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Cross-Case Analysis and Discussion

10.1 Introduction

While the previous chapter presented data gathered from the individual case studies, this chapter presents the findings of the cross-case analysis in order to develop a solid and a more comprehensive understanding. The applied cross-case analysis techniques are proposed by Eisenhardt 1989; Miles and Huberman 1994; Yin 2009 where data were analysed using a certain lens to do a structured analysis to understand the similarities and differences between cases as explained in Chap. 4. To do so, the comparison is based on the institutional theoretical framework, which was formulated in Chap. 3. The emergent concepts, themes and factors are highlighted and discussed.

The aim of this discussion is to delineate and discuss the differences and similarities among the cases regarding the investigated constructs of the key corporate governance pressures; the control assumptions of ERP systems as perceived by participants in each case; the IAF changes as responses to these pressures and assumptions and the reasons behind adopting these responses. Therefore, the aim of studying multiple cases is to compare outcomes across cases in order to develop more powerful

explanations through understanding how outcomes are qualified by contextual conditions.

10.2 IAF-Related Governance External Pressures

Although the four case organisations work in the Egyptian governance environment and are affected by similar governance pressures, there were some differences among the cases as they belong to two different sectors and two of them are national and two are international. Therefore, the institutional lens does not focus on the organisational field level of analysis; however, it goes deeper to specific organisational and sub-organisational levels as a unit of analysis. This is because the organisational field level comprises several organisations or industries which could be unrelated in some ways and which adopt different institutional norms. Therefore, there were differences in the external pressures between cases, although they are located in the Egyptian organisational field each organisation and its IAF, as a sub-organisation unit, have some specific governance pressures.

10.2.1 IAF-Related Coercive Pressures

The IAF-related coercive pressures were very weak in Egypt; therefore, it was voluntary to maintain an adapted IAF. However, the banking sector had more rules that govern the business. The legal framework that regulates auditing practice in the Egyptian banking sector had no rules directly related to the IAF; however, there was emphasis on having an internal inspection department. This means keeping the traditional concept of errors reporting that does not add value. The executive regulations of the banking law implicitly determined the responsibilities of the IAF to include reporting on the adequacy of the internal control systems.

The mixture of using audit and inspection terms caused confusion at NB as there was no clear understanding about different roles. The IAF is a consulting activity that evaluates and improves as an advisory service, whereas inspecting only provides error finding reports. Therefore, auditors at NB consider themselves as inspectors, detectors or policemen who

are responsible merely for reporting errors. Preserving this concept after the ERP system implementation has legitimated the IAF adaptation.

The central bank of Egypt issued a manual about the control policies that should be followed by all banks. It implicitly highlighted that the IAF has a role to play in reviewing the sufficiency of internal controls including the computerised IS controls and asked the audit committee to review the availability of qualified personnel in the internal audit department. However, bank supervision in Egypt is hampered by limitations. The significant increase in the number of banks has not been met by an equivalent increase in the staff, capacity or resources of the central bank of Egypt's control department, resulting in insufficient monitoring (e.g. El-Shazly 2001).

IC and IB were subject to some other rules and regulations of other countries as they are listed on international stock markets. They are listed at NYSE and must maintain an IAF. They had to comply with SOX (2002) and the UK Combined Code of corporate governance (2010), where the importance of the IAF was emphasised. These pressures encourage keeping an IAF that is more risk based.

Pressures of the head office control upon group subsidiaries have been recognised by institutional researchers as a form of coercive pressure (Fligstein 1990). Internal rules and principles that determine the responsibilities constitute coercive pressures on the sub-organisational groups. For IC and IB, these pressures were strong to have well-defined auditing practice and structure. Internal policies took into consideration the requirements of the national or the international regulations whichever were stricter. These pressures from the head office or the group regulations emphasised the impact of the international regulations and even the international auditing normative standards on the top management in Egypt. At NC and NB, it is an oral working environment wherein dependence was on the traditional inspection practice. There were no written policies, and where there were some available, they were not applied, and no one was aware of their existence.

Other type of pressures came from the external audit management letter, where the external auditors highlighted the importance of having an adapted IAF especially after the change occurred with the ERP system implementation, at NC. There was no active audit committee

at NC; consequently, there was insufficient support for IAF adaptation or response to the issues that were highlighted in the management letter.

In sum, coercive pressures, when they existed, determined the most important activities for the IAF, which gave it legitimacy as an effective governance tool. It was demonstrated that there was an impact of the institutional pressures on the adaptation of the IAF that was stronger when imposing sanctions. As a result, there is an unimportant IAF at NC, while there was an inspection department at NB and, in contrast, there was an important risk-based IAF at IB and IC.

10.2.2 IAF-Related Normative Pressures

These pressures depend on values and norms as the basis of social obligation. Most of the values and norms in Egypt supported the traditional view of the IAF, where the internal auditor is a watchdog or an inspector. The internal audit profession is still less mature in Egypt and has not been fully recognised as a specialised profession. Internal auditors collectively struggle to define the conditions and methods of their work, set up a cognitive basis and seek legitimacy. Most forms of internal auditing professionalisation such as formal education or professional networks are weak in Egypt, where new models of modern IAF were difficult to emerge.

Egyptian auditing standards dealt only with the reporting issues and ignored internal auditing, and there was no any separate code applicable for internal auditing. There is not any Egyptian professional institution to support the IAF or issue standards other than the ESAA, which does not ensure compliance with rules of professional conduct. Although there is an IIA chapter in Egypt as a professional body to govern this profession, it has had a minor role. Moreover, the quality of auditing education suffered from a lack of a modern syllabus and lack of resources for students.

These characteristics of the internal audit environment mean that internal audit practice could significantly vary among organisations in Egypt. Therefore, the normative pressures at NC and NB had a negative impact on improving the IAF. This was because of the weak professional

and educational environment. Moreover, the majority of internal auditors in these cases were not Certified Internal Auditors or even professionally qualified accountants.

At IC and IB, the majority of internal auditors were Certified Internal Auditors and came from the big four audit companies. They complied with the group rules and internal policies, which were mainly based on most of the professional standards. These standards emphasised the ultimate goal of the IAF which is to add value through taking an effective role in supporting risk management and internal control assurance. They encouraged gaining the suitable skills and having sufficient knowledge of key IT risks and controls; evaluating risk exposure relating to ISs; and using the appropriate technological tools. IC and IB turned normative pressures into coercive pressures through incorporating these standards in the formal internal policies. The greatest support for the normative professional pressures was the sound internal audit professional group network.

10.2.3 IAF-Related Mimetic Pressure

In all cases, ERP systems implementation created uncertainty in the working environment for the internal auditors. At IC, the internal auditors and the management tried to copy a successful IAF model of the head office and subsidiaries in the same region, which had already implemented SAP. At IB, the CIA looked to the successful IAF outside Egypt through their relationships at the big four audit companies. In both cases, the use of the same implementation consultant which had been used by other organisations in the same group to implement ERP systems outside Egypt and the strong professional audit network facilitated the mimetic process for adaptation.

At NB, the working environment was characterised by uncertainty and there was only a vague conception of the proper IAF that increased with the ERP implementation. Therefore, there was a tendency to stick with the traditional concept of inspection. Being an inspector was an accepted role of the internal audit department. At NC, the absence of guidance regarding IAF practice resulted in shared misconceptions

Table 10.1 Governance institutional pressures matrix

	Case study 1 IC	Case study 2 NC	Case study 3 NB	Case study 4 IB
Coercive govern- ance institu- tional pressures related to the IAF	Not required to have an IAF	Not required to have an IAF	Not required to have an IAF, but must have an inspection depart- ment	Not required to have an IAF, but must have an inspection depart- ment
Supervisory	None	None	Causes confusion between internal inspection and internal audit	Central bank of Egypt
International regulations	SOX, NYSE and UK CG Code	None	None	SOX and NYSE and UK CG code
Head office poli- cies	Code of ethics, Code of business principles, compliance manual, risk manage- ment policy, account- ing and reporting policy	Oral working envi- ronment without written policies	Working environ- ment depends on the traditional organisational experience	Lead to risk-based audit Internal Policies and Group Audit Standards Manual
External auditor	None	The management letter highlights the IAF need for improvement	The management letter highlights the IAF need for improvement	None

(Continued)

Table 10.1 (Continued)

