Master’s Degree Project
Internal Control application

Empirical evidence from Sweden

Author: Ramy Abou Zaid
Supervisor: Klas Sundberg
Examiner:
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Abstract

Aim

The aim of this study is to explore based on internationally recognised frameworks:

1. how internal control structures are applied in Sweden among different sectors;
2. how organizational size and environment affect internal control structures; and
3. the impact of internal control structures on organizational performance.

Methods

A quantitative method was used in the data collection and analysis. The sample consisted of 1117 organizations operating in Sweden. A mean analysis was conducted to measure the level of internal control structures among different industries, organizational sizes, and different choices of listing in the stock exchange market. Person’s correlation analysis was then used to explore possible correlations between external environmental factors and internal control structures, and internal control structures and organizational performance. Lastly, a structural model was built to measure the impact of internal control structures on organizational performance. The measurements of internal control structures and organizational performance are based on COSO framework’s principles and objectives.

Results

This study gives an insight on how internal control structures are applied across industrial sectors in Sweden, with financial institutions and manufacturing organizations having notably higher levels of internal control structures. Additionally, it provides evidence of the impact external environmental factors have on internal control structures. Furthermore, it shows that organizations that are listed in the Swedish stock exchange market have an equivalent level of internal control structures to those registered in the American stock exchange market. In contrast, organisations that are not listed in the stock exchange market have a notably lower level of internal control structures. Lastly, it illustrates the positive impact the presence of internal control structures has on organizational performance.
Conclusion

The results highlight a crucial role the supervisory authority Finansinspektionen (FI) has in regulating the Swedish financial market. They also show that the stability of the Swedish business environment has had a positive impact on the level of internal control structures.

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List of abbreviations and key words

- Committee of Sponsoring Organizations of the Treadway (COSO),
- Sarbanes-Oxley Act 2002 (SOX).
- Supervisory Authority Finansinspektionen (FI).
- Contingent Factors (CF).
- Internal Control Structure (ICS).
- Organizational Performance (PREF).
- Control Self-Assessment (CSA).
- Pearson product-moment correlation coefficient (PCC).
- Structural Equation Model (SEM).

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1 Introduction

1.1 Setting the scene

The growth of the corporation as a business structure in the early 20th century led to increased separation between management and investors. This separation was accompanied by increased investor concerns regarding businesses financial positions, resulting in periodical audits by external public accountants. These changes in the business environment with the consequential new forms of structures, illustrated by creation of departments, specialization of operating units and functions, also deepened the gap between management, operating units and functions of the business. To fill this gap and perform adequate management control, various forms of internal control started to emerge at that time (Haun, 1955).

Arwinge (2014) argues that internal control matters for different stakeholders such as investors, customers, credit rating agencies, regulators, supervisory authorities and media in addition to the company itself. The corporate scandals of the early 21st century extremely affected investors trust in the capital markets (Chan, Farrell, & Lee, 2008). The presence of fraud and unanticipated business failures in the 80s led the U.S. government to demand adequate financial reporting systems, and especially the internal controls, of public companies. This concern encouraged the creation of the Committee of Sponsoring Organizations of the Treadway (COSO) and its call for additional internal control standards and guidance (Kinney & McDaniel, 1989).

Moreover, the greater complexities in businesses, the technological revolution, the intensified requirements of laws and regulations, the increased pressure from different stakeholders concerning more information about the business and the rising costs in public accounting have raised the demand for internal controls (Brown, 1962).

According to the COSO publication, Internal Control-Integrated Framework (COSO, 1992), internal control systems are designed for an organization to achieve reliability in its financial reporting, effectiveness and efficiency in its operations, and compliance with laws and regulations.
However, in the past two decades since the publication of the original framework, business and operating environments have transformed radically, becoming increasingly complex, technologically driven, and global. At the same time, stakeholders are even more attached to businesses, demanding higher transparency and accountability for the integrity of internal control systems that support business decisions and governance of organizations. This required the COSO to publish a new integrated framework (D’Aquila, 2013). Thus, there is a greater need for studies that examine the development of the organizational systems within an increasingly complex business arena.

1.2 Need for the study

Arwinge (2014) argues that the impact of risks, such as fraud and scandals, coupled with the increasing accessibility of data via the internet and media (Carlsson, 2004; Kallinikos, 2005), allows for hostile reactions from investors and other stakeholders to deficiencies in systems to occur dramatically. These changes pose increased challenges to management to enhance the effectiveness of internal control systems and to clarify this concern to the board of directors and shareholders (Sutton, 2006).

The external audit has been the core function in corporate governance in response to the increased demands for transparency and accountability in corporate governance recently, resulting in a great demand for the audit function. This was accompanied by the development of internal control systems, transferring the concept from a narrow matter concerned with accounting records and financial reporting into a wider corporate governance approach. The joint development of the internal control concept and the role of Enterprise Risk Management (ERM) made the two concepts more closely tied together, where internal control has become an all-encompassing process for risk mitigation that covers the entity as a whole (Arwinge, 2010).

