, integrity and availability (Bilgihan et al, 2011). And there are various reasons why hotels choose to have an information technology risk management system (O'Connor, 2007). These broadly fit broadly into two categories, market assurance and governance (Law, and Hsu, 2006). Market assurance concerns the ability of an ITRM process to provide confidence, within the marketplace, in a hotels' ability to look after customers' information securely (Tsai, et al., 2009). Particularly, it inspires confidence that the hotel will maintain the integrity, confidentiality, and availability of customer information (Murat and Bilgihan, 2012). O'Connor, (2007) explained that governance concerns how hotels are managed. In this case, an ITRM process is recognized as being a proactive way to manage information security (Jake and Daniel, 2010). This study aims to identify the antecedents of hotel ITRM adoption and how this affects the hotel market share.

LITERATURE REVIEW

Information Technology Risk Management Process

Mohd et al, (2007) defined information technology risk as the probability of loss arising because of incorrect, vulnerability, incomplete, illegal access to information or an event impacting the set of company IT assets. Varying degrees of risk are connected with the process of acquiring and sharing information. Every company needs to acquire and share information in order to perform its own function, and as such, the information flows between different drivers, may be transformed or modified, and consequently increases risk, which should be properly managed (Tuncel, and Alpan, 2009). Alberts and Dorofee, (2002) defined Information technology risk management as the process of identifying, evaluating, selecting, and implementing actions to prevent or reduce IT risks to guests and hotel assets. The goal of risk management

represented in integrating actions that prevent or reduce information risks while taking into consideration ethical, political, social, cultural, and legal side (Jake and Daniel, 2010).

Law and Hsu, (2006) cleared that Information security spans the areas of confidentiality, integrity, and availability. Confidentiality is protection against unauthorized access, appropriation, or use of assets such as assuring the payment security on the website, Customer personal and financial data are well-protected on the website, and the website guarantees the privacy of customer transactions. Integrity is protection against unauthorized manipulation, modification, or loss of assets. Availability is protection against blockage, limitation, or diminution of benefit from an asset that is owed (Chen and McQueen, 2008).

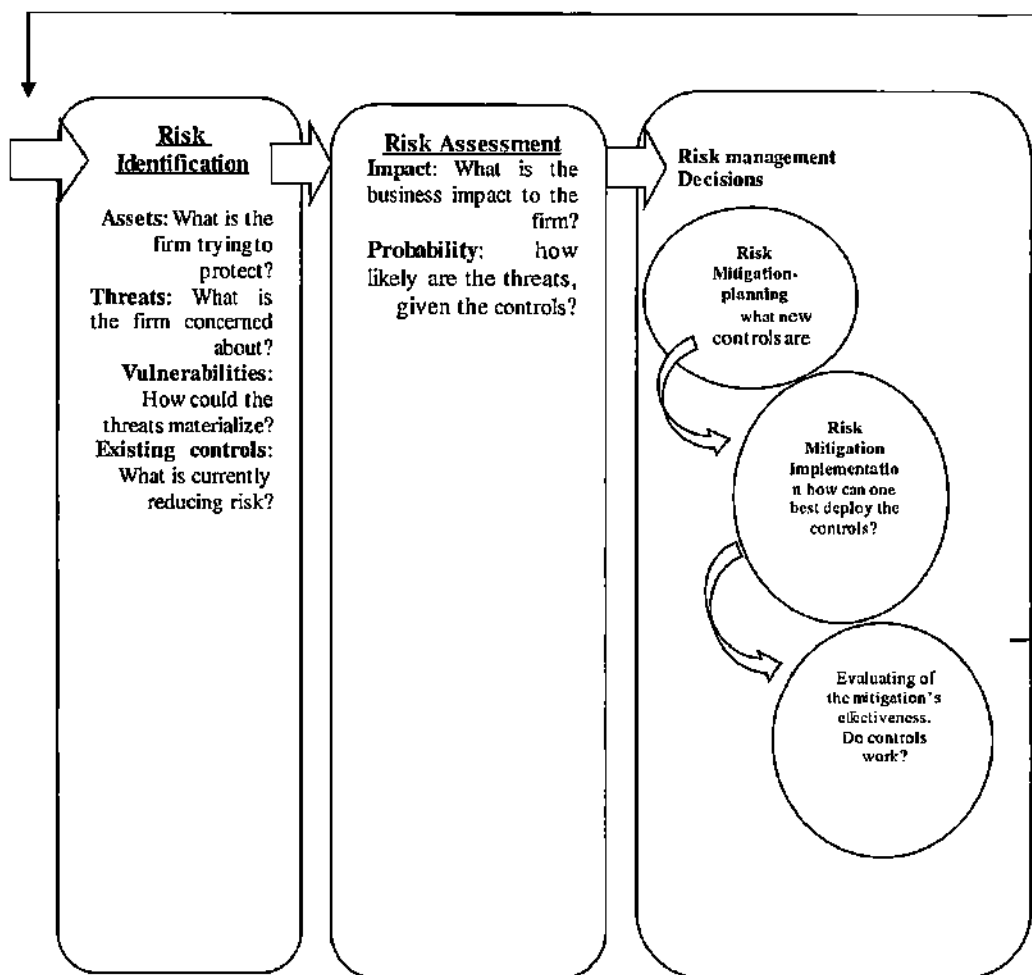


Figure (1): IT Risk Management Process. Source: Jake and Daniel, (2010)

Westerman and Hunter, (2007) explained that risk identification refers to the process of ongoing identification of threats, vulnerabilities, or (risk) events impacting the set of IT assets owned by the organization. Risk assessment is the process of calculating quantitatively the potential damage and/or monetary cost caused by a threat, vulnerability, or by an event impacting the set of IT assets owned by the company. Identification of the probable loss to the IT assets and/or to the business processes based on

previous internal and external events, input from subject matter experts, and audits. Specifically, this entails (a) quantifying the potential damage, and (b) quantifying the probability that damage will occur (Shoniregun, 2005).

Beachboard, and Cole, (2008) identified risk mitigation planning as the Process responsible for controlling and mitigating IT risks. It typically assures the election, application, check, and security assessment of safeguards. This system security review considers both effectiveness and efficiency, inclusive impact on the mission and constraints due to policy. Risk mitigation implementation refers to deploying and placing in service equipment and/or solution identified during the risk mitigation planning phase. or actuating new corrective processes (Alberts and Dorofee, 2002). European Network and Information security Agency, (2007) indicated that evaluation the of mitigation’s effect through Monitoring the environment for effectiveness against the previous set of threats, vulnerabilities, or events, as well as determining if new/different threats, vulnerabilities, or events results from the modifications made to the environment.

Alberts and Dorofee, (2002) cleared that by implementing risk management, an organization not only will be able to reduce the information risk exposure it faces , but also can save the expected losses incurred from exposures. Cutting the number of minor incidents suffered day-to-day, along with the inefficiencies that go with them. According to the European Network and Information Security Agency, (2007) some problems in the area of risk management include Low awareness of risk management activities within public and private sector organizations, absence of a “common language” in the area of risk management to facilitate communication among stakeholders, lack of researches on existing methods, safety measures, tools and good practices, limited or non-existent interoperability of methods and integration with corporate governance.