	Case study 1 IC	Case study 2 NC	Case study 3 NB	Case study 4 IB
Normative	IIA encourages gaining sufficient knowledge of key IT risks and controls; evaluating risk exposures relating to ISs; using the appropriate tools; and ensuring the availability of the sufficient resource to achieve goals Group IA professional network to share new developments	Egyptian Society of Accountants and Auditors No Egyptian standards and the Society does not ensure compliance. Keep the traditional concept of watchdog	Egyptian Society of Accountants and EBI Auditors No Egyptian standards and the Society does not ensure compliance Keep the traditional concept of watchdog and inspector	IIA and Basel encourage gaining sufficient knowledge of key IT risks and controls; evaluating risk exposures relating to ISs; using the appropriate tools; and ensuring the availability of the sufficient resource to achieve goals. Group IA professional network to share new developments
Formal education	Company enhances internal auditors' capabilities through encouraging continuous education	Education deficiencies keep the traditional concept	Education deficiencies keep the traditional concept	The bank enhances internal auditors' capabilities through encouraging continuous education
Mimetic	There were successful IAF change models to copy from the head office and other subsidiaries	There was no successful model to be adopted	Stuck to the accepted IAF model of the central bank of Egypt as inspectors	There were successful IAF change models to copy from the group audit network and relations with the Big 4 audit companies

about the acceptability of a weak role for the IAF. Therefore, mimetic process explains the common theme that internal audit is not an important function. However, companies tend to imitate other successful models to avoid being different; there was no clearly successful model of the IAF to be followed other than the traditional common one. Therefore, NC discarded the IAF and kept only one auditor as a symbol of having an IAF after the ERP system implementation.

Table 10.1 shows the Institutional Pressures Matrix, which displays and summarises the important observations of the comparisons related to the governance coercive, normative and mimetic pressures related to the IAF.

10.3 Control Assumptions of ERP

It has been confirmed through the multiple cases that ERP systems if implemented and used properly, can significantly improve the internal control system. The main difference was that, for IC and NC, the ERP system controls the processes of the whole business, while for NB and IB they worked as back-office systems and offered tight control on the activities other than the core-banking business processes. The assumptions behind the ERP-embedded logic of control translated in each context were investigated. The contents of technology reflect peoples' cognitive assumptions about the meanings and expectations of a particular technology (Orlikowski and Gash 1994). Therefore, data codes identify the meanings and expectations that different groups expressed about the assumptions behind the control logic of ERP systems.

10.3.1 Automation

ERP systems offered automatic and systematic controls that reduced human intervention errors. The clear difference among cases was that when the accuracy and availability of information are at a low level such as at NC and NB, the importance of having automated and

documented processes increased more than focusing on improving the business processes or developing other areas such as the IAF. However, this automation raised the importance of automating some of the auditing activities at IC and IB. Automation provided by ERP systems implementation resulted in preventive control and continuous monitoring and reduced the effort of the internal auditors in doing routine work and non-value-adding tasks.

10.3.2 Centralisation

Using a centralised database minimised data redundancy and the divergence in values from one system to another when using the same data. This centralisation opened the possibility of a deeper level of controllability to activities that had been partially opaque. The evidence supported that centralisation was more important at NB and IB as bank branches are spread around the country more than IC and NC. ERP systems offered faster auditing tools through screens that provide centralised access to all needed information without physical visits.

10.3.3 Continuous Timely Monitoring

In all cases, ERP systems improved the internal control structure based on offering the ability to continuously monitor information flow and users' activities. The integration, automation, real-time data sharing and multi-path query for internal control offered by ERP systems facilitate real-time control, continuous monitoring and improved internal controls through periodic, ad hoc, exceptional or specialised reports. The evidence showed in all the cases that ERP systems increase the interdependability of work processes and increase the importance of peer reviewing as a way for continuous monitoring. Whenever the IAF was weak and did not utilise these facilities, other parties especially IT personnel took over many auditing tasks and built upon these features to enhance their position at NC and NB.

10.3.4 Data Consistency

ERP systems made data consistent through standardising business processes and unifying the whole data process. ERP systems' standardisation of business process resulted in all data being consistent among all branches and departments. AIS became based on event-driven business data. ERP systems offered data consistency through offering data integration instead of data redundancy by having scattered data in numerous systems and documents. The evidence in the cases showed that the importance of having consistent financial and non-financial information was higher at IC and NC as trading companies than in banks like IB and NB.

10.3.5 Data Security

One of the most emphasised assumptions of ERP shown in the cases was its automated data and functions security. Considering data security as a component of the internal control system was a new concept for internal auditors; however, data security's impact on the internal control system was appreciated by internal auditors. Auditors' main concern was the security of financial data because when data security processes are missing, integrity is threatened. The evidence in the cases showed that there was a great concern from the internal auditors' side about data security at banks NB and IB more than at companies IC and NC, which is logically expected due to the higher security risk in the banking sector.

10.3.6 Integration

Having different legacy fragmented systems challenged internal control improvement in all cases. ERP systems did not define what the concept for integration is or how it can be developed; however, they implied a technologic that determines how control can be performed through

financial and non-financial representations. ERP systems enabled the integration between processes and the elements of financial statements.

The integration enhanced the internal control in all cases through using only single points of data entry and through the dependability of the business process that required peer review by employees of the work of others. The automated integration of activities made individuals' actions visible and data transparent and raised the importance of self-review for individuals and branches.

10.3.7 Multiple Methods of Control

ERP systems offered many ways to control the same object through providing controls of the logistics and its financial results and controls by maintaining consistency. The exertion of control after implementing ERP systems represented a change of control from an identifiable locus in space and time to a multiplicity of loci. Controlling from multiple angles, locations were possible, in all cases. ERP systems merged various visions of control such as economic vision through controlling financial flows, logistics vision through controlling material flow and information vision through controlling information flow.

10.3.8 Preventive Controls

ERP systems automated many controls and turned them into being preventive more than detective. The ERP prevented violations of any restrictions regarding the removal of electronically stored data and prevented unauthorised, incomplete or incorrect data to be entered or posted to wrong period. ERP systems impose processing constraints that prevented users from adding or updating beyond certain points. These controls were assured by the IT team in NC and by the outsourced IT auditing at NB. Therefore, it is very important for internal auditors to be able to assure the effectiveness of the preventive automated controls, which were not there before the ERP systems.

10.3.9 Standardisation

ERP systems were considered as control technology that emphasises standardisation of business processes. ERP systems standardised the IT infrastructures across functions, which facilitated the sharing of information and the integration of business activities. The standard data entry process in one format leads to data consistency. This assumption enhanced the abilities of the internal auditors since it became very easy to identify the anomalous transactions as the divergence from the norms became highlighted. This assumption prevented some illegal practice at IC but not at NC. This difference was because at IC the internal auditors' were involved in the implementation and the management wanted to apply and benefit from all ERP systems features.

10.3.10 Transparency and Visibility

Transparency of information through detailed disclosure of data was impossible without integration and a consistent data source. ERP systems offered internal transparency on multi-organisational and managerial levels to enhance accountability, which was welcomed in all cases but NC. ERP systems offered the ability to trace any transaction from the aggregate consolidated level down to the processing level. Working in a more visible environment to others facilitates exercising control. ERP systems enabled great visibility of workplace behaviour as workers are considerably visible to their peers. Accounting numbers in reports reflect operational performance and make it visible and controllable.

10.3.11 Compensating Controls

For IC, ERP systems did not dictate one control for one risk. ERP helped in making a mix of controls to mitigate the same risk. However, for IB there are three lines of defence that complement each other to mitigate risks and not all of them depend on ERP systems as these systems serve back-office processes only. Table 10.2 shows the assumptions

matrix, while Fig. 10.1 shows the assumptions behind ERP systems control logic.

10.4 Aligning Efforts Among ERP, Governance and IAF

A related implementation issue was alignment, where several aligning viewpoints were taken into consideration. The governance improvement efforts focus on increasing transparency, accountability and clarifying the segregation of duties which were proven to be supported by ERP systems. As ERP systems are considered as control technology, they are by default in alignment with the governance objectives.

ERP systems and governance rules were complementary in their impact on the IAF. Governance rules and ERP systems were considered as two sides of the same coin. Governance rules draw the process guidelines, while ERP systems execute work processes taking into consideration these rules. ERP systems were recommended as a proof of having good governance practice. ERP systems are considered as a means of changing the governance process through better internal control system and an adapted IAF. Although ERP systems are in alignment with governance objectives, some effort had to be made during the implementation process to maintain this alignment.