In 2002 the U.S. Congress passed the Sarbanes-Oxley Act, SOX 2002 (What is the ’Sarbanes-Oxley Act Of 2002 - SOX, 2003). Under Section 404 of SOX, managements of firms listed in the U.S. exchange market are required to issue a report assessing the effectiveness of a firm’s internal controls. The responsibility for validating the effectiveness of internal control over financial reporting and verifying the management’s assessment of internal controls is assigned to external independent auditors (Chan et al., 2008). In other words, the application of SOX
(2002) has significant implications on businesses as it requires U.S. publicly traded companies’ to explicitly declare the weaknesses they have in their internal control systems. This implies that they are required to fix these deficiencies and that requires more investment into internal control systems.

Since the application of SOX 2002 in USA, many studies (Chan et al., 2008; Doyle, Ge, & McVay, 2007; Ge & McVay, 2005) have taken place in USA. to examine the frequency of material weaknesses declarations and analyse their association with different factors such as size, profitability, and firm’s complexity, etc.

However, Arwinge (2014, p. 21) argues that, although, the professional and practical texts, frameworks and standards on internal control design and application are widely spread, academic and scientific research is lacking. Furthermore, Jokipii (2009) adds that studies that examine internal control effectiveness within the organizational environment are non-existent. COSO (2013) illustrates that an internal control structure that is tailored to an organization’s environment results in the enhancement of organizational performance. In addition, neither the professional texts and frameworks nor prior studies offer adequate information about the association of internal control systems with firms’ organizational environments. Contingency theory suggests that there is no one applicable universal system that fits all organizations in all circumstances, but rather the accounting systems are shaped by environmental and organizational factors (Otley, 1980). This contingency perspective is aligned with the leading frameworks (COSO, FRC, etc.) on internal control (Arwinge, 2014), and offers a rich theoretical foundation for management control research. Therefore, this study adopts a contingency approach in attempt to understand the association between the organizational environment and the examined organizational systems.

1.3 Research problem

Internal control systems were investigated in association with organizational environments in several prior studies under the application of SOX (2002) in USA (Chan et al., 2008; Doyle et al., 2007; Krishnan, 2005; Skaife, Veenman, & Wangerin, 2013). The application of SOX (2002) on firms listed in the U.S. exchange market facilitated academic studies that examined the association of deficiencies in internal control systems with the organizational environment. This information is easily available and accessible from the U.S. Securities and
Exchange Commission (SEC, 2016). In contrast, to conduct such academic studies on firms that are not listed in the U.S. exchange markets requires access to information that is not easily acquired, which makes it harder to observe the impact of the organizational environment on the examined systems.

The shortcomings in the scientific research in this area can be understood due to the fact that the objective evidence of the actual performance of internal controls is non-existent (Martin & Power, 2007). This is because of the nature of the information required to assess internal controls application, which is considered to be sensitive information by most organizations. It is considered to be a black box that is not visible for external parties (Arwinge, 2014). Thus, most research avoids the exploration of this topic.

Sweden was one of the first countries in Europe to apply GL 44 (The EBA, 2016), which is an EU framework that regulates corporate governance as well as internal control. This regulation is conducted in Sweden under the oversight of the supervisory authority Finansinspektionen, FI (“About FI,” 2004). One of the earliest regulations applied under GL 44 cover guidelines for governance, risk assessment, and internal control at credit institutions (FFFS 2004:1). The FFFS (2004:1) and many other regulations imposed by FI are based on the COSO framework and stipulate the application of internal controls in the Swedish financial market.

Arwinge (2014) studied internal control design, application and outcomes of internal controls based on a case study of an insurance company in Sweden, Folksam. The study took into consideration the firm’s specific factors and their impact on the internal controls design and outcome, yet insurance companies as part of credit institutions are highly regulated by FI with a large number of demands on their internal control systems. This case study therefore does not illustrate the whole picture of internal control application in Sweden (FFFS 2014:1).

Another study was conducted in Sweden by Franck and Sundgren in 2010 about internal control application in 97 publicly traded Swedish companies. The study shows that 2/3 of the examined companies increased the amount of investment in internal control during the period of the study. The study was based on managements’ perception of whether there is a benefit in the application of internal controls. It illustrated that the likelihood of errors in financial statements had been reduced following the application of internal control systems. In
addition, it showed that Swedish listed companies are willing to increase the amount of investment into their internal control systems. Still, the presence of internal control systems in Sweden remains an underexplored topic\(^1\). This is highly remarkable, as the systems in Sweden have grown more complicated, as in other non-Anglo-Saxon countries (Doupnik & Perera, 2012). In particular, there is a need for studies that examine the organizational performance associated with the presence of internal control structures within the organizational environment (Arwinge, 2014). This study focuses on Sweden, as an example of broader international phenomenon.

Therefore, the aim of this study is to explore:

1. how internal control structures are applied in Sweden among different sectors;
2. how organizational size and the environmental uncertainty affect internal control structures;
3. the impact of internal control structures on organizational performance, based on internationally recognised frameworks.