Table 3.Information Technology Risk Management implementation

Indicators	Researchers
Assuring the payment security on the website.	Angriawan and Thakur, 2008; Chen and Dibb, 2010.
Customer personal and financial data are well-protected on the website.	Flaviàn and Guinañu, 2006; Bart et al, 2005.
The website guarantees the privacy of customer transactions.	Gefen et al, 2003; McKnight et al, 2002; Chen and Dibb, 2010.
IT assets are well-protected.	Chen and McQueen, 2008; Law and Hsu, 2006; Hassanein and Head, 2009; Keeling et al, 2010.
Assuring the election, application, check, and security assessment of safeguards.	Beachboard, and Cole, 2008; Gupta et al, 2009; Cyr et al, 2007.
Reviewing considers both effectiveness and efficiency, inclusive impact on the hotel operations.	Jake and Daniel, 2010; Bilgihan et al, 2011; Alberts and Dorofee, 2002; Bart et al, 2005; Chen and Dibb, 2010; Gefen et al, 2003.
Actuating new corrective processes.	Tuncel, and Alpan, 2009; Angriawan and Thakur, 2008; Chen and Dibb, 2010; Flaviàn and Guinañu, 2006.
The website is prepared to solve customers’ problems.	Lee and Turban, 2001; Palvia, 2009, Flaviàn and Guinañu, 2006; Bart et al, 2005.
Monitoring the environment for effectiveness and	Mohd et al, 2007; Bwalya, 2009; Johnson, 2007;McKnight et al, 2002;Cyr et al, 2007;

efficiency.

Kim et al, 2009.

Drivers of Information Technology Risk Management (ITRM) Adoption

Due to amplified threats to information security from external and internal invasion, the importance of information security has increased (Stanton et al, 2005). Even though damage incurred from computer viruses and hacking has decreased due to more investment in security technology, internal security breaches have increased from incidents of managers and line employees lack awareness of the need for security of information or their intentional disregard (Contos, 2006). Kim et al., (2009) stated also that the hotel industry has broadly adopted apply on information system (IS), and security for IS has become increasingly important, since most hotels have to manage quest information in a broad customer database. Recently, due to the increased number of customers who access hotels via the Internet and employees permissible accessing Hotel Information Systems (HIS) through outside intranets, the importance of security for customer information, mostly acquired through on-line sources by the hotel, has become greater than ever. Hotel Information Systems refers to all the computing software programs and hardware applied to the hotel operations, consisting of many subdivisions, such as front office, reservations, restaurant services, engineering, sales, accounting, housekeeping and guest services (Collins and Cobanoglu, 2008). Ultimately, Rosemary et al., (2012) found out that hoteliers agreed upon a number of benefits gained from using information technologies risk management in various hotels. In terms of benefits, many studies have concluded that ITRM drivers could be summarized in the following points:

Business facilitation

Azdel et al., (2012) identified Information technology as one of the main sources of sustainable competitive advantage in the hotel industry, especially, in an environment where customers' expectations and needs are changing considerably, identifying and adopting the right technology becomes very important for hotels. According to Beachboard, and Cole, (2008) as well as Chang, and Ho, (2006), the use of ITRM by various hotels is related to the potential benefits of participating in international value chains, increasing market access and reach, lowering transaction costs, and improving market efficiency. Credence to such benefits has led to the adoption of ITRM by various hotels (European Network and Information Security Agency, 2008). The Competitive value for hotel companies and stakeholders will increase locally and globally when information risk is mitigated and properly managed (Hassadoust, and Farzaneh, 2011; Bilgihan et al, 2011).

According to Mohd et al., (2007) the utilization of ITRM tools helps not only to fulfil defined hotels' goals but to optimize the work processes as well. Also, O'Connor, (2007) indicated that the right information technology risk management is available and it is correctly applied, a manager can obtain obvious organizational benefits and can stimulate the growth of the hotel, in line with the market evolution. Thus, the researcher hypothesizes the following:

H1: Business facilitation has a positive impact on the adoption of ITRM.

Cost reduction and productivity

Ayeh, (2006) cleared that the use of technology for registration would lead to a reduction in transaction costs as firms will be able to check-in guests faster with lesser number of employees (Bergen and Ridder, 2013), while responding to the guests' requests faster (Benaroch et al, 2009). Moreover, the scope for human error in each transaction will be reduced through the use of on-line systems, which will further reduce costs (Nwakanma et al, 2014). In addition to the governance and coordination mechanisms that need to be in place to control for opportunism, bounded rationality and risk behaviour of agents will be lower when lesser employees are involved in the transaction (Rosemary et al, 2012). Ultimately, many hotels use ITRM to support their operations as ITRM has become the major facilitator of business activities in the world today (Bilgihan et al, 2011). Azdel et al, (2012) explained that ITRM also is used as it is a catalyst of fundamental

changes in the structure, operations, and management of hotels. When the changes are made, hotels seek to achieve certain business objectives represented in improving customer relationships, productivity, decision making, reducing costs generally and Costs related to marketing would be lower when the ITRM is used more extensively as opposed to traditional marketing (Collins, and Cobanoglu, 2008; Hassadoust, and Farzaneh, 2011). Thus, the researcher hypothesizes the following:

H2: Cost reduction and productivity have a positive impact on the adoption of ITRM.

Service level

Jake and Daniel, (2010) indicated that information technology risk management is part of a series of value-adding activities for acquiring, transforming, and distributing information that hotel managers can use to improve decision making, enhance organizational performance, and ultimately increase firm profitability (Chang and Ho 2006). Quality information should be relevant, related to customer needs and interests so that it adds value for customers (Benaroch et al, 2009). Businesses have to focus on relevant information which responds to customer needs and attracts them to keep accessing the firm website as a quality information source (Flaviàn and Guinalu 2006). The informational benefit is also more valuable to customers if website owners provide accurate information (Whitman and Mattord 2008). Accuracy refers to how well the information represents the phenomenon it purports to describe (IBM, 2011). Finally, quality information has to be timely, which means that up-to-date or current information must be provided (Suhong and Binshan 2006).

Chang and Ho (2006) showed that one of the major attractions in commercial use of the web is the ability to access information more easily. Jake and Daniel (2010) pointed out that accessibility to service provider/supplier sites can create better levels of responsiveness to customers. Furthermore, if the firm website is easily accessible, customers can access information faster, encouraging them to continue connecting back to the firm website, so they can frequently check firm information (Nwakanma et al, 2014). In addition, to make websites most accessible, firms have to pay particular attention to creating flexible ways to disseminate information resources to their customers (IBM, 2011). Nor et al., (2012) cleared that online information sharing has been conceptualized in different ways; one of the popular issues mentioned by researchers is information sharing via a virtual community (Jake, and Daniel, 2010). Whitman, and Mattord, (2008) indicated that firms can create a virtual community to serve the needs for communication and information sharing among customers who have common interests or experience, e.g., via the bulletin board. Virtual communities can be used to attract customers and enhance their involvement with the firm (Chang, and Ho, (2006). Firms can now interact with customers on a global scale, in real-time, and using two-way interaction (Miltgen et al, 2013). Information sharing among customers can help enhance customer service by increasing convenience, through a collection of service performance information to support management decisions, and by making possible the offering of more customized products or extra services according to customer needs (Veenstra et al, 2008; Kumar, 2004; Lacity et al, 2009). Thus, the researcher hypothesizes the following:

H3: Service level has a positive impact on the adoption of ITRM.