10.4.1 Change Management

ERP systems implementation was accompanied by changing the way of doing some processes and consequently a different way of auditing them. ERP systems implementation at NC and NB involved shifting from a rule-breaking, flexible and individualist culture to a standardised and integrated way of doing business. A strong change management plan was prepared at IC and IB, while it was totally absent from the other two cases. The existence of a change management plan had a clear impact on facilitating and directing the adaptation of the IAF.

Table 10.2 ERP systems' control assumptions matrix

Control principle	Case study 1 IC	Case study 2 NC	Case study 3 NB	Case study 4 IB
	Business processes became governed by the systems Control warehousing, cash management, accounts receivables, accounts payables, data transfer and segregation of duties ERP systems stopped the illegal practice and offered greater accountability	Improved the weak internal control system; mitigated financial risks of manipulations and stealing and improved cost control	Control the overall bank from headquarters level over HR, inventory, assets and purchasing transactions Back-office system offered greater accuracy, data transparency and action visibility	Governance tool to enhance internal accountability system. Reduced errors in information flow; supported sharing of information; supported team-work and improved internal control
Assumptions	Automation Automated validation process on all levels. Security profiles for each user Automatic segregation of duties test to reveal conflicts in codes Automation controller controlling desktop applications Objects control framework at the backend	Decrease human intervention, automatically link reflect transactions impact on financial records, preserving automatic archiving system, automatic segregation of duties	Automated back-office processes Automatic controlled data access, approvals checking. Prevent from human intervention, compliance with rules increase information availability and reduce errors	Automated business process applied long time ago; however, ERP systems were applied in areas that depended on legacy systems with non-automated controls
	ERP systems offered central data consolidation of similar functions	The financial module is a pool that is affected by all transactions take place in all other modules	Central data consolidation across all branches to control the inventory, HR, purchasing and assets centrally from headquarter	Centralised access to all needed information without physical visits
Continuous monitoring	Real-time data sharing Multi-path query Multi-purpose reports Result from automation and integration	ERP systems made many of the internal auditing practice redundant through their continuous monitoring functionalities SAP systems offered consistency reports of production, sales, procurements and financials Comparable data reports with previous years Reduce data redundancy, standardise interfaces and enable controlled access	Internal auditors had no interest on using the continuous monitoring features. They did not ask about activating these reports One general ledger and one chart of accounts Comparable data between branches and departments	Better automatic monitoring and control on real time. IAF has open access for real-time information ERP systems helped ensuring that information remains structured updated, accurate, detailed, organised and reliable
Data consistency	SAP generated consistency between financial and non-financial information. Unity mass-data volume economically, eliminate data duplication, redundancy			
Data security	ERP systems restricted security rules that prevented most of fraud opportunities using role-based access control		Function security Data security Role-based access control and profile options	Strict security rules that prevent data manipulations Data access control
Integration	Integrated business process and integrated data process cycle Integrated internal control system rather than isolating internal controls	Efficient and effective communication across functions. Increase the importance of the "peer review"	Integrated front-office business process with back-office processes. Increase the importance of the "self-review"	Integrated front-office business process with back-office processes. Integrated infrastructure help in adding software for special investigations

(Continued)

Table 10.2 (Continued)

	Case study 1 IC	Case study 2 NC	Case study 3 NB	Case study 4 IB
Multiple methods of control	New non-financial controls Inherent controls delivered with SAP Configurable controls Security controls Reporting controls	Not all control possibilities offered by ERP systems were used	Control from multiple angles Locations or visions possible: Economic vision, logistics vision and Information vision	Integrated financial view with the operational view offers many ways to control the same transaction
Preventive controls	Access protection system Automation controller Objects control framework	Authorisation lists and segregation of duties Not all controlling features were used	Incidence response and reporting. User profile according to segregation of duties Access controls	The authorisation, security and access controls
Standardisation	Standard business processes Standard accounting structure	Not all activities were standardised. Some preferable processes cannot be standardised since they are illegal	Standard back-office business processes with Standard accounting structure	ERP standardised the back-office functions
Transparency	Data transparency Actions visibility Traceability	Visibility to management and to peers More transparency, while the company is not ready for this practice	Data transparency Visibility to peers and to managers Traceability Extends the exercise of self-review	Full view about data entered from different branches and departments by storing data in one integrated database with the ability to retrieve these data from different positions
Compensating controls	Based on the multiple controls offered by the systems	No evidence	No evidence	Three lines of defence are not related to ERP systems

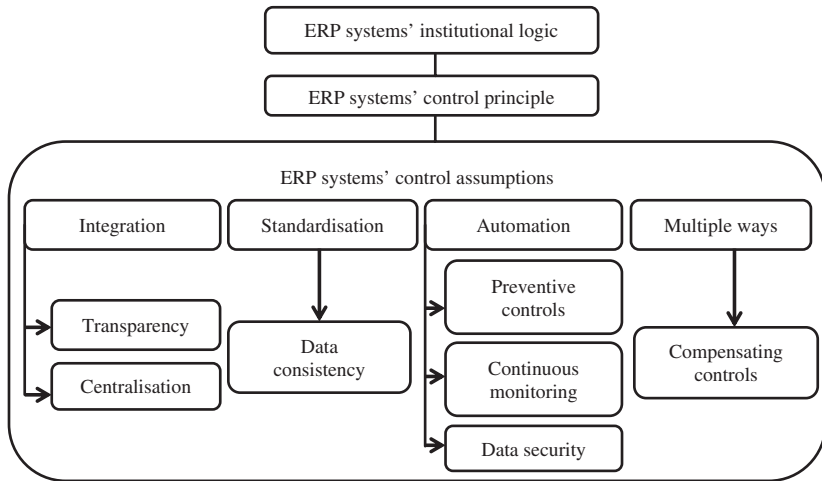


Fig. 10.1 The assumptions behind ERP systems control logic

10.4.2 Reengineering and Customisation

The level of mixture between reengineering the processes or systems customisation depended on the management orientation in terms of keeping the old work routines or changing to benefit from best practice. By implementing ERP systems, illegal procedures could not continue and had to be reengineered at IC as they could not be customised within the systems, while these practices continued at NC through workaround. For NB and IB, there was a need for customisation from the control point of view to add the function of checker to some processes.

10.4.3 Internal Auditors' Involvement in ERP Implementation

Processes should be made auditable before an internal audit can be conducted. Auditors' involvement in the implementation mainly depended on the effectiveness of the IAF; therefore, they were totally involved at IC and IB. The need to be objective did not exclude the possibility that

management could request an internal auditor's opinion on specific matters related to the internal control.

The involvement of internal auditors in the ERP systems implementation process had benefits in two ways. First, internal auditors have wide view of business processes and know the business policies and segregation of duties rules, therefore preventing control problems after implementation. Second, the internal audit team's involvement gave them important awareness about the controls within the systems and how the business process is handled by the systems. Auditors' involvement in the implementation process enhances the system's impact on the internal control system. Internal auditors who take responsibility for governance will also have an important role in ERP governance to ensure IT alignment with organisational goals. The IAF role assured the harmony among corporate governance, policies, ERP systems and business processes.

Table 10.3 shows different alignment efforts that took place in each case to highlight the impact of these efforts on the IAF adaptation later on.

10.5 The IAF Adaptations

Adapting the way internal auditors operate was an integral part of maintaining the IAF's legitimacy. This adaptation involved changes in the structure and practice of the IAF. The changes in the IAF as a result of ERP systems introduction were difficult to quantify; therefore, each aspect of the IAF's practice and structure was investigated after implementation.