\(^1\) Might be the result of data accessibility in Sweden in contrast to the case in the U.S.
2 Conceptual Framework

2.1 Internal control

2.1.1 The development of internal control definition

Arwinge (2010) recognizes a difficulty in giving a single definition of control in organizational theory. He argues that the concept of control lies between different fields of academia, such as organization, management control, management accounting and auditing. Although the concept has significant overlap between these academic fields, it is still fragmented into their separate research areas. The origin of the word control comes from French language, in which it means to check (Tannenbaum, 1968). Tannenbaum debates that the word control is usually used interchangeably with terms such as influence and power. He refers to control as “any process in which a person or group of persons or organization of persons determines, that is, intentionally affects, the behaviours of another person, group or organization”.

The concept of internal control came into existence in 1982 through the publications of the English-Audit specialist Lawrence Dicksee. Dicksee (1982) recognized that the main duty of the auditor was to evaluate the system of controls and search for the weakest points. The internal controls were acknowledged as a system of internal inspections, established by the firm itself, whereby the duty of external auditors should be focused on evaluating this system before reviewing the annual accounts. Therefore, the external auditors viewed that system as an organizational internal system for controls.

Since the emergence of the internal control concept in the accounting and auditing society, there has been an ongoing debate in an attempt to define the concept (Heier, Dugan, & Sayers, 2005), in which official definitions have been shown to be contestable (Hay, 1993). Maijoor (2000) adds that the traditional view of the concept of internal controls was mainly focused on the accounting records, but that it has evolved to encompass a significant amount of organizational activity. This was considered as an expansion of the domain of internal controls to general management and corporate governance.
In 1992 the Committee of Sponsoring Organizations of the Treadway Commission (COSO) released its Internal Control—Integrated Framework. The framework has obtained a great deal of recognition in the business arena and is extensively used worldwide as a base for regulatory authorities. It is recognized as a prominent framework for designing and applying internal control and measuring the level of effectiveness of internal control. Thus, this study adopt the COSO definition of internal control.

2.1.2 Internal Controls (COSO)

According to the COSO (1992) publication, Internal Control-Integrated Framework, internal control is the process that is carried out by the entity’s board of directors, management and other personnel that is designed to achieve the company’s objectives effectively and efficiently, in which it provides a reasonable assurance that:

1. *the operations are efficient and effective*;
2. *the financial reporting are reliable in terms of accuracy and time*; and
3. *the laws and regulations are complied with*.

COSO (2013) adds that “Internal control is not a serial process but a dynamic and integrated process” (see Figure 1).
The Framework can be applied to all types of organizations: large, mid-size, small, for-profit and not-for-profit, and government bodies. Nevertheless, each organization may decide to apply internal control in a different way. For example, a smaller firm’s structure of internal control may be less formal and not as structured as larger firms. These smaller firms may though still maintain a high level of effectiveness in internal control. The COSO (2013) framework categorizes internal control into five interrelated components, in which each component unfolds a number of principles that must cover all the entity’s levels (Entity, division, operating unit, function). However, this study is focused on the application of internal controls on the entity level, due to the complexity of measuring it on all the organizational levels. The components of internal control structure are as follows:

1. **The control environment** component is considered the foundation for all other components and requires management, board of directors and personnel to demonstrate commitment to integrity and ethical values. The management must show independence and exercise oversight of the development and performance of internal control, which it must establish, with board oversight, structures, reporting lines, and appropriate authorities and responsibilities in the pursuit of objectives. The organization as a whole should demonstrate a commitment to attract, grow, and retain experienced individuals in alliance with its objectives. However, in pursuit of the organization’s objectives, the employees and management should be held accountable for their internal control responsibilities.

2. **Risk assessment** is the practise of recognising, analysing and managing the risks which could prevent the organization from attaining its objectives. The organization’s objectives should be specified clearly to enable the recognition and assessment of risks relating to those objectives across the different organizational levels. The organization should analyse risks on the entity, division, operating unit and function levels. This analysis should be considered as a base for determining how the risks should be managed. For example, the organization should consider the potentials for fraud while assessing risks, as well as identifying and assessing the changes in the business environment that could significantly influence the internal control structure.

3. There are different **control activities** that can be applied to enhance the application of strong internal control systems. These activities can be classified according to their results
(e.g., preventive activities such as proper segregation of duties and suitable authorization of transactions, detective activities such as bank reconciliations and top-level reviews of performance reports with variances from budgets, corrective such as procedures emplaced to correct errors discovered by detective controls, etc.)

4. **Information and communication** component requires that relevant and quality information is recognised, captured and communicated in a timely manner in a way that allows people to perform their responsibilities. The organization should make sure to internally communicate the information that is related to internal control including the responsibilities, the authorities and the objectives, which are necessary for the functionality of the internal control structure.

5. Lastly, the **monitoring** component requires the organization to assess the entire internal control system to assure that it operates effectively. The results of this monitoring and that should be communicated to the responsible parties including senior management and the board of directors, in an appropriate and timely manner. This should be followed by corrective action.

The components of the internal control system should not be considered separately, but rather should be operating together as a cohesive structure. In particular, the manner in which principles interact inside and across the components (COSO, 2013). The COSO frameworks also recognize that the alignment of the system with the contingent factors, such as environmental uncertainty, size, structure, and strategy, results in a higher performance of the system. These factors are discussed in detail in the next section which focuses on contingency theory.