Regulatory compliance

Nwakanma et al., (2014) indicated that a great number of the laws and regulations created recently in reaction to corporate scandals address the information security issue and pressure organizations to effectively assess information security risk and/or to implement security measures (Overbeek et al., 2011). Jake and Daniel, (2010) assured that compliance is mandatory for most of these regulations. Hotels companies today are being asked to comply with more regulations, covering more aspects of the hotel, than ever before (Law and Hsu, 2006). Many of these regulations are based on the protection of the hotels' information assets, or information they hold on behalf of others in the course of their business (O'Connor, 2007). Protecting these assets and demonstrating how that protection forms part of the enterprise strategy is becoming a core component of any compliance program (Nwakanma et al, 2014). Ongoing reforms to legislation and regulation in the area of information security must be continually monitored by hotels to ensure that regulatory compliance is maintained (Overbeek et al., 2011). But note that compliance isn't the same as security, securing information may make hotel compliant, but being compliant doesn't necessarily make hotel secure. Thus, the researcher hypothesizes the following:

H4: Regulatory compliance has a positive impact on the adoption of ITRM.

Security

Law and Hsu, (2006) showed that the hotel industry has been very attractive for hackers and fraudsters because of low computer and network security practices used by hotel staff. In the USA upwards of 55% of credit card fraud comes from the hospitality industry, giving the fact that hoteliers have the responsibility of protecting their customers (Miltgen et al., 2013). So, hoteliers should view information technology risk management as an invaluable and expected guest service (Chen and Dibb, 2010). O'Connor, (2007) cleared that there are many Information Security Risk Events such as Organized crime or terrorist groups using identity theft or other forms of compromise, Storms, tornados, floods, acts of God or intentional acts such as arson that may disrupt, damage, or destroy information assets and services, fraudsters who simply use IT while exploiting control weaknesses in the IT-enabled business processes, or directly exploit control weaknesses within the IT systems themselves, or exploit other control weaknesses involving printed or other information rather than computer data and systems, Hackers, ranging from evil Black Hats down to Gray or White Hats, Unethical competitors, foreign powers targeting commercial and national secrets through espionage, social engineering, network penetration, human errors, misuse system security functions, or ignore security policies and good practices (European Network and Information Security Agency, 2008). these risks lead to Direct financial losses, lost sales, decline in public confidence, Loss of competitive advantage, Loss of privacy, Reputational damage causing brand devaluation, lost customers, customer complaints and defection, Jail time, fines, licenses suspension, Reduced profitability, growth, and compensation caused by the background noise of security incidents, control costs, and unspecified doubts about the effectiveness of security (Jones, 2005; Collins,2008; Jake and Daniel, 2010; and Alberts and Dorofee, 2002).

According to Palvia, (2009), trust is emphasized more in an e-commerce context than in a traditional one because e-vendors' unethical behaviours carry a high risk, and sometimes consumers perceive a degree of social complexity in online transactions. Indeed, higher e-trust levels may lead to a higher e-loyalty toward a website and more use IT applications. Generally, customers' trust of (IT) adoption found in literature has been categorized into five main groups; security/privacy, social presence, credibility, benevolence, and website's attitude according to (Doong et al., 2011).

Gilbert et al., (2004) explained that the development of Internet technology, hotel websites generally provide a hotel's information, online reservations, and newsletters for customers. Hotel websites collect customers' personal data when providing hotel services and other information, while such collected information greatly contributes to the hotel's marketing and promotional strategies, the hotel must preferentially protect customers' data to sustain integrity. For this purpose, most hotels establish protocols pertaining to customers' privacy and security. Some examples of the protocols include self-regulation based on government guidelines and protection from outright legislation (O'Connor, 2007). So, customer can book room from home by using online security to protect their privacy and financial information, unlike the past where personal information may be given to a middle party such as travel agent, where there is risk of information leaked out or sold to others, However there is no 100% guarantee that using online security can 100% protect customers privacy as technology improves more security measures are taken to protect their privacy (Miltgen et al, 2013).

Ultimately, Drivers of (ITRM) adoption found in literature have been categorised into five main groups; business facilitation, Cost reduction & productivity, service level, regulatory compliance, and security according to (Erzurumlu et al, 2013 and Urciuoli et al, 2013). Table (1) illustrates the drivers of (ITRM). Thus, the researcher hypothesizes the following:

Table 1. Drivers of (ITRM) adoption

Drivers	Researchers
Business facilitation	
Reach global customers.	Gilbert et al, 2004; Jake and Daniel, 2010
Tighter supplier relationships.	Jake and Daniel, 2010; Liao & Cheung, 2001
More productive partnerships.	Hesketh, 2009; Bwalya, 2009
Outsourcing.	Bwalya, 2009; Paraskevas, and Buahlis, 2003; Aron et al, 2005
Sustainable competitive advantage.	Veenstra et al, 2008; Kumar, 2004; Lacity et al, 2009; Bilgihan et al, 2011; Westerman and Hunter, 2007
Cost reduction & productivity	
Eliminate redundant administration tasks.	Bharosa et al, 2011
Reduce helpdesk burden.	Baida et al, 2007; Jake and Daniel, 2010
Reduce process cycle time.	Hasan, 2003; Chen and Dibb, 2010
Service level	
Information quality.	Chang, 2006; Suhong and Binshan, 2006
Focused, personalized content.	Liao and Cheung, 2001; O'Connor, 2007
Comprehensive profile view.	Benaroch et al, 2006
Service meets commitments to customers.	Angriawan et al, 2008; Flaviàn and Guinafu, 2006
Regulatory compliance	
Comply with international data privacy regulation.	Overbeek et al, 2011; Jake and Daniel, 2010
Reduce customers' complaints.	Overbeek et al, 2011; Jake and Daniel, 2010
Reduce fines and legal costs.	Overbeek et al, 2011; Jake and Daniel, 2010
Security	
Consistent information security policy.	Roca et al, 2010; Chen and Dibb, 2010
Managing risk or reducing enterprise risk.	Benaroch et al, 2006; Flaviàn and Guinafu, 2006; O'Connor, 2007
Consistent identity data.	Bart et al, 2005; Beachboard and Cole, 2008

H5: Security has a positive impact on the adoption of ITRM.

Boundaries of Information Technology Risk Management (ITRM) Adoption

Although ITRM process has a great role and importance in the hotels sector, but Stoneburner, (2002) indicated that there are practical challenges for any enterprises to adopt this process represented in how to organize and run an efficient and effective information security program for persistent, high-grade protection and, in turn, how to actually (i) identify IT risk events, (ii) assess the IT risks, and (iii) mitigate ("manage") the IT environment to reduce IT risks.