10.5.1 Scope of Services and Practice

The change in the practice of the IAF depended to a great extent on its effectiveness and on the role it played before ERP systems implementation; the change management plan; the support from the audit committee; the acquiescence to the governance institutional pressures; and

Table 10.3 ERP systems implementation aligning efforts matrix

	Case study 1 IC	Case study 2 NC	Case study 3 NB	Case study 4 IB
Alignment	<p>Offer transparency</p> <p>Comply with the SOX</p> <p>Decrease key controls</p> <p>Standard process going according to all policies, rules, regulations and international standards</p> <p>Agreed plan to change management</p> <p>Consultancy agencies support the required change management.</p> <p>A dedicated change management team including internal auditors</p>	<p>Procedures and duties for each function become documented</p> <p>ERP systems collided with the way of managing the business</p> <p>There was no proper management plan for change.</p> <p>Workaround the systems to keep some preferred practice</p>	<p>ERP systems were recommended by the central bank of Egypt to improve the governance within banks</p> <p>There was not predefined change management plan or proper training to prepare users to accept changes.</p> <p>The aim was to keep all working customs</p>	<p>ERP systems became an integral part of the governance landscape</p> <p>ERP systems made the compliance audit, control audit and financial audit much easier</p> <p>Change management plan</p> <p>Extensive continuous training</p> <p>Rewards to implement ERP modules</p> <p>Great attention to manage the changes needed in the IAF</p>
Reengineering and customisation efforts	<p>Customisations in reporting</p> <p>localisation in terms of laws</p> <p>Illegal procedures stopped</p> <p>The processes were reengineered to be in an auditable format</p>	<p>Some ways to work around the systems were arranged to keep the preferred practice</p> <p>Some localisation to systems to be compatible with tax laws purposes</p>	<p>Insisted to follow their old process and ask for customisation to systems</p> <p>Localised solutions regarding taxations</p> <p>Some workaround</p>	<p>ERP systems did not initiate much business processes reengineering.</p> <p>Configured to cover local needs, segregation of duties and reporting area</p>

(Continued)

Table 10.3 (Continued)

	Case study 1 IC	Case study 2 NC	Case study 3 NB	Case study 4 IB
The IAF role in ERP systems implementation	<p>Auditors participated effectively during requirement gathering and mapping</p> <p>The main input related to roles and authorisations to ensure a fit control environment</p> <p>Capture ERP system features</p> <p>Set reporting requirements</p> <p>Assuring that there is not any financial data loss when transferring to ERP system</p>	<p>Internal auditors had no role at all to play at any stage of the ERP systems implementation</p> <p>There were not qualified internal auditors could add value through participation</p>	<p>Internal auditors were not involved by any means in the ERP systems implementation</p> <p>Inspection department was involved after implementation stage and had some reporting requirements</p> <p>Their absence not only had an impact on the implementation, but also had some repercussions on the IAF later on</p>	<p>Raised the importance of implementing ERP systems</p> <p>Auditors were involved in the process of choosing the needed modules and choosing the appropriate vendor</p> <p>Were involved from the early stages and had an added value</p> <p>Assure compliance with manuals</p> <p>Auditors were considered as super users</p>

the IAF involvement in the implementation. Where the IAF was doing traditional checking of the correctness of the accounting figures, then ERP systems easily replaced this function. Where the IAF could be well adapted, it turned into an integrated IAF on different levels. The integration could be on one of three levels. The first level of the integrated auditing practice covers the whole business with many auditors responsible for each function such as financial, HR, logistics, marketing and IT. The second level is to have an integrated IT and financial internal audit plan, while the third level is to have narrow scope of practice that focus on processes across functions through having comprehensive auditors.

The study finds that in IC and IB, where ERP systems were properly utilised the internal control became a collective affair. Many departments are involved in the internal control responsibilities; consequently, the IAF scope of service was expanded to assure these control activities were carried out by many other departments. In the cases where the IAF was expanded, it got new responsibilities including checking automated internal control procedures of segregation of duties and access rights; information security in relation to IT; assuring not only the functionality of list of controls but also the existence of compensating controls and IT operational control assessment; and giving consultancy advice to improve the business, while in other cases where the IAF could not adapt, internal auditors were assigned other responsibilities apart from auditing.

10.5.2 The Structure of the IAF

Having a balanced internal audit team was crucial for supporting an integrated business working environment. While IS was considered to be a domain for specialised IT auditors, after implementing ERP systems all the processes became all auditors' concern. Where the structure of the IAF was adapted, it became an integrated internal audit team that included individuals who had various backgrounds including financial, accounting, HR, business and IT. Within the younger internal audit team there were dedicated individuals for internal control checking

including segregation of duties and access rights, risk management, IT auditors and IT security officers.

In other cases which could not adapt, the organisational restructure after ERP systems implementations was not in the favour of internal auditors. Where the control assurance became the responsibility of everyone, the value added by the internal audit team reduced. After ERP systems implementation, the internal control assurance was not the responsibility of IAF only.

10.5.3 Internal Auditors' Skills

The study finds that in most cases, the available skills before ERP systems, training sessions and involving the internal audit team in ERP system implementation affected the adaption of the IAF's skills. Internal auditors needed to be trained in technical areas of auditing, internal control, fraud detection and accounting in the new working environment of the ERP. In addition to these skills, the participants emphasised that there was a need for some important social soft interaction skills in order to be able to interact within an integrated team, with the auditees, IT team, audit committee and management. Skills such as business and system knowledge and judgement are needed as well.

In the international organisations IC and IB, there was great attention given to the skills of the audit team members; every auditor was required to complete a certain number of hours of training per year that included internal or external training courses, online or computer-based training or self-study. Therefore, the impact of ERP systems implementation was to focus this training on some specific new skills and knowledge.

10.5.4 Internal Auditing Tools

ERP system implementation did not encourage acquiring new special software for internal auditing proposes in all cases; however, the ERP system itself offered internal auditors reporting tools and notifications options which were very helpful. The differences among cases were in

the degree of utilising the tools offered by the ERP systems for control assurance. ERP systems allowed internal auditors to interrogate large volumes of data and run multiple queries to extract information, which help detecting internal control breaches, errors and potential frauds.

10.5.5 The IAF Sourcing

The ERP working environment required different skills and competencies in the internal audit team. Internal auditing became more advanced and specialised in terms of technical competence. Organisations faced the choice of whether to develop these broader competencies internally or to outsource internal auditing to outside service providers. An internal audit team which has the experience of the problems encountered before and during the implementation stage was much better equipped than others who do not have this experience. Therefore, IC and IB preferred having a qualified internal audit team than outsource the IAF, while IT auditing was the only outsourced part of the IAF in NB.

10.5.6 Internal Auditors' Relationship with the IT Department

However, in the ERP systems working environment, the IT audit has been identified as one of the most difficult specialties for internal audit staff, developing a rotational relationship between internal auditors and the IT team provided benefits due to reduced recruiting and consulting costs as well as increased quality of auditors' understanding of the systems.

The degree of collaboration increased after the introduction of ERP systems to different levels. Internal audit team became closer to the IT team; however, not all the internal audit team members have a direct link with the IT team. Internal auditors depend on the IT team to understand technical details. The audit and control functions collaborated with the IT team in making tailored systems to help them in their monitoring role.

In the cases of having a weak IAF as at NC, the IT team supported the management needs through monitoring the activities on the systems, assuring the segregation of duties and assuring the correctness of the financial numbers. Internal auditors preferred not to deal directly with the system as they did not have enough knowledge to write or run any queries. The importance of the internal auditors went down compared with the IT team.

10.5.7 The Size of the Internal Audit Team

ERP systems integration and automation reduced the amount of information posting and eliminated some jobs. The ERP systems' complexity widened internal auditing analytical processes. In some cases, the ERP system implementation decreased the number of the traditional internal auditors. However, in IC and IB, the internal audit team increased as internal auditors from different backgrounds became needed. In other cases, the IAF eroded after ERP systems implementation for many reasons including: the IAF maintained a very traditional auditing mindset that did not add value; internal auditors did not participate in ERP systems implementation to know how ERP systems would affect their work; there was no interest or support from the top management to improve the IAF as the IT team and the ERP systems overcame the need to have a traditional IAF.

10.5.8 The IAF Budget

ERP systems reduced the cost of audit investigations through the offered visibility. Making the best use of the ERP systems' features in controlling and monitoring the business process through having an integrated and balanced internal audit team saved a substantial part of the audit budget. However, the budget of the IAF increased slightly as some specialists from different areas have been allocated to the internal audit team to make it an integrated IAF at IC and IB where there was also increased investment in qualifying the internal audit team. The IT

audit outsourcing is a new component in the budget at NB, because of not having the required skills in house.

10.5.9 Internal Auditors' Relationship with the External Auditor

The external auditors' decision about the extent of dependency is affected by the IAF structure, reporting system, independency, qualified staff available, training, audit tools and techniques and experience and history of previous audits. Mainly the experience and history of previous audits affected the relationship after ERP systems introduction. Where there was confidence in the efficiency of the IAF, ERP systems did not change the relationship significantly but could increase this confidence at IB and IC. If the external auditors were concerned about the low level of the internal auditors' qualifications, implementing ERP systems had a negative impact on the confidence of the external auditors in the IAF. Generally, the external auditors were sensitive in the year of implementation because of the huge change taking place.