The COSO (2013) framework states that internal control offers reasonable assurance, but not absolute assurance, for attaining the entity’s objectives. That is due to different shortcomings that are still present in internal control system, no matter how well designed, as it is not able to avoid irrational judgments or choices. It also cannot predict the external events that can lead to the organization’s failure to achieve its operational objectives. Limitations may result from different reasons, for example, the fact that human judgment might be subject to bias in the decision making process, or the failures caused because of human failures such as simple
errors. Other reasons can be the ability of management to override or manipulate the internal control. One significant limitation for internal controls could be the possibility of manipulation through collusion by management, personnel, and/or other stakeholders. Lastly, the rapidly changing environment might pose external challenges that are beyond the entity’s control. One can add to these limitations the presence of information asymmetry, which can create an environment of opportunism among the involved stakeholders.

2.2 Contingency theory

2.2.1 Concept

Wickramasinghe and Alawattage (2007) argue that until the 1970s there had been a dominant belief amongst the management accounting researchers that there was a universal model of for management accounting systems. After the 1970s the contingency perspective of management accounting has become more active, in which the ability of one system to provide information for decision making and management control, under any circumstances, was questioned.

According to Wickramasinghe et al. (2007) a contingency is an unavoidable business condition, it differs from an emergency in which it has to be acknowledged by managers and dealt with consequently. For example, hostile competition in the external environment should be recognised and considered while designing an organizational structure and management control system. The contingency theory of management accounting suggests that there is no one applicable universal system that fits all organizations in all circumstances, but rather the accounting systems are shaped by environmental and organizational factors, which will be considered later as contingent factors and recognised under 4 main categories: environment, technology, size and structure (Khandwalla, 1977; Otley, 1980).

The environmental factors consist of market conditions and their consequent variables such as price, goods, competition, increased regulations, governmental politics, etc. In their study (Burns & Stalker, 1961) categorise environment into two extremes, stable and uncertain. This study shows that firms that are operating in stable business environments are much more mechanistic and the ones operating in uncertain environments tend to be much more organic and less bureaucratic.
The technological factor denotes the type of production that is used by the firm. Woodward (1965) as cited by Wickramasinghe et al. (2007, P. 387) categorises technology into three major streams: small-batch and unit production, large-batch and mass production, and process production. Small-batch production usually implies less control as it is hard to predict the outcome of the production process. In contrast, in mass production the controllability and predictability are less complex, thus the control system becomes more standardized and formal.

Size of the firm can be measured differently in different studies, e.g. by number of employees or value of the assets. Pugh, Hickson, Hinings and Turner (1969) found that there is a clear relationship between the size of the parent company and its system, in which larger organizations are more standardized, specialized, formalized, etc. In contrast, smaller organizations are more likely to be less structured and less bureaucratic.

The structure factor refers to the formation of specific relations amongst people with defined goals and tasks. A structure that is badly aligned with the organizational control system can cause a great deal of wasted resources and lead to the eventual failure of the business the system was meant to support (Wickramasinghe et al. 2007, P. 390).

The COSO committee recognized that businesses continually evolve, and that new risks keep emerging in this dynamic environment. Thus, it sees that an effective internal control system acclimates to both planned and unanticipated deviations and events. In addition, such acclimation results in effective internal control that can help to mitigate risks that inhibit the organization from achieving its objectives. For these reasons the COSO committee updated the integrated framework and published a new one in 2013 (PWC, 2013), which reflects an implicit assumption of interrelation between internal control structures and contingent factors. The Linear model constructed by Otley (1980) is also aligned with the COSO model, in which it illustrates the connection between organizational performance measured by the achievement of organizational objectives and the contingent factors. Thus, Otley’s linear model is adopted in this study to elaborate how internal control structures are influenced by the contingent factors, in addition how internal control structures impact organizational performance.
2.2.2 Linear model (Otley, 1980)

According to Wickramasinghe et al. (2007, P. 390) the expansion and articulation of management controls systems is contingent upon several factors. This was followed by different attempts to conduct further studies (Miller, 1976; Otley, 1980, 1994) expanding contingency theory into management accounting arena.

(Otley, 1980) studied management accounting from contingency perspective by examining 3 contingent variables, technology, structure and environment. As part of these studies Otley developed a new model called the Linear model. Otley argues that the means of production must have an effect on the way the accounting information is provided. In his model, Otley suggests that environment and technology led the way in the design of organizations, which would have different characteristics such as shape, centralization and interdependencies. This design, illustrated in Figure 2, would also have implications on the type of Accounting Information System (AIS) in terms of technicality and behaviour. Lastly, the model elaborates a method to test the organizational performance, which can be measured by the achievement of the organizational objectives.

The COSO committee put further emphasis in the updated internal control framework on the relation between internal control structure and organizational performance. In particular, the updates emphasised the notion of risk oversight and strengthened the association between risk and performance. This boosts the ability of businesses to assign funds to support internal control in mitigating risks that inhibit the achievement of the entity’s objectives (PWC, 2013).