According to Nwakanma et al., (2014) as well as Abou-Shouk et al., (2013) various hotel face four types of Boundaries, namely resources limitations and internal boundaries which refer to hotel resources or capabilities and the hotel's approach and external barriers which are related to factors such as the environment, infrastructure, cultural and social barriers and legal, regulatory and political barriers. In addition to, adopted ITRM attributes represented in "Trial ability, Complexity, Reversibility, Modifiability, Observability, and Suitability".

Resources Limitations and Internal Boundaries

Collins and Cobanoglu (2008) summarized resources limitations and internal boundaries are ITRM readiness factor which refers to the level of ITRM usage within the hotel. This category includes hardware and software compatibility, system interrelation, data conversion, troubles in updating and maintenance, ITRM infrastructure and migration from legacy system (Golshan and Rasid, 2012; McQueen, 2008; Gilbert et al., 2004). The second factor category refers to the hotel industry financial readiness (Webster et al., 2006). Jake and Daniel, (2010) argued that financial readiness is reflected by the top management's willingness to fund an ITRM adoption. The major cost of ITRM adoption is the cost of educating and training management and employees to use ITRM (Dyerson and Harindranath, 2007). Another concern of the top management is the losses of productivity due to abuse by ITRM staff readiness factor category refer to the IT and Risk management literacy level inside the hotel (Veenstra et al, 2008). Similarly, Management support is another important factor category. Law and Hsu, (2006) stated that this category represents the extent to which the top management recognizes the importance of ITRM adoption. The recognition is reflected in the support and leadership of top management executives in ITRM adoption process (Westerman and Hunter, 2007). Hence, the management level should not only support the ITRM applications but also understand how to align ITRM with the business strategies (Jake and Daniel, 2010). In addition, the hotel internal culture refers to the collaboration level and style of the different managerial levels and team spirit and dedication to the business processes (Gilbert et al, 2004). Azdel et al, (2012) cleared that hotel size is one of the main reasons for not adopting ITRM. Large hotel has more resources and infrastructure to facilitate implementation of ITRM adoption projects (Rosemary et al, 2012). The anticipated financial and managerial benefits are important factors affecting the adoption (IBM, 2011). Thus, the researcher hypothesizes the following:

H6: Resources Limitations have a negative impact on the adoption of ITRM.

H7: Internal Boundaries have a negative impact on the adoption of ITRM.

External Boundaries

Chen and McQueen (2008) summarized external barriers are uncertainty factor may be present because the transacting parties have incomplete or imperfect information, or because there are numerous unimaginable possibilities, which may arise during the course of the transaction. Kim (2005) asserted that lack of trust is one of the most important future challenges for adopting ITRM within hotels because of customer fears of higher risk in using the internet as a channel for financial transactions (Jake and Daniel, 2010). Customers are also worried that technology-based service delivery systems will not work as expected, and lack confidence that problems can be solved quickly (Chen and Dibb, 2010). Ghamatrasa, (2006) found that transaction risk occurs when online markets fail to assure that service will be delivered with sufficient quality. Frequently, slow response time after the Internet interaction leads to a delay of service delivery and causes customers to be unsure that the transaction was completed (Bart et al., 2005).

Stoneburner., (2002) stated that customer protection is a major legal issue associated with using the Internet, this issue can cover unfair and bluffy deals practices by service providers or suppliers, unauthorized access and usage by others (e.g., hackers). Customer protection is important for building customer confidence over the Internet because there is no personal contact, and there is a great likelihood for having problems via the internet (Lim, 2008). In addition, fair liability is a key legal issue (Overbeek et al., 2011). Gefen et al., (2003) mentioned that responsibility must be set when financial losses occur in Internet transactions.

Hassadoust and Farzaneh (2011) mentioned that many hotels are still wary of making extensive transactions over the web because of the lack of supporting law about electronic documents as legal evidence (Law and Hsu 2006). Frequently it is unclear whether electronic documents and records are acceptable as sufficient

evidence of transactions (Bigdeli and de Cesare, 2011). Overbeek et al; (2011) showed that some customers will not accept online transaction records due to the difficulties in providing authentication of electronic transmissions. Stanton et al., (2005) stated that these sorts of issues cause customers to question about the legal basis for using the Internet in commercial transactions in terms of the jurisdiction of the courts and dispute resolution procedures (Flaviàn and Guinalú, 2006).

Jake and Daniel (2010) indicated that emergence of a global economy calls for information systems that can support both producing and selling goods in many different countries. Azdel et al., (2012) asserted that going global also bring in global competitive pressures, together with continuous innovations. Many organizations are forced to rethink how they do business (Miltgen et al, 2013). Further, there are language, cultural, and political differences among countries in which the hotel going global must operate. Nwakanma et al., (2014) mentioned that such a hotel must develop global hardware, software, and communications standards and create cross-cultural accounting and reporting structures. Azdel et al, (2012) cleared that hotels should develop an information architecture and information technology infrastructure that supports their business goals. Lim (2008) said that hotels also should use ITRM to enhance their information processing, operations, and decision making, and to design, produce, deliver, and maintain new products and should make money doing so. Jake and Daniel, (2010) stated that organization's management needs to gauge whether or not they are receiving the kind of return on investment on ITRM that they should (Bigdeli and de Cesare, 2011). Either investment in IT may not necessarily guarantee returns or it may not be easy to determine the returns (Overbeek et al., 2011). Finally, hotels should ensure that their information systems are used in an ethically and socially responsible manner (O'Connor, 2007). However, they have also introduced new problems and challenges of which managers should be aware (Law and Hsu, 2006). There are problems of security and control, privacy, use of systems to monitor quality assurance, accuracy, reliability, and timeliness of information etc (Miltgen et al, 2013). Information systems should be designed in such a way that people can control them in order to deal with the problems (Abou-Shouk et al., (2013).

Ultimately, boundaries of Information Technology Risk Management (ITRM) Adoption are divided into four main categories in this study; internal, external, ITRM attributes, and resources limitations Boundaries according to (Abou-Shouk et al., 2013).Table 2 clears the Boundaries of (ITRM) adoption. Thus, the researcher hypothesizes the following:

H8: External Boundaries have a negative impact on the adoption of ITRM.