10.5.10 The IAF Strategic Response

ERP systems constituted the stimulus for internal auditors to relate these systems to their roles and responsibilities and thus to their professional identity. The internal auditors faced pressures at the functional level that mainly related to their shared professional values and trends and made them adapt to advanced practice. Uncertainty increased over the new internal audit practice and structure; the CIAs searched for new ideas from professional communities and imitated the practice already adopted by others.

ERP systems triggered profound adaptations. The IAF should be flexible enough to take full advantage of opportunities. The IAF's effectiveness was an important variable in the internal auditors' strategic responses to ERP systems introduction. The IAF adaptation and responses matrix are shown in Table 10.4. Internal auditors'

Table 10.4 The internal audit function adaptation and responses matrix

	Case study 1 IC	Case study 2 NC	Case study 3 NB	Case study 4 IB
Scope of services	<p>The implementation of ERP systems was exploited by extending areas of involvement</p> <p>Integrated auditing in comprehensive approach where all the business became included in the IAF scope</p> <p>Application controls are covered seamlessly during end-to-end audits</p> <p>From doing routine checking to creative, analytical internal control review in more risk-based manner</p>	<p>The narrow scope of the IAF was mostly covered by ERP systems and the value of the traditional IAF quickly disappeared</p> <p>Less need for substantive testing</p> <p>ERP systems do more than what internal auditors were doing</p> <p>Other responsibilities than auditing</p>	<p>The IAF became easier with narrower scope</p> <p>Focus moved from functions to processes, so a new concept appeared that is "comprehensive auditor"</p> <p>The scope was reduced as ERP do most of audit duties</p>	<p>Replaced and consolidated many auditing tasks.</p> <p>Helped in improving and expanding financial, compliance and operational audits</p> <p>The role of internal auditors was evolved and the scope of audits is expanded</p> <p>Financial and IT-integrated auditing</p>
The IAF's structure	<p>The internal audit team includes individuals who have IT, marketing, human resource, manufacturing and financial backgrounds.</p> <p>The team contains younger auditors and more multi-disciplinary experience than older financial auditors</p>	<p>The management believed that there is no need to have a separate IAF as it was absorbed in the organisational structure</p> <p>All internal auditors left the company except the youngest one</p>	<p>Centralised internal audit at headquarters doing comprehensive inspection and financial audits</p> <p>Younger internal auditors became preferable</p>	<p>Already had an integrated audit team but enhanced to have gathered general auditors, and IT-specialised auditors</p> <p>Trend to have some individuals with professional qualifications and younger</p>

(Continued)

Table 10.4 (Continued)

	Case study 1 IC	Case study 2 NC	Case study 3 NB	Case study 4 IB
Skills	The audit view shifted from functional to process with understanding of the technicalities and security aspects. New skills include computer skills, systems knowledge, communication skills, IT-related risks and consulting skills	Traditional auditing skills of tracing transactions are not needed anymore. Internal auditors did not receive proper training to improve their capabilities	There was a difficulty in gaining the multidimensional skills needed to create an internal audit team comprising cross-functional members. Insufficient training in order to improve auditing skills	Implementing ERP systems did not affect much the set of skills in the audit team. Skills of extracting data from ERP system
Tools	No new special software for internal auditing proposes. ERP systems offer internal auditors helpful tools	ERP systems implementations did not motivate to use audit tools. SAP systems were not been used at all by internal auditors	There was no specific auditing tool used by the bank before or after ERP. Reporting system "Business Objects" software was implemented	The internal auditors make the best use of the systems as they were already using the latest audit methodologies and related IT-based solutions
Source	ERP systems did not generate the need for IAF outsourcing. Having qualified internal audit team is much preferable than outsource the IAF	The IAF neither outsourced nor improved but eroded	The common perception that the IAF can be done by anyone. The IT auditing is outsourced to external service providers who can bring in the required expertise and experience	There was no need to even partly outsource IAF. IB had all needed experience to do all types of auditing and any needed specialist can be provided by the audit group

(Continued)

Table 10.4 (Continued)

	Case study 1 IC	Case study 2 NC	Case study 3 NB	Case study 4 IB
Relationship with IT department	The close relation between the IAF and the IT professionals started with ERP systems implementation stage when defining the segregation of duties. Not all the internal audit team members have direct link with the IT team	IT team members have accounting background and understand SAP systems; therefore they do some of the duties that are supposed to be done by internal auditors	IT individuals are considered as enabler for internal auditors. The mutual working relation became stronger as they work as complementary teams The importance of the internal auditors went down compared with the IT team	ERP systems implementation strengthened the work relationship between the IAF and the IT team
Size	ERP systems implementation has caused an increase in the size of the internal audit team	The IAF has been eroded after ERP systems implementation	ERP systems make the traditional IAF easier and centralised; therefore the size of the internal audit department has decreased	The size of the IAF could increase because of the expansion not mainly because of ERP systems. Incorporating experts is related to ERP systems implementation
Budget	ERP systems implementation did not significantly affect the annual budget of the IAF	The budget assigned to the IAF was reduced significantly as the team reduced from nine to be only one	The IAF budget reduced by the ERP systems implementation. The IT audit outsourcing increased as a new component in the budget	Budget decreased slightly with the ERP systems implementation

(Continued)

Table 10.4 (Continued)

	Case study 1 IC	Case study 2 NC	Case study 3 NB	Case study 4 IB
Relationship with external auditor	The SAP did not change the relation significantly ERP systems improved internal auditing accuracy and reliability	ERP systems did not affect the work relation as it was very weak before or after	Implementing ERP systems had a negative impact on the confidence of the external auditors on the IAF	ERP systems did not change the well-established relationship and confidence
Response	Compromise strategy through bargaining and balancing tactics-acquiescence strategy through compliance, habit and imitation tactics	Internal auditors tried to use defiance strategy through dismissing, challenging and attacking tactics; however their efforts could not succeed	Defiance response was done through tactics of attacking, challenging and dismissing. Internal auditors used the avoidance response through tactics of escape, buffer and conceal	The internal auditors adopted acquiescence strategy through imitation tactics
			Remaining internal auditors considered the unqualified conformity unworkable therefore they used the compromise response through balance tactic	

involvement in ERP systems implementation gave them the opportunity to respond constructively. Active forms of resistance did not work, and internal auditors' efforts did not succeed, when the IAF was weak. When the resistance strategies did not work, internal auditors had two main options, to compromise or avoidance.

The IAF needs to adapt as rapidly as the working environment, or it will lose its legitimacy. Results imply that partial compromise allowed for existing practice to remain unchanged, whereas full acquiescence could only be reached by changing the nature of these practices. An important observation is that the strategies used seem to be temporary and often led to a move towards acceptance. One major finding emerged from the study that different sources of institutional influence evoke different strategic responses. The higher the pressure which was applied, the less the active strategies would be chosen. At IB and IC, before implementing ERP systems, all the requirements were agreed and a strong change management plan was put in place by the head office outside Egypt. Therefore, there was great pressure to manage the changes needed in the IAF from the group audit team.

Given the initial fear of the internal auditors that the ERP systems would replace them, it was surprising that they seized this as an opportunity to increase their scope and become a comprehensive audit with an integrated team. In this case, the IAF's practice and structure could not be completely explained by considering the governance institutional pressures. Thus, through the interviews, the ERP systems influence on the adaptation of the IAF has been understood. Therefore, there was an acquiescence response through mimetic behaviour in which the IAF sought to model the practice of similar organisations which were perceived to be more legitimate. Consultants and the professional network within the international organisations facilitated the copying process of the successful internal audit practice and structure of the organisations that had implemented ERP systems before.

The impact of ERP systems implementation on the IAF mainly depended on the level of the IAF quality before ERP. Where there was a good IAF before implementation, then ERP systems worked as a great motivation for this function to have a great revolution, while where there was a poor IAF before ERP, it easily lost its importance after ERP

systems implementation. Where it was strong, the IAF could improve to add more value after ERP systems implementation, while where it was weak it was very easily broken up. It can be concluded that while the implementation of ERP systems has the ability to facilitate change to the IAF, the willingness of internal auditors to accept change is critical. Table 10.4 shows the matrix of the IAF adaptation and responses.