2.3 Research Framework

In this part the research framework for the research is introduced and hypotheses are constructed and related to the prior research. The foundation of the research framework is based on the Linear Model presented earlier by Otley (1980). However, the Linear model is slightly adjusted, in which the organizational design and Accounting Information System (AIS) are jointly under the internal control structure, as internal control structure according to
the COSO framework represents a dynamic and integrated process that covers the organization as a whole. This adjustment is necessary to ensure the relevance of the Linear Model with the current study, whereby organizational design and Accounting Informational Systems (AIS) are represented by Internal Control Structure (ICS). The theoretical relationships are categorized into 3 main levels: contingent factors (CF), ICS and organizational performance (PREF), (see figure, 2). The contingent factors level (CF) consists of the contingency factors that are examined in the study. The examined factors will be only the environmental uncertainty and size.

Furthermore, there are several reasons why size and environmental uncertainty are the chosen factors. First, prior studies in U.S. under the application of SOX (2002), (Doyle et al., 2007; Ge & McVay, 2005), recognized size as one of the main factors, where ICS is more present and effective in larger corporations. Dr. Richtermeyer (Small Businesses, 2013), IMA’s representative on the COSO board, recognizes both small- and medium-sized organizations as “a key part of the economy”, and debates whether internal controls application is important in small businesses.

The environmental characteristics of the firm in Sweden and its impact of internal controls application represents a special case. Sweden has a unique economic model, with among the EU’s lowest levels of national debt and a low and stable inflation rate, as well as a strong banking system (“How Sweden created a model economy,” 2013). The application of internal controls in association with this business environment remains unexplored.

Figure 3: The relationships between theoretical concepts examined
Sundberg (2014) covers in his study the association between structure, strategies and management control systems in Atlas Copco, one of the leading industrial Swedish companies with international business worldwide. The study has a longitudinal approach and covers a period between 1980 and 2011. Sundberg debates whether changes in strategy stretch for a longer period of time, in contrast to the case in traditional literature on management control. It has been acknowledged that there is a complexity in measuring structure and strategy in addition to not having a complete access to information from particular organizations. Thus, it has been recognized that it is difficult to measure these contingent factors within the scope of this study. In addition, while a great deal of research took place in the U.S. under the application of SOX (2002), which facilitated conducting such studies due to the explicit declaration of material weakness. The application of SOX (2002) denotes a higher level of application of internal controls in organizations that are listed in the American stock exchange market than organizations that are listed in the Swedish stock exchange market.

The ICS level represents the internal control structure which consists of the five components based on the COSO (2013) framework. Lastly, the organizational performance (PREF) level consists of the objectives of internal control systems that are presented in the COSO (2013) framework. The model aims to observe the relationship of the contingent factors (CF) with the ICS. Then ICS is linked with PREF.

2.3.1 Size

Ge et al. (2005) and Doyle et al. (2007) examine the firms that have disclosed material weaknesses in their internal control under the application of SOX (2002) in the U.S. The research claims that large firms tend to obtain more resources that can be allocated towards greater staffing, as well as towards internal auditors or consulting fees, which can lead to the assertion of strong internal control. The research illustrates that the disclosure of material weaknesses is negatively correlated with firm size. In addition, Jokippi (2009), in his study on Finish firms, finds that internal control structure is dependent on the size of the organization.

- H1: Organizational size will have a positive impact on the presence of internal control structures in Sweden.
2.3.2 Environmental uncertainty

The earlier conclusions by Stalker (1961) showed that a stable environment is associated with more mechanistic and structured organizations, and in contrast uncertain environments associate with much more organic and less bureaucratic organizations. However, later studies contradict these results. For example, Chenhall (2003) recognizes that organizations that operate in hostile and uncertain environments tend to rely heavily on formal control systems. Jokipii (2009) found that companies operating in foreseeable environment tend to have a less effective internal control structure than the ones operating uncertain environment.

- H2: Environmental foreseeability will have a negative impact on the presence of internal control structures.

2.3.3 ICS and the observed organizational performance (PREF)

On the one hand, the theoretical relationship between ICS and the organizational performance is based on the COSO framework (1992). The framework states that organizational performance is associated with ICS, which relies on the idea that internal control components are presented and operating well. In addition, the framework recognises that a properly tailored ICS that suits the business environment will result in enhanced organizational performance. Jokipii (2009) claims that there is no prior study that measures the organizational performance based on solely internal control systems, he then recognises that internal control structures mediate the relationship between the contingent variables and observed organizational performance.

H3: The presence of internal control structures will have a positive impact on organizational performance.
3 Research Design

3.1 Research strategy

The aim of this study is to explore:

1. how internal control structures are applied in Sweden among different sectors;
2. how organizational size and the environmental uncertainty affect internal control structures;
3. the impact of internal control structures on organizational performance, based on internationally recognised frameworks.

To meet this aim, it is required to access information from a large set of companies and institutions operating in the Swedish market. In addition to that, the type of information required is quite sensitive for most organizations, as it concerns their financial reporting systems, efficiency in operations, as well as their compliance with laws and regulations. Therefore, to obtain information about ICS and its associated organizational performance might seem quite ambitious.