Information Technology Risk Management Attributes

Lim (2008) defined complexity as the degree to which an ITRM adoption is perceived as relatively difficult to understand and use. As Rogers, (2003) stated complexity is negatively correlated with the rate of adoption. Thus, the excessive complexity of an ITRM system is an important obstacle in its adoption (Azam, 2007). So, ITRM system must be easy to use to be useful (Beckinsale and Levy, 2004). Dyerson and Harindranath, (2007) defines perceived ease of use as the degree to which a person believes that using a particular system would be free from effort. Customers also will perceive the system difficult to use for an intended task as not useful (Azdel et al., 2012). MacGregor and Vrazalic, (2005) asserted that new technology requires users to quickly learn it. Hence, one part of the final attitude towards the technology is affected by the degree of effort required to learn and comprehend its functionalities (Jake and Daniel, 2010). Altuntus et al., (2011) indicated that business environments today progress and change rapidly to keep up with evolving markets. Most business processes are supported by software systems and as the business processes change, the systems need to be modified in order to continue supporting the processes (Nwakanma et al, 2014). Modifications include extending, deleting, adapting, and restructuring the enterprise systems (Abou-Shouk et al, 2013). The world around most software systems is constantly changing; this requires software systems to be modified several times after their initial development (A´lvarez et al, 2007). Ayeh (2006) assured that maintenance cost generally presents the major cost factor during the lifecycle of a software system. Consequently, when developing a software system, stakeholders are very interested that the system is designed in such a way that future changes will be relatively easy to implement since this decreases maintenance cost (Kartiwi and MacGregor, 2007).

Tucker, (2008) stated that compatibility is the degree to which an ITRM adoption is perceived as consistent with the current values, past experiences, and needs of potential adopters. Rogers, (2003) asserted a positive relationship between an individual's prior compatible experiences and the new information technology risk management acceptance (Kendall et al., 2001). They found that the extent of prior experience with similar

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technologies was positively associated with an ease of use belief about information technology risk management adoption (Beckinsale and Levy, 2004). According to MacGregor and Vrazalic, (2005), trialability is the degree to which an ITRM adoption may be experimented with on a limited basis. Also, trialability is positively correlated with the rate of adoption (Azam, 2007). The more an ITRM is tried, the faster its adoption is (Rosemary et al, 2012). Lai and Samad, (2011) stated that the perceived belief of trialability connotes a risk-free exploration of the technology. That is trialability measures the extent to which potential adopters perceive that they have an opportunity to experiment with the innovation prior to the usage (Hesketh, 2009). Chen and McQueen, (2008) defined observability as the degree to which the results of an ITRM adoption are visible to others. Thus, the researcher hypothesizes the following:

H9: ITRM Attributes have a negative impact on the adoption of ITRM.

Table 2. Boundaries of (ITRM) adoption

Boundaries	Researchers
Internal Boundaries	
High-financial cost of ITRM adoption and maintenance.	Collins and Cobanoglu, 2008; Ghamatrasa, 2006; Webster et al, 2006.
Lack of staff and Managers' knowledge, awareness and experience of ITRM benefits.	Golshan and Rasid, 2012; McQueen, 2008; Gilbert et al, 2004; Jake and Daniel, 2010; Stoneburner, 2002.
Resistance of staff towards IT applications.	Altuntus et al, 2011; Simmons et al, 2008; Collins and Cobanoglu, 2008.
Inadequate of ITRM training programs.	Camison, 2000; Dyerson and Harindranath, 2007.
Lack of IT assets.	Hesketh, 2009; Bwalya, 2009; Lai and Samad, 2011; Kim, 2005.
Lack of support from top management.	Bwalya, 2009; Paraskevas, and Buahlis, 2003; Aron et al, 2005.
Inadequate planning and preparedness for unpredictable, unusual or extreme information security incidents.	Chen and Dibb, 2010; Law and Hsu, 2006; Veenstra et al, 2008; Lacity et al,2009;Bilgihan et al,2011; Westerman and Hunter,2007.
External Boundaries	
Lack of trust in commercial exchange.	Kim, 2005; Chen and McQueen, 2008; Overbeek et al, 2011.
Regulations and rules of the legal system.	Law and Hsu, 2006; Jake and Daniel, 2010; Stoneburner, 2002.
Lack of local authorities' advice and support.	Chen and Dibb, 2010; Ghamatrasa, 2006; Gefen et al, 2003.
The availability of Internet access.	Bigdeli and de Cesare, 2011; Chen and McQueen, 2008.
Customer trust and satisfaction.	Ghamatrasa, 2006 Bart et al,2005; Beachboard and Cole,2008
Ignorance, carelessness, negligence, or idle curiosity by users.	A Alvarez et al, 2007; Stanton et al, 2005; Stoneburner, 2002.
Lack of credit card security understanding by customers.	Lim, 2008; Flaviàn and Guinaflu,2006; Gefen et al,2003

ITRM attributes

Trial ability (the technology can be adopted in a trial).	Azam, 2007; Kendall et al., 2001; MacGregor and Vrazalic, 2005
Complexity (technology is not easy use).	Lim, 2008; Dyerson and Harindranath, 2007; Beckinsale and Levy, 2004.
Reversibility (technology can be discontinued easily).	MacGregor and Vrazalic, 2005. Jake and Daniel, 2010; Altuntus et al, 2011.
Modifiability (technology can be updated and modified over time).	Azam, 2007; Abou-Shouk et al, 2013.
Observability (adopters can observe and measure technology impacts on their firms).	A´lvarez et al., 2007; Ayeh, 2006; Kartiwi and MacGregor, 2007;
Suitability (technology is not suitable to culture and readiness of customers, suppliers or partners).	Tucker, 2008.

Resources limitations

Inadequate financial resources.	Collins and Cobanoglu, 2008; Ghamatrasa, 2006; Webster et al, 2006.
High costs of technology adoption: technologies and equipment.	Abou-Shouk et al, 2013; Ayeh, 2006; Chen and McQueen, 2008; Ghamatrasa, 2006
High cost of developing and managing websites.	Abou-Shouk et al, 2013; Collins and Cobanoglu, 2008.
ITRM implementation and maintenance.	Jake and Daniel, 2010; Kim, 2009.

Information Technology and Hotel Market Share

According to Emarketer, (2005), The number of travellers who use the internet to plan and book trips continues to grow at a rapid rate, according to two reports by the Travel Industry Association of America (TIA). In 2000, more than 59 million online travellers used the internet for information on destinations or to check prices or schedules, growing 395 percent over the last three years. So, information technologies crucially impact customers' knowledge attitudes and behaviours.

The hotel industry is also experiencing increased globalization, competition, higher customer turnover, growing customer acquisition costs and rising customer expectations, meaning that hotels' performance and competitiveness is significantly dependent on their ability to satisfy customers efficiently and effectively (e.g. Hassadoust, and Farzaneh, 2011). The online systems are becoming the main communication channel for the Business to Consumer market in the hotel industry. Therefore, hotels must exploit the online systems in order to develop trust and increase their market share. According to Mamaghani, (2009) Information Technology is the single greatest force affecting change in the hospitality industry. Iris (2012) attributes this trend to both the rapid advances in technology as well as the increasing demands of the customers who look forward to flexible, specialized, accessible and interactive products and communication with principals. The IT based products and processes help the hotels to enhance the operating efficiency, improve the service experience as well as provide a means to access markets on a global basis. The hotel level competitiveness generally refers to the ability of the hotel to increase in size, expand its global market share and its profit (Tsai et al., 2009). And according to QUN (2010) and other economists, market share refers to a company's sales revenue from that market divided by the total sales revenue available in that market. The gaining and retention of market share or customer base are the main goal of any service operator (Pongsak and Sunil, 2007). Murat and Bilgihan (2012) agreed with Tsai, et al., (2009) that a large body of empirical studies focused on the technological progress of firms. These studies have established that the level of the technological progress of a company contributed to its economic performance and increasing market share. Thus, the researcher hypothesizes the following:

H10: ITRM has a positive impact on the hotel market share.