10.6 IAF Legitimacy After ERP Implementation

One way to understand how a profession survives is to focus on its use of specific techniques to control and modify the system of knowledge in response to forces that open and close jurisdictions, provide new models for practice and change the legitimisation criteria (Abbott 1988). Moreover, Meyer and Rowan (1977) and DiMaggio and Powell (1991) suggest that the quest of legitimacy is one of the main motives behind the development of social practice such as internal auditing.

At IC, the IAF maintained pragmatic legitimacy through self-interest to adapt to improve their identity within the organisation. Moral legitimacy has been achieved as the adaptation was in alignment with the prevailing normative professional prescriptions and standards as “the right thing to do”, which required adaptation to maintain capability of providing internal control assurance and assist risk management. Therefore, the adaptation was considered as complying with the directions of the normative governance pressures.

On the organisational level, NC could not apply acquiescence strategy as there was no need to legitimate through having an adapted IAF. This was because the weak coercive and normative governance pressures related to the IAF and the absence of a successful adapted IAF model to imitate. One dimension of external legitimisation for NC was to achieve legitimacy by decoupling the inner core from their external environment. This was the way that NC used as there was no actual IAF; however, they kept only one internal auditor as a symbol of having an IAF. Internal auditors saw their role as being to serve their managerial clients rather than the public or investors since this affects what they regard as legitimate. Therefore, ERP systems and IT team served the managerial needs and the IAF lost its legitimacy.

For NB, the conformity with conventional beliefs, which was supported by the coercive and normative governance pressures, legitimated the IAF. The IAF at NB maintained its moral legitimacy through adhering to the inspection concept that is acceptable within the national banking sector. At IB, one of the legitimacy-maintenance strategies that has been used by the internal auditors was to focus on enhancing the ability to foresee the emerging challenges from ERP systems introduction. In addition to guarding against challenges, they seek to buttress the legitimacy they have already acquired.

According to the modern definition of the IAF by the IIA, the IAF should be legitimate through being able to assure the internal control and assess risks. ERP systems can be considered as a potential threat to the IAF's legitimacy.

10.6.1 Ability of the IAF to Provide Control Assurance

These internal auditors who maintained their legitimacy adapted to be capable of adding value by controlling the integration of ERP systems with other systems and assure the effectiveness of any new controls applied within ERP systems to mitigate risks. ERP systems were considered by these internal auditors as internal control tools that improved their service regarding internal control assurance. Others in the IAF, who could not adapt, felt threatened especially because of the IT team's involvement in the internal control assurance at NC and NB. There was no need for deep technical knowledge to assure internal control systems after ERP systems implementation. When internal auditors assured the implementation of the segregation of duties rules on the systems and assured that all the feeding processes were done correctly, then the internal auditors gave assurance about the effectiveness of the internal control system.

10.6.2 The IAF Ability to Support Risk Management

The nature of risks is different after ERP systems implementation from using legacy or manual-based processes. Internal auditors who maintained their legitimacy adapted so as to be able to assess all types of risks

and determine the sufficiency of internal controls. The IAF supported risk management through a comprehensive risk-based assessment at IB and IC. ERP systems offered internal auditors a good opportunity to be more involved in the risk management process. Where the ERP systems implementation was a well-planned project, there were few new operational risks afterwards. Adding IT auditors to the internal audit team after implementing an ERP system was important for managing technical risks.

Other IAFs preferred a traditional function and avoided using the systems to improve their profession, so their legitimacy as a governance tool was threatened. In these cases, other parties such as the IT team, internal controllers and IT security officers played a more effective role in supporting the risk management processes.

10.6.3 The IAF Importance After Implementing ERP

The importance of the IAF depended on the organisational culture. International organisations gave the IAF a respected position. ERP systems implementation by itself did not change the internal audit's position; however, the role played by internal auditors during the implementation process and their intention to benefit from ERP systems increased their knowledge of the system. Consequently, the IAF's value within the organisation was increased. The IAF's involvement in ERP systems implementation can be considered as proof of the trust and understanding of the top management of the importance of the IAF. The IAF is the maestro who keeps harmony among governance, external and internal rules and policies and ERP systems and business processes. ERP systems supported the IAF position as an important governance tool. More weight was given to the IAF than ever before. The IAF was considered as a very important function that is highly appreciated by all stakeholders, and any kind of support needed by the IAF is immediately provided. Here the IAF was the main generator of change.

In the national cases, the top management did not attach importance to the IAF. This lack of regard was reflected at NC in having a dummy audit committee on paper only which was not activated. The IAF was

part of the financial department and reports to the top financial manager. The IAF could not work as a governance tool to support risk management and internal control assurance.

The abilities of the IAF to do the activities that legitimise are shown in Table 10.5, and the meta-matrix is shown in Table 10.6.

10.7 Reflections on Findings

“Conflicting literature represents an opportunity. The juxtaposition of conflicting results forces researchers into a more creative, frame breaking mode of thinking than they might otherwise be able to achieve” (Eisenhardt 1989, p. 544). Therefore, this section aims to highlight and discuss the consistencies and inconsistencies between the findings of this study and findings of the previous literature when available.

10.7.1 IAF-Related Governance External Pressures

Institutional environments influence the macro-level through the “archetypes they develop for actors, the logics they legitimate and the governance systems and rules of social action they support” (Scott et al. 2000, p. 166). On the macro-level, the governance pressures to adapt the IAF, to automate and integrate internal audit activities, to extend audit scope, to develop audit skills and to support the IAF standing within businesses were weak in Egypt. Internal auditors stressed the fact that Egyptian laws did not include rules that state their rights and obligations but, in Egypt, there is no strong independent professional organisation and there are no standardised measures for internal audit quality.

Very few studies address the corporate governance institutional pressures upon the IAF (e.g. Al-Twajry et al. 2003; Arena et al. 2006). These studies have focused on investigating the impact of governance institutional pressures on the establishment of internal audit departments at the country level (Saudi and Italy), while the current study

Table 10.5 The internal audit function legitimacy matrix

	Case study 1 IC	Case study 2 NC	Case study 3 NB	Case study 4 IB
Internal control assurance	IAF responsible for assuring functionality and effectiveness of internal controls in mitigating risks, whether these controls are manual controls or automatic	IAF could not assure the effectiveness of internal controls after most of the internal controls they used to review became automated based on ERP systems The IT team are responsible for assessing and managing technical risks and internal auditors have no role to play in this issue The IAF could not survive after ERP systems implementation as it did not receive the proper support to adapt	IAF emphasised more of financial controls; while IT department paid more attention to technical security controls	Internal auditors proved that they are able to provide proper assurance of the efficiency of the internal control systems even after ERP systems implementation and turning towards more automated controls
Risk management	The auditing practice are risk-based Internal auditors are more capable than others of assessing risk sources and help in mitigating these risks effectively IAF has prestige within the company, especially after their effective role in the successful implementation and stabilisation of ERP systems in the company	The IT team are responsible for assessing and managing technical risks and internal auditors have no role to play in this issue The IAF could not survive after ERP systems implementation as it did not receive the proper support to adapt	IT and risk management departments are responsible for assessing and managing risks, while internal auditors have no noticeable role	The IAF prepare a risk mapping process to classify risks from high to low in different areas within the bank. Internal auditing is risk-based before and after ERP systems implementation
Position after ERP	IAF has prestige within the company, especially after their effective role in the successful implementation and stabilisation of ERP systems in the company	The IAF could not survive after ERP systems implementation as it did not receive the proper support to adapt	ERP systems implementation did not raise the importance of the IAF. It highlighted the IAF deficiencies and areas that needed improvements	The internal auditors succeeded in preserving a very good image for their profession. They reduced the gap between their desired and perceived professional images. Internal auditors are capable to meet the technical and social demands of their function