The COSO framework and contingency theory provide a fundamental theoretical background for the study, whereby the theories draw expectations on the relationships between the contingent variables, ICS and expected organizational performance, which can be tested deductively (Saunders, 2011). Thus, this type of study lies under the explanatory studies category that use quantitative methods to explain relationships between variables (Saunders, 2011). However, Saunders notes that there is a need to distinguish between the data that is based on attributes of people and organizations and the data that is based on opinions, which is referred to as ‘qualitative numbers’.

Moreover, the data examined in this study does not bring a static and objective picture of the reality, such as perceived environmental uncertainty, ICS and organizational performance (Bryman & Bell, 2015, P. 637), as they are based on the subjective judgment of the management. This is due to the lack of objective data available for external parties regarding internal control systems (Jokipii, 2009).
Therefore, this study is done in order to explore internal control structures in Sweden under different scenarios such as industry and size. Thus, it is required to obtain a great deal of observations from a large number of organizations, which is one of the distinguishing features of quantitative studies, in particular a survey strategy (Saunders, 2011).

The survey method is cost effective and particularly appropriate for assessing soft controls like ethical climate, compliance with laws and regulations, communication, and employee values as well as hard controls such as segregation of duties, internal checks, authorizations and approvals, etc. (Adamec et al. 2002).

3.2 Data collection

3.2.1 Survey (Questionnaire)

3.2.1.1 Sample

The knowledge specify nature of the required data poses a challenge in which it is only acquired by key experts in high level management in organizations. On the other hand, the COSO framework (1992) illustrates that organizational performance associated with ICS is a subjective judgment. This is due to the fact that it is based on management’s perception that a reasonable assurance that the objectives of the system are being achieved.

Moreover, Krishnan (2005) clarifies that CFOs and CEOs are responsible for assessing the effectiveness of internal control systems. Furthermore, Adamec, Rexroad, Leinicke and Ostrosky (2002) illustrates that management's self-assessment of internal control is a cost-effective method that the internal audit function can use under the application of section 404 of SOX (2002). The study targets CFOs, CEOs, Financial Controllers, Business Controllers, Board of Directors, Internal Auditors and Risk Officers, due to the high level of involvement that these positions have with internal control structure.

To reach out for this data, an innovative method was implemented. The population is defined in organizations operating in Sweden. The professional networking website LinkedIn was used extensively to search and obtain contacts detail for the targeted population, resulting in 1210 emails of key specialists who has knowledge of internal control systems in the
organizations. The contacts were refined to exclude contacts that work for the same organization, resulting in 1117 organizations.

The process consisted of multiple stages that cover a period of two months. One of the key features of the search engine LinkedIn is that it is only possible to add a second level connection or a member of a mutual professional group, therefore if a mutual connection or group are not present then a connection request cannot be sent.

The first step started in early February, 2016 when a large number connection requests were sent to HR and recruiting specialists. The second step was to send a large number of connection requests that reached a number of 10,000. The ultimate limit of requests which can be sent on LinkedIn\(^2\) is 5000, thus a request was sent to the technical staff, resulted in an extension to the limits to 10,000. This resulted in obtaining first level connections with 1210 specialists in Sweden only. Then the connections were exported into an excel sheet including the names, emails, company names and positions of the contacts. Lastly, Mail Merge feature in Google account was used to personalize the letters to each individual to insure the highest response rate possible.

The sampling method applied in this study may lie between different methods. The fact that the connection request has to be accepted by the participants to extract his/her email address implies that it is non-probability and convenience sampling based on availability. Thus, the credibility of the sample might be subject to bias. Nevertheless, the extracted sample is still able to meet the purpose of the study, thus it is a valid sample (Saunders, 2011).

3.2.1.2 Survey administration

Saunders (2011) states that questionnaires are the most commonly used data collection method used in the survey strategy, due to the fact that it is an efficient way to collect data from a large set of individuals. Therefore, a questionnaire was developed through an online website called kwiksurveys. The website provides a free service with a very good quality, which allows an unlimited number of different types of questions.

\(^2\) (Appendix 1: LinkedIn limits)
The survey is categorised into two main domains. The first section is divided into five questions that cover the contingent variables, size and environmental uncertainty, and three factors, position of the respondent, industry of the company, and listing in stock exchange market choices.

The second section represented in the fifth question, which consists of 20 (matrix or rating) multiple choice statements that cover the 17 principles and three objectives of internal controls (recognized in this study as Organizational Performance, PREF). Control environment includes five principles coded with letter (C), risk assessment is coded with the letter (R) and covers four, control activities (A) covers three, information and communication (I) covers three, and lastly monitoring (M) covers two. The organizational effectiveness is covered in three statements that represents the objectives of internal controls. The reliability of financial reporting (FI), the efficiency of operations (OP), and lastly the compliance with laws and regulations (LA).

### 3.2.1.3 Variables measurement

Jokipii (2009) recognises that ICS and the associated organizational effectiveness can be easily described theoretically, yet both are hard to quantify. Thus the process illustrated by Bollen (1989) is applied and internal control is measured based on a control self-assessment (CSA) method. Bryman and Bell (2015) argues that closed questions are mostly used in self-completion questionnaires, in which respondents are asked to give fixed pre-coded answers that can be designed vertically or horizontally. Consequently, this process of pre-coding results in generating data that is easy to process and analyse for the computer.