RESEARCH METHOD

The Questionnaire

Data for this study were gathered using a questionnaire with a 5-point Likert-style scale (“1=strongly disagree” to “5=strongly agree”). Questionnaire items were adapted from previous studies (i.e., Chen and Dibb, 2010; Keeling et al, 2010; Gupta et al, 2009; Bilgihan et al, 2011; Mohd et al, 2007; Jake and Daniel, 2010; Bharosa et al, 2011; Angriawan et al, 2008; Overbeek et al, 2011; Beachboard and Cole, 2008; Collins and Cobanoglu, 2008; Golshan and Rasid, 2012; Lai and Samad, 2011; Lim, 2008; Abou-Shouk et al, 2013). The questionnaire was pre-tested in five- star hotels to evaluate its validity and reliability.

Thirty five items were used to measure the eleven constructs of the hypothesized model: ‘business facilitation’ (measured by 5 items), ‘cost reduction and productivity’ (3 items), ‘service level’ (4 items), ‘Regulatory compliance’ (3 items), ‘security’ (3 items), ‘hotel internal environment’ (7 items), ‘hotel external environment’ (7 items), ‘ITRM attributes’ (6 items), ‘resource limitation’ (4 items), ‘information technology risk management (ITRM)’ (9 items), and ‘hotel market share’ (2 items). Personal data were also included in the form (i.e., gender, experience, education level, and the usage time of internet).

Validity and Reliability

The questionnaire was designed in order to collect data from hotels' employees. For validity concerns, the survey was piloted on a sample of 40 employees to check its face and content validity. The comments of respondents related to language and design of questionnaire were considered in the final form. To investigate the content validity, corrected item–total correlation statistics were used to determine the retained variables (Netemeyer et al., 2003). For reliability of constructs, Cronbach's alpha coefficient was computed and exceeded 0.70 for all constructs reflecting reliable results (Hair et al., 2010).

Sample Size

Four hundred questionnaires were sent out for data collection from five- star hotels in Cairo. 20 out of 33 five star hotels were randomly selected. The Questionnaires were randomly distributed among employees. Of 400 distributed questionnaires, 257 were found usable. Accordingly, the response was 0.64 which is sufficient, see Table 3.

Analysis Technique

Structural equation modelling (SEM), an advanced multivariate technique, was employed to investigate the causal relationships between drivers and boundaries constructs and ITRM of the hotel. SEM allows the researcher to measure the relationships between the latent constructs and including measurement errors. SEM establishes both measurement and structural models to be used. While the structural model measures the causal relationship between independent and dependent latent variables, the measurement model measures the relationships between the constructs and their indicators. Warp PLS (version 4) software was used in the analysis.

For the measurement model, Average variance extracted (AVE) should be calculated. It is recommended that each latent variable should account for more than 50% of the variance explained to confirm convergent validity (Fornell and Larcker, 1981). Discriminant validity is confirmed if the square root of AVEs is greater than the correlations among constructs (Kock, 2012). Considering Cronbach's alpha, and composite reliability statistics that should be greater than 0.70 for reliable findings (Hair et al, 2010).

RESEARCH FINDINGS

Descriptive Statistics

The descriptive statistics showed that 60.3% of the respondents are males while 39.7% of them are females. 18.7% of the respondents are under 5 years' experience, 19.8% of them are between 5 and 10 years, 31.1% are between 10 and 15 years, and 30.4% are more than 15 years' experience. 77.6% had university level of education, 11.6% secondary level, and 10.8% were post-graduate. 65% of respondents use the Internet regularly, and 29.2% often use it, and 5.8% use it rarely (Table 4).

TABLE 4 Descriptive Statistics of the Respondents

Description		Frequency	Per cent
Gender:	Male	155	60.3
	Female	102	39.7
Experience:	Under 5 years	48	18.7
	5 to 10 years	51	19.8
	10 to 15 years	80	31.1
	More than 15 years	78	30.4
Education level:	Secondary or Technical education	78	11.6
	University education	191	77.6
	Post-graduate study	34	10.8
Using the Internet:	On a regular basis (> 4 times a week)	167	65
	Often (3-4 times a week)	75	29.2
	Rarely (1-2 times a week)	15	5.8
	Very rarely (0-1 times a week)	0	0
Occupation	Security	76	29.6
	Sales & marketing	75	29.2
	Front office	79	30.7
	Engineering	27	10.5

The Measurement Model

To test the measurement model, Table (2) outlines the construct loadings, average variance extracted (AVE), square root AVE (SQRT AVE), Cronbach's alpha, and composite reliability (Com. Rel.). Looking at AVE statistics, the revealed values of all constructs are greater than 0.50 which is evident of convergent validity. Discriminant validity is confirmed where the square root of AVEs is greater than the correlations among constructs. In total and from Table 5, convergent and discriminant validities are evident and the measurement model is valid. Considering Cronbach's alpha, and composite reliability statistics, all values of Cronbach's alpha and composite reliability are greater than 0.70 and the findings of the measurement model are reliable.

TABLE 5: Measurement Model

<i>Dependent Constructs (reflective)</i>		<i>Loadings</i>	<i>AVE</i>	<i>SQRT AVE</i>	<i>Cronbach's alpha</i>	<i>Com. Rel.</i>
Business facilitation	BF1	0.793	0.598	0.773	0.759	0.850
	BF2	0.884				
	BF3	0.470				
	BF4	0.872				
	BF5	0.534				
Cost reduction & productivity	CR1	0.648	0.504	0.710	0.750	0.834
	CR2	0.619				
	CR3	0.692				
Service level	SL1	0.806	0.733	0.856	0.817	0.891
	SL2	0.876				
	SL3	0.810				
	SL4	0.489				
Regulatory compliance	RC1	0.803	0.631	0.794	0.707	0.837
	RC2	0.788				
	RC3	0.791				
Security	Sec1	0.760	0.664	0.815	0.743	0.855
	Sec2	0.899				
	Sec3	0.779				
Business internal environment	BIE1	0.869	0.638	0.799	0.801	0.873
	BIE2	0.930				
	BIE3	0.621				
	BIE4	0.740				
	BIE5	0.611				
	BIE6	0.744				
	BIE7	0.556				
ITRM attributes	ITRMA1	0.423	0.556	0.733	0.811	0.801
	ITRMA2	0.543				