Table 10.6 Meta-matrix

Sector ERP	Case study 1 IC	Case study 2 NC	Case study NB	Case study 3 4 IB	Case study
Corporate governance institutional pressures	SAP				
	International	X	X	X	X
	Egyptian regulations	X	X	✓	X
	Egyptian Supervisory Institutions	X	X	✓	X
Coercive	International regulations	✓	X	X	✓
	Head office policies	✓	X	X	✓
	External auditor	X	✓	✓	X
Normative	Professional network	✓	X	X	✓
	Formal education	-	X	X	-
ERP systems' logic of control Assumptions	Mimetic	Copy successful model	✓	X	✓
	Automation		✓	✓	✓
	Centralisation		✓	✓	✓
	Continuous monitoring		X	X	✓
	Data consistency		✓	✓	✓
	Data security		✓	✓	✓
	Integration		✓	✓	✓
	Multiple methods of control		✓	✓	✓
	Preventive controls		X	✓	✓
	Standardisation		X	✓	✓
	Transparency		X	✓	✓
	Compensating controls		X	X	✓

(Continued)

Table 10.6 (Continued)

	Case study 1 IC	Case study 2 NC	Case study NB	Case study 4 IB
Aligning efforts				
Alignment	✓	✓	✓	✓
Change management	✓	X	X	✓
Reengineering and customisation	✓	✓	✓	✓
The internal audit role	✓	X	X	✓
Scope of services and practice change	✓	✓	✓	✓
IAF changes				
Structure change	✓	✓	X	X
Skills change	✓	X	X	X
Tools change	X	X	X	X
IAF outsourcing	X	X	✓	X
Relations with IT department	✓	✓	✓	✓
Size	✓	✓	✓	X
Budget	X	✓	✓	✓
Relation with external auditor	✓	X	✓	X
IAF responses				
Acquiescence	✓	-	-	✓
Compromise	✓	✓	✓	-
Avoidance	-	-	✓	-
Defiance	-	✓	✓	-
Manipulation	-	-	-	-
IAF legitimacy				
Internal control assurance	✓	X	X	✓
Risk management	✓	X	✓	✓
IAF Position after ERP	✓	X	X	X

focuses on the impact on the functional practice or structures on the organisation and sub-organisational level.

Egypt is considered as one of the fast-reforming economies (Bolbol et al. 2005); therefore, thorough research using a multiple-case study offers useful policy implications. In accordance with the findings of the previous studies (Al-Twajjry et al. 2003; Arena et al. 2006), it is suggested that there should be more coercion through compulsory regulations to push companies towards maintaining adapted IAFs and organise their activities effectively. The findings of this study are consistent with the results of Arena and Azzone (2009), who suggest that the internal audit professional bodies should redesign the competency sets needed for their profession.

Unlike Al-Twajjry et al. (2003), who investigate the case of internal auditing in Saudi Arabia using a questionnaire study, this study uses institutional theory to understand the IAF changes using in-depth case study on the organisation level. The study results are consistent with the results of Ebaid (2011) who shows that weak organisational status affects negatively the internal audit's role in the governance process, while it shows different results from Arena et al. (2006) who found that there is an influence of regulations on the development of the internal audit in Italy.

10.7.2 Control Assumptions of ERP

Yoo et al. (2007) find that ERP systems embody particular rationalised logic and procedural focus; however, the principle commonly associated with ERP systems is control. They suggest that this control principle is based on assumptions of standardisation, visibility and integration. In this study, all the assumptions related to the ERP control principle were explored and fresh insights were provided by conceiving ERP systems as having control logic in themselves.

On the micro-level, one fruitful way to understand ERP systems challenges was the institutional lens (Gosain 2004; Currie 2009). According to the adopted institutional lens, the study confirmed that ERP systems, which are material carriers of the logic of organisational

actions with associated rationalities, resulted in the emergence of new practice and structure of the IAF which lack a commonly accepted orientation.

Others, such as Bea and Ashcroft (2004) and Kanellou and Spathis (2011), provide evidence that implementation of ERP systems has a large impact on auditing. However, previous research does not investigate in depth how the IAF changed or should change. The participants' responses confirmed that the new logic of ERP systems in controlling the business requires IAF adaptations; otherwise, the importance of this profession would vanish gradually. The findings agree with Kanellou and Spathis (2011) and Chen et al. (2012) that it is obvious that ERPs significantly change the auditing procedure and the internal control. Furthermore, the evidence here offers more understanding of the new logic of ERP systems in controlling the business. ERP systems impose new logic based on some assumptions such as: standardisation, multiple ways, integration, automation, data consistency, compensating controls, transparency, preventive control and continuous monitoring. These assumptions strengthen internal control and reinforce corporate governance.

It has been confirmed that ERP systems, if implemented and used properly, can significantly improve the internal control system. ERP systems offered automatic controls that reduced human intervention errors. ERP systems automated many controls and turned them into being preventive more than detective. This is consistent with previous studies, which suggested that automation is an ERP systems' control assumption as in Sect. 2.2.4 (e.g. Rikhardsson et al. 2005; Chapman and Kihn 2009; Emerson et al. 2009). Automation provided by ERP systems implementation resulted in preventive control and continuous monitoring. ERP systems made data consistent through standardising business processes and unifying the whole data process. The standard data entry process in one standard format leads to data consistency. Some previous studies suggest that the standard data process is a control assumption brought by ERP systems implantation such as discussed in Sect. 2.2.4 (e.g. O'Leary 2000).

ERP systems offered an IT central infrastructure which supported the internal control system consistently, and some previous studies

have highlighted centralisation as a control assumption related to ERP systems as in Sect. 2.2.4 (e.g. Ragowsky and Somers 2002). ERP systems control the business based on the integration offered, as previous studies suggest in Sect. 2.2.4 (e.g. Soh et al. 2000; Mabert et al. 2001; Chapman and Kihn 2009). Integration raised new control concepts that internal auditors should take into consideration when assuring controls such as peer-review and self-review controls. The study findings are consistent with Chapman and Kihn (2009), who propose that the full ERP systems automated integration of functions provides more transparency. In Sect. 2.2.4, some previous studies highlight the increased transparency facilitated by ERP systems implementation (e.g. Elmes et al. 2005).

10.7.3 Aligning Efforts Among ERP, Governance and IAF

ERP systems institutionalise managerial actions and rationalities in the form of institutional logic (Gosain 2004) that clashed with local institutions and caused major problems in some cases. The traditional IAF practice was incongruent with the identified control logic of ERP systems that guide practice. Therefore, alignment did not occur without adapting practice.

ERP systems implementation is a socio-technical challenge that requires a different way of looking at things from purely technologically driven innovations. ERP systems supported the governance efforts through offering transparency and a top-down approach. The findings are consistent with previous studies asserting that change management is a critical issue in ERP implementation. The cascading nature of adaptation required suggests that managers should not underestimate the efforts required for managing change (Robey et al. 2002). The study results are consistent with Chen (2009) about the importance of aligning ERP systems implementation with corporate governance processes. As suggested by Spathis and Constantinides (2004) and Nicolaou and McKnight (2006), the findings also suggest that the implied logic of ERP systems enhances the corporate governance process through increased transparency and the significant impact on control processes.

These findings support Chen (2009), who concluded that ERP should be considered as a part of the corporate governance system. The research findings confirmed that ERP systems were considered as a corporate governance tool, but only when internal auditors are well involved in the early stages of the systems implementation. Unlike the findings of Saharia et al. (2008), this study found that internal auditors played an important role in defining internal control and in reengineering efforts necessitated by ERP implementation. Internal audit participation in ERP systems implementation gave them opportunities to insure that all controls were in place and the process was compatible with the standards. This agrees with Glover et al. (1999), who suggests that internal auditors can use their understanding of operations and risks to help in implementing ERP systems. The research results added that the involvement of the internal auditors during the implementation stage can have a great impact on considering these systems as a corporate governance mechanism. In agreement with Nwankpa and Datta (2012), this study finds that it is prudent to involve internal auditors in playing an active role in the implementation phase of the ERP. Moreover, in accordance with Scott (2008), the substantial changes in the logic governing professional work have increasingly invaded many of the more traditional professions such as IAF.

10.7.4 The IAF Adaptation

Many studies have highlighted the need to change the IAF as it faces various technological challenges and gains unprecedented importance as a corporate governance actor (e.g. Smith 2000). Others suggest that ERP systems have driven radical changes in audit processes (Sutton 2006; Grabski et al. 2011); however, no study has focused on investigating the adaptation and the response to these challenges.