Moreover, Saunders, (2011) recognises that when the data is qualitative and discrete in nature, questions that reflects respondents’ opinions can be ranked on a scale that presents the relative position for each case, which is considered as ranked (ordinal) data. Therefore, the Likert scale using a score from 1 to 5 is used to measure environmental uncertainty, internal control structure, and organizational performance (Bryman & Bell, 2015).

The questionnaire is adopted from Jokipii (2009) to measure respondents’ perceptions on ICS and organizational performance, whereby respondents are asked to give their opinion on a scale from 1 (totally disagree) to 7 (totally agree) on number of statements, which are used by
the end to measure internal control structures and organizational performance. However, a pilot test was conducted and resulted in a change on the scale to 1 (totally disagree) to 5 (totally agree), indicating that a 5 point scale gives clearer results.

This study relies on the COSO (2013) framework in the measurement of internal control structures and organizational performance. The 17 principles of the COSO (2013) model among the five main components, explained earlier in the theoretical framework, are used to measure the presence of internal control structure. The measurement of organizational performance is based on the linear model by Otely (1980) and the COSO (2013) framework. Whereby, the objectives of internal control systems defined by COSO (2013) framework (financial, operational, and compliance) are used to measure the organizational performance according the linear model.

**The size** concerns the organization as a whole and is measured according to the European Commission definition of SME (“What is an SME?, 2016). However, the size can be measured by the number of employees or the amount of turnover and total balance sheet, yet due to the need to simplify the questionnaire only the number of employees is included:

- Large: > 250
- Medium-sized: < 250
- Small: < 50
- Micro: < 10

**The environmental uncertainty** variable measurement is adopted from Govindarajan (1984). The respondents were asked to give their perception of the level of certainty they have over predictions of external environment on a scale of five points (ranging from 1- not foreseeable to 5- very foreseeable) for 5 external factors (supplier actions, customer demands, tastes & preferences, market activities & competitors, production technologies, government regulations). The **industrial** factor is designed according to the Standard Industrial Classification (SIC), which resulted in a total of 10 main industries (“Standard Industrial Classification,” 2016).

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3 Appendix 2 represent the survey including all measurements
3.3 Data analysis

The data analysis in this study was carried out in two parts, both parts using a computer program available at the University facilities called STATA, which is a statistical software available for general use (Stata, 2016). The first part consists of the descriptive data analysis, taking into consideration the exploratory nature of the first two questions. The descriptive analysis (mean analysis and Pearson’ correlation analysis) is used to measure the application of ICS in different set of conditions (Size, industry, and listing in stock exchange market) and then to measure the strength of linear association between contingent & control factors and ICS. The second part of analysis uses a structural equation model, which is a combination of Confirmatory Factor Analysis (CFA) and path analysis, to quantify the linear relationship between ICS and PREF.

3.4 Data quality issues

The nature of the data in this study has several implications for both the research methods and data collection strategies, whereby objective data is not available for external parties regarding internal control systems (Jokipii, 2009). Moreover, (Bryman & Bell, 2015) argues that the criteria for assessing business and management research is based on reliability, replication and validity. Whilst reliability refers to whether the results of a study are repeatable under the same circumstances, replication refers to the ability to replicate the study using the same methods, and validity refers to integrity of the conclusions.

The use of LinkedIn for collecting samples is available to everyone, which enhances the replicability of the study. In addition, the fact the respondents’ identities were kept anonymous allows them to express their true opinions, increasing the reliability of the data. The questionnaire used is based on a strong fundamental framework, and the measurements used are well defined and referenced to in prior research in the field of internal control. In addition, to increase the reliability of the questionnaire, a pilot test was sent to financial controller and senior auditor, which resulted in a few changes to the formulation of the questions.
3.5 Ethical consideration

Saunders (2011) argues that gaining access for full-time students who have no prior contact with organization or group of organizations might pose a great deal of difficulty. In particular, one major concern associated with this study was taken into consideration, the sensitive nature of the data implies caution for goodwill and integrity issues. Furthermore, the use of internet in this study has pros and cons, in sequence in terms of the easy access and ethical issues. Therefore, the personal statement of the researcher’s LinkedIn account was changed to reflect the purpose of the study prior to the launch of invitation requests, which illustrated the reason for the invitation request to the targeted individuals. In addition, while the names of individuals and companies in the quantitative sample are known, the names of the actual participants in the survey are kept anonymous.
4 Findings

In this chapter the findings of the study are illustrated, by first describing the data and conducting mean and correlation analyses:

4.1 Data description

The number of participants reached 173, representing 15.48% from the total sample, categorized according to the size of organization they represent in Table 1 (Participants’ organizations size). Notably, the highest number of participants is among large organizations that have more than 250 employees at 96 responses, representing 56% of the total responses. The number of respondents from medium and micro organizations stood at 26, at an average of 15%. The number of responses from small organizations is slightly lower than micro and medium organizations at 25 responses, averaging 14% of the total responses.