	ITRMA3	0.754				
	ITRMA4	0.744				
	ITRMA5	0.821				
	ITRMA6	0.455				
Resources limitations	RL1	0.444	0.653	0.832	0.766	0.777
	RL2	0.711				
	RL3	0.654				
	RL4	0.592				
business external environment	BEE1	0.661	0.659	0.812	0.733	0.851
	BEE2	0.908				
	BEE3	0.845				
	BEE4	0.576				
	BEE5	0.678				
	BEE6	0.611				
	BEE7	0.632				
ITRM	ITRM1	0.885	0.783	0.885	0.723	0.878
	ITRM2	0.885				
	ITRM3	0.622				
	ITRM4	0.484				
	ITRM5	0.733				
	ITRM6	0.674				
	ITRM7	0.823				
	ITRM8	0.777				
	ITRM9	0.634				
Market share	MS1	0.917	0.841	0.917	0.811	0.914
	MS2	0.917				

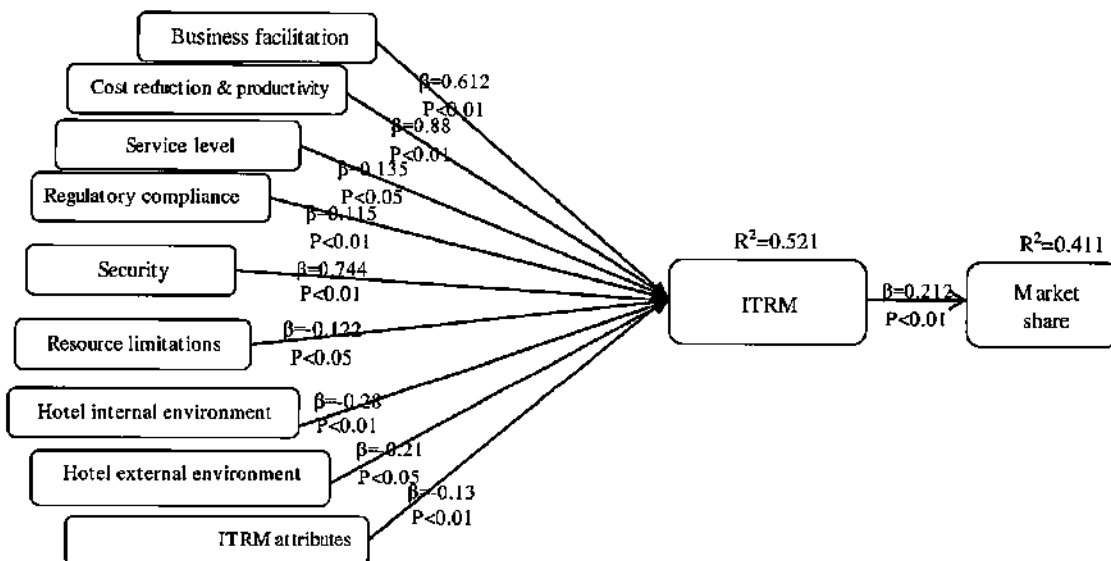
Note: AVE: average variance extracted, SQRT AVE: square root, Com. Rel.: composite reliability

The Structural Model

The structural model is used to measure the causal relationships among the constructs. Figure 2 depicts the causal relationships and beta coefficients of independent variables (drivers and boundaries) on the mediator (ITRM). The model shows good fit of data. The Average path coefficient (APC)=0.164, $P<0.001$, Average R-squared (ARS)=0.611, $P<0.001$, Average adjusted R-squared (AARS)=0.621, $P<0.001$, Average block VIF (AVIF)=2.133 (ideal fit), Average full collinearity VIF (AFVIF)=2.622 (ideal fit), TenenhausGoF (GoF)=0.677 (large), Sympton's paradox ratio (SPR)=0.777 (acceptable), R-squared contribution ratio (RSCR)=0.978 (acceptable), Statistical suppression ratio (SSR)=0.813 (acceptable), and Nonlinear bivariate causality direction ratio (NLBCDR)=1.000 (acceptable).

It is found that drivers and boundaries have a significant effect on the implementation of information technology risk management (ITRM) within five-star hotels. The findings revealed that the ten hypotheses measured in the study are supported and the factors involved in this study are significantly affecting ITRM of the hotel. However, the factors of the drivers and boundaries (independent variables) have a different effect on ITRM of the hotel (mediator). Some factors were found positively affecting ITRM within hotels while some others were found negatively affecting it. The interpretation of positive and negative effects reflects how hotel's employees perceive the drivers and boundaries of the adoption of ITRM and information provided on the Egyptian hotels (Figure 2).

FIGURE 2 The Structural Model of the Drivers and Boundaries Features Affecting Hotel ITRM



Respondents perceive the five constructs of drivers to have a positive effect on the effectiveness of the ITRM. The business facilitation content is positively affecting the hotel effectiveness of ITRM ($\beta=0.612$ and $p<0.01$) (H1). Furthermore, the cost reduction and productivity drivers are found positively affecting the implementation of the hotel ITRM ($\beta=0.88$ and $p<0.01$) (H2), and service level ($\beta=0.135$ and $p<0.05$) (H3). The regulatory compliance has a positive impact on the ITRM implementation ($\beta=0.115$ and $p<0.01$) (H4). The security drivers were found to have a positive effect on the hotel ITRM implementation and business ($\beta=0.744$ and $p<0.01$) (H5).

On the other hand, four boundaries constructs were perceived negatively affecting the ITRM adoption, these are: resource limitations ($\beta=-0.122$ and $p<0.05$) (H6), hotel internal environment ($\beta=-0.28$ and $p<0.01$) (H7), hotel external environment of the hotel ($\beta=-0.21$ and $p<0.05$) (H8), and ITRM attributes ($\beta=-0.13$ and $p<0.01$) (H9). Therefore, the nine hypotheses are statistically supported and the IT drivers and boundaries are significantly affecting the adoption of hotel ITRM. Drivers and boundaries explain 52% of the variance in the effectiveness of hotel ITRM ($R^2=0.521$). Furthermore, the information technology risk management

(mediator) was found significantly affecting hotel market share (outcome variable) ($\beta=0.212$ and $p<0.01$) (H10).

DISCUSSION

Studying the drivers and boundaries of Information Technology Risk Management, ITRM functions are an important concern for hotels in a fierce competition among tourism enterprises to satisfy, retain, and expand their customers. Hotels are important sectors of the hospitality industry that seek to improve their image and increase their customer-base. In this study, hotel employees in Egypt have expressed their opinions in nine critical components of ITRM drivers and boundaries. Cost reduction and productivity are ranked first positively affecting the adoption of ITRM. This is reflected in the elimination of redundant administration tasks, the reduction of help desk burden, and the reduction of process cycle time. Employees scored a mean value of (4.89) on this variable meaning that they are very satisfied with these features on the Egyptian hotel. Security is a crucial factor for ITRM adoption; fortunately, it is a result of high level of consistent information security policy of the hotel IT data applied in the Egyptian hotels, particularly in managing risk or reducing enterprise risk. Security of a hotel website and IT assets is a feature of success for ITRM adoption as claimed by Law and Hsu (2006) who noted that Information security spans the areas of confidentiality, integrity, and availability, in addition to reflecting the hotel cares about their customers.