The research evidence shows that traditional internal auditing practice in terms of financial and regularity audit is less important. The dominant approach was the comprehensive audit focusing on aspects of efficiency and effectiveness in the whole business. In accordance with Chen et al. (2012), the study suggests that the importance of

transactions audit has decreased since ERP implementation. The IAF, in some cases, needed to do extend its scope from purely control assurance to many areas which were not in its scope before. This finding agrees with Dechow and Mouritsen (2005), who conclude that internal controls become a collective affair, where the ERP defines the logic through which a control function is performed, as discussed in Sect. 2.3.3. Moreover, the findings match the results of the previous research on management accounting, reviewed in Sect. 2.4.1. For example, Scapens and Jazayeri (2003) observe a widening of the role of the management accountants.

Confirming Saharia's et al. (2008) results, the study suggests that ERP systems implementation generates a need for additional skills in the internal audit team. They must have enough system knowledge and skills to understand the internal workings of the implemented ERP systems; however, the evidence here emphasises that there is a need for not only IT or system knowledge but also communication skills in order to be able to work in an integrated team. These results agree with Gramling et al. (2004) that further skills are needed for internal auditors to expand the scope of assurance that is a cornerstone of the role of IAF in corporate governance.

Although the assurance of the reliability of internal controls is much more critical for an ERP system, the study findings are inconsistent with the suggestion of Bae and Ashcroft (2004) that auditors need to heavily rely on CAAT and with Lightle and Vallario (2003), who claim that auditors need new software tools to help them expedite the segregation of duties testing process; otherwise, their ability to assure controls would be compromised. The findings are consistent with results from management accounting as discussed in Sect. 2.4.1 that no sophisticated management accounting techniques have been introduced after ERP systems implementation (Scapens and Jazayeri 2003). Furthermore, the study finds that where the IAF did not possess skills then the IT audit was completely outsourced. These findings are consistent with previous studies, discussed in Sect. 2.6.5 (e.g. Abdolmohammadi and Boss 2010).

The study finds that organisations with highly advanced abilities to use information derived from an ERP and to understand assumptions

behind its control logic have adapted their IAF's practice and structure. This is consistent with Davenport et al. (2004) referred to in Sect. 2.2.2, who suggest that these organisations have the potential to alter job roles and change their organisational structures.

The study findings confirm that ERP, based on its control assumptions, is a catalyst to change the internal auditors' role, which is in agreement with the findings in management accounting as discussed in Sect 2.4.1. For example, Granlund and Mouritsen (2003) conclude that the management accountants' roles were redefined, although they did not find a clear causal relationship between IT and management accounting work. The findings regarding the increase of the IAF's scope of services to cover non-financial aspects and access control are consistent with the suggestions in the literature. As discussed in Sect. 2.3.3, the findings are consistent with Glover et al. (1999), who claims that internal auditors toned to have experience of controlling the non-financial side of the business and with Rikhardsson et al. (2005) who suggests that the importance of controlling access and use of information is increased. These findings agree with the suggestion of Arnold and Sutton (2007) that internal auditors need to focus on the ERP system process to assure robust internal controls in order to ensure complete, accurate, authorised and valid processing of all transactions.

The study results regarding the increase of the scope of services do not show, in most cases, a huge increase in the consultation. This is inconsistent with Selim et al. (2009) who document a significant increase in consulting practice in the UK, Ireland and Italy. The study results regarding the increase of the scope of services do not show a role for the IAF in deciding the proper degree of security. This is inconsistent with She and Thuraisingham (2007), who claim that internal auditors may play a role in deciding the degree of the security to trade off between cost, time, complexity of operations and security needs.

The importance of the internal auditors declined, in some cases, compared with the IT team. This finding is similar to the results in management accounting as discussed in Sect. 2.4.1, where for example, Newman and Westrup (2005) show that neglecting the relationship between management accountants and ERP systems allows other groups to wrest control from management accountants and take over ERP

work themselves. Moreover, the findings agree with what Allen (2008) suggests in (Sect. 3.2.6) that the internal audit department should work closely with the IT department. The findings gave multiple insights in different cases as an answer to the questions that have been asked by Sumners and Soileou (2008), who wanted to know how the internal auditors' interaction with the IT department changes after ERP system implementation.

The internal audit team increased in number, in some cases, as internal auditors from different backgrounds became needed. This finding is inconsistent with the results in management accounting, Sect. 2.4. For example, Chapman and Chua (2003) provide evidence that both aspects of automation and integration in ERP systems cause a reduction in the size of the managerial accounting function. However, as the interviews were conducted shortly after implementation of the ERP system, the increase in the number of internal auditors may have been only temporary until people got used to using it.

Furthermore, the findings confirm the suggestions in (Sect. 3.2.8) of Petter et al. (2008) that a significant internal audit cost is related to the complexity of recent IT and Abdolmohammadi and Boss (2010), who suggest that the significance of the budget of the IAF is related to the complexity of the IT. Additionally, the study results are inconsistent with Glover et al. (2008) because the results show that there is a weak interaction between internal and external auditors, while this study confirms the suggestion of Munro and Stewart (2010) that changes in the internal audit are likely to impact external auditors' reliance decisions

Dillard et al. (2004) classify organisations into innovators and late adopters based on the extent to which organisations introduce new practice or implement successful practice. The study finds that the responses of the IAF went through more than one stage and the implementation of a new practice by a late adopter legitimises the practice and encourages additional late adopters to implement the practice.

In accordance with Oliver (1991), the study finds that when conformance was anticipated to enhance legitimacy, acquiescence was the response to institutional influence. Therefore, IAFs that adapt to the ERP systems working environment thrive, whereas those continued to follow a traditional compliance approach could not survive. In

accordance with Oliver (1991), the study finds that when the extent of the institutional pressures are consistent with goals they would be inclined to select less active strategies such as compromise and acquiescence, as in the cases of IB and IC. Additionally, one key element of the pressures which were exerted was the degree of inter-connectedness in the business environment. ERP systems are integrated into the business processes; therefore, they cannot be audited or audit their outcomes separately as their impact on the financial, operational or compliance audit can be isolated. These results are in accordance with Oliver (1991) who shows that the higher the degree of inter-connectedness, the lower the likelihood of using active strategies.

10.7.5 IAF Legitimacy After ERP Implementation

The IAF seeks legitimacy; therefore, the change itself should be legitimated. The internal audit legitimacy was threatened by the misalignment of expectations. These threats led to pressures for changing the practice and the structure of the IAF. The legitimacy of the IAF as a profession rests in part on an assumption that individuals are rational and knowledgeable and motivated to ensure that internal controls are effective to mitigate risks. Based on this assumption, the adapted IAF, in most cases, maintained legitimacy, while in some other cases the IAF tried to maintain legitimacy through serving the management or keeping inherited acceptable roles. In contrast to this Arena and Jeppeson (2010) find that Danish internal auditors derive their legitimacy mainly from being assistants to the external auditors.

According to the institutional change model proposed by Greenwood et al. (2002), events such as ERP systems implementation or governance pressures can destabilise and change IAF practice. These changes precipitated the entry of new players, the ascendance of existing actors or disturbed the socially constructed consensus by introducing new ideas and thus the possibility of change. Then, organisations and IAFs innovated independently, seeking viable solutions to locally perceived problems. New practice was adopted and compellingly presented as more appropriate than existing practice. Therefore, the adapted IAF in most

cases maintained pragmatic or moral legitimacy. The IAF adaptations could be diffused to gain social consensus concerning their pragmatic value (Suchman 1995); thus, they might diffuse even further. Therefore, it is suggested that future research could investigate whether the changes themselves become taken for granted as the natural and appropriate arrangement to reach cognitive legitimacy (Suchman 1995).

10.8 Conclusion

The findings of the cross-case analysis highlight similarities among the four case study companies; however, there were some differences. In this study, the specific feature adopted is the strategic responses (Oliver 1991) of IAF and organisations to the ERP systems, considering that IAFs are subject to rules and regulations to which they tend to conform so as to ensure their legitimacy. Institutional theory (DiMaggio and Powell 1991) is adopted to explain and understand the dynamics of the change in the IAF. The focus, therefore, was on explaining and understanding how the change in the IAF was shaped by both macro- and micro-forces.

Some conclusion can be drawn from these case studies. Internal auditors look upon current technological and governance developments as a golden opportunity to raise the level of expectations about what they can offer and add in terms of value. Nevertheless, they have to be equal to the task. They need to widen their own horizons, keep abreast of rapidly changing technologies, regulations and legislation. The IAF needs to adapt as rapidly as the working environment or it will lose its legitimacy. Recognising the need to change is easier; implementing strategic change is so far the greater challenge.

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