The business facilitation construct comes next affecting the ITRM adoption of a hotel. Having a mean value of (4.71) means that employees are satisfied with the IT business facility of Egyptian hotel. The business facilitation concept includes the easiness of reaching global customers, developing tighter supplier relationships, developing more productive partnerships with tourism enterprises, outsourcing and the ability to achieve sustainable competitive advantage. This finding is in line with Bilgihan et al, (2011) agreed with Alberts and Dorofee, (2002) that ITRM adoption, a hotel not only will be able to reduce the information risks exposure it faces, but also Business facilitation could be generated generally.

Service level is ranked fourth in the list of factors affecting the ITRM adoption of a hotel. The mean value of employees on this component is (4.55) which means that employees are very satisfied with IT service level of Egyptian hotels. This includes information content quality, focused personalized content, comprehensive profile view, and service meets commitments to customers. Although this component is vital for any IT application, some enterprises might believe that crowded IT content conveys many details and it is useful for customers which lead to customers feeling lost in the hotel IT content. However, the clear structure of the IT service level and detailed information are a crucial success factor. The service level is one of five features of ITRM adoption as claimed by to Angriawan et al, (2008). In addition, ITRM adoption engages service quality improving (Chang, 2006).

The next factor affecting the ITRM adoption of hotel is its regulatory compliance content. This construct includes a number of items: these are complying with international data privacy regulation, reduction of customers' complaints, and decreasing fines and legal costs. Having a mean value of (4.34) means that employees are solidly satisfied with the regulatory compliance content of IT in the Egyptian hotels. This construct reflects the importance of regulatory compliance application on the hotel IT content and how it helps customers in their decision-making process. In addition, it affects their decision in selecting their holiday hotel or moving to search for another one. This finding is consistent with previous studies conducted by Overbeek et al, (2011) who mentioned that customers' perceive a hotel to be more reliable with their personal and financial data are well-protected on the hotel website, as well as provide a means to guarantees the privacy of customer transactions (Law and Hsu, 2006).

On the other hand, the results showed the defects in the Egyptian hotel ITRM adoption. The factors negatively perceived by employees are resource limitation, hotel internal environment, hotel external environment, and adopted technology attributes. Hotel internal environment is ranked first negatively affecting the adoption of ITRM. Employees believe that the hotel internal boundaries are negatively affecting the adoption of ITRM, This construct includes a number of items: these are high cost of ITRM adoption and maintenance, lack of staff and managers' knowledge, awareness and experience of ITRM benefits, resistance of staff towards IT applications, inadequate ITRM training programs, lack of IT assets, lack of support from top management, inadequate planning and preparedness for unpredictable, unusual or extreme information security incidents, and lack of staff proficient English in time of neglecting the local

language in technology implementation policies. The mean value of employees on this component is (3.61) which mean that employees are recognized hotel internal environment of Egyptian hotels.

Furthermore, the second negative perception of employees towards the hotel external environment implies unpleasing appeal. This factor is crucial for hotel managers to improve the ITRM adoption of their hotel and staying ahead of competitors. The mean value of employees on this component is (3.51) which mean that employees slightly accept external boundaries of Egyptian hotels. This construct includes lack of trust in commercial exchange, customer trust and satisfaction, ignorance, carelessness, negligence, or idle curiosity by users, and lack of credit card security understanding by customers.

ITRM attributes are ranked third in the list of factors negatively affecting the ITRM adoption of a hotel. This includes trialability, complexity, reversibility, modifiability, Observability and suitability. This could be addressed to IT producers who should make it available in the trial, easy to use and adapt it to fit the nature of services. This finding is consistent with previous studies conducted by Lim, (2008) who mentioned that attributes of ITRM used at hotels should be used easily. In addition, it can be updated and modified over time (Altuntas et al, 2011), as well as adopters can observe and measure technology impacts on their hotels according to (Abou-Shouk et al, 2013). Similarly, Tucker (2008) have found that technology should be suitable to culture and readiness of customers, suppliers or partners.

Resource limitation is ranked fourth in the list of factors negatively affecting the ITRM adoption of a hotel. This includes inadequate financial resources, high costs of technology adoption: technologies and equipment, high cost of developing and managing websites, and ITRM implementation and maintenance. This finding is consistent with previous studies conducted by Abou-Shouk et al, (2013) who mentioned that resource limitation is one of the main barriers affect of the ITRM adoption of a hotel. In addition, resource limitation includes high costs of technology adoption and its maintenance according to (Collins and Cobanoglu, 2008). Similarly, Kim (2009) have found that the high cost of developing and managing IT security systems considers also a crucial barrier to adopt ITRM at hotels.

It is also clear that the ITRM of a hotel increases the potential intention of hotel market share in terms of increasing hotel reservation sales, and achieving high profitability and growth within hospitality industry. ITRM construct includes, assuring the payment security on the website, customer personal and financial data are well-protected on the website, The website guarantees the privacy of customer transactions, IT assets are well-protected, assuring the election, application, check, and security assessment of safeguards, reviewing process considers both effectiveness and efficiency, inclusive impact on the hotel operations, actuating new corrective processes, the website is prepared to solve customers' problems, and monitoring the environment for effectiveness and efficiency. The mean value of employees' opinions on this component is (4.88) which means that employees are very satisfied with IT ITRM policies of Egyptian hotels. In other words, a high level of ITRM gives a credible image to customers about the hotel services. Keeling et al, (2010) agreed with Angriawan and Thakur (2008), that technological progress and IT security system at hotel not only will be able to reduce the IT risks exposure it faces, but also can enhance its economic performance and increase the hotel market share (Murat and Bilgihan, 2012; Tsai et al., 2009).

CONCLUSION AND LIMITATIONS

This study investigated the factors affecting hotel ITRM adoption and the effect of ITRM on the market share intention of hotels. The study has tested ten hypotheses of how these factors (business facilitation, cost reduction and productivity, service level, regulatory compliance, security, ITRM attributes, resource limitations, hotel internal environment, and hotel external environment) affect the dependent variable (ITRM adoption within hotel) and how ITRM affects hotel market share intention. The study has revealed very useful results in the way it evaluated the perceptions of employees on the hotel ITRM and described the factors that hotels have succeeded to offer in their ITRM. Meanwhile, the study has provided general managers and marketing managers in hotels with some feedback on the overall perception of their ITRM from employees' viewpoint. The factors negatively affecting the ITRM of the hotel need to be addressed seriously by marketing managers particularly in relation to the boundaries. These factors represent the main target of the hotel ITRM that need enhancement. Failing to achieve this target leads hotels to fall behind their competitors and in turn lose opportunities to increase their market-share. This concludes that the Egyptian

hotels still have critical issues and need to address some defects in their ITRM to improve their sales, and satisfy their customers. However, the hotels have succeeded in introducing ITRM that the employees believe it is acceptable and affects their potential market share.

It must be admitted that this study has some limitations. One limitation is the need to conduct qualitative interviews to fully understand how managers perceive the negative aspects of the hotel ITRM. Future research studies will investigate the perceptions of customers on hotel websites in addition to comparing two different samples, which could be employees' perceptions and customers' perceptions. The quantitative-qualitative approach will be useful in future studies to fully understand the subject of the study.

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