<table>
<thead>
<tr>
<th>Size</th>
<th>Number of responses</th>
<th>Percentage</th>
<th>Percentage excluding micro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>96</td>
<td>56%</td>
<td>65%</td>
</tr>
<tr>
<td>Medium</td>
<td>26</td>
<td>15%</td>
<td>18%</td>
</tr>
<tr>
<td>Small</td>
<td>25</td>
<td>14%</td>
<td>17%</td>
</tr>
<tr>
<td>Micro</td>
<td>26</td>
<td>15%</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>173</td>
<td>100%</td>
<td>(147) 100%</td>
</tr>
</tbody>
</table>

Table 1: Participants’ Organizations Size.

Jokippi (2009) set a criteria for the size of organizations that should be included in studies focusing on internal control applications. He argues that the direct involvement of top management in micro organizations compensate for less advanced internal control system, whereby the existence of ICS is not visible. Therefore, the responses from micro organizations is excluded from the observations and the study will focus on 147 organizations that indicated more than 10 employees.

The questionnaire was designed to allow participants to choose up to three titles, so the number of positions reached 165, indicating that 12 responses recorded more than one position. It was expected that participants from small organizations would hold more than one
positions, yet most participants who chose more than one title are from large organizations. Most responses came from financial controllers at 42, followed by CFOs at 34. The numbers of participants’ positions is illustrated in the Table 2 (Positions of participants).

![POSITIONS OF PARTICIPANTS](image)

**Table 2: Positions of participants.**

Moreover, the responses are categorized based on industry⁴, whereby the highest number is recorded for service provider at 35, followed by manufacturing at 28. Further illustration is presented in Appendix 3. Lastly, the responses are categorized based on the listing in the exchange market. The numbers of organizations based on listing in sequence are 90, 35, 15, and 7, for not listed organizations, listed in Swedish exchange market, listed in American exchange market, and listed in both.

To measure the reliability of the responses in the sample Cronbach’s alpha test is conducted. Nunnally (1978) argues that the test determines the internal consistency of items in a survey instrument to measure its reliability, whereby 0.7 Cronbach’s alpha value is the threshold of acceptable reliability coefficient. As all 17 internal control principles and 3 internal control objectives measures have a Cronbach’s alpha higher than 0.94, the samples’ responses are internally consistent and the selected scales are reliable.

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⁴ Appendix 4: Illustration of participants industries.
4.2 Mean analysis

4.2.1 Size

The mean represents the presence of internal control principles. It shows the average responses to each question assigned to each principle. The score is scaled from 1 to 5 (strongly disagree to strongly agree), in which the higher the score, the higher the application of the principle. In line with previous studies (Jokipii, 2009), this study is using mean analysis to study the presence of internal control structures.

The results of the total sample categorized based on the organizational size indicates that the means of internal control principles application is higher for larger organizations than medium and small organizations, which answers the first hypothesis of this study.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>3.46</td>
<td>4.19</td>
<td>4.40</td>
</tr>
<tr>
<td>C2</td>
<td>3.40</td>
<td>3.62</td>
<td>3.85</td>
</tr>
<tr>
<td>C3</td>
<td>3.56</td>
<td>3.88</td>
<td>4.16</td>
</tr>
<tr>
<td>C4</td>
<td>3.40</td>
<td>4.00</td>
<td>3.70</td>
</tr>
<tr>
<td>C5</td>
<td>3.48</td>
<td>3.62</td>
<td>3.23</td>
</tr>
<tr>
<td>R1</td>
<td>3.40</td>
<td>3.66</td>
<td>3.64</td>
</tr>
<tr>
<td>R2</td>
<td>3.52</td>
<td>3.31</td>
<td>3.69</td>
</tr>
<tr>
<td>R3</td>
<td>3.36</td>
<td>3.54</td>
<td>3.75</td>
</tr>
<tr>
<td>R4</td>
<td>3.52</td>
<td>3.62</td>
<td>3.69</td>
</tr>
<tr>
<td>A1</td>
<td>3.56</td>
<td>3.69</td>
<td>4.00</td>
</tr>
<tr>
<td>A2</td>
<td>3.40</td>
<td>3.46</td>
<td>3.79</td>
</tr>
<tr>
<td>A3</td>
<td>3.48</td>
<td>3.73</td>
<td>3.91</td>
</tr>
<tr>
<td>A4</td>
<td>3.24</td>
<td>3.28</td>
<td>3.57</td>
</tr>
<tr>
<td>B1</td>
<td>3.34</td>
<td>3.31</td>
<td>3.43</td>
</tr>
<tr>
<td>B2</td>
<td>3.38</td>
<td>3.37</td>
<td>3.70</td>
</tr>
</tbody>
</table>

Table 3: ICS principles implementation means based on organizational size.

The means for all principles in the sample are higher than 3. To illustrate the results visually, the values that are higher than 3.5 are coloured in light blue and values that are higher than 4 are coloured in light green in Table 3 (Means based on Size). The standard deviation (SD) illustrate the amount of variation of the set of data values around its means.

4.2.2 Industry

The same visualizing method based on colours that is used to illustrate the means in the size category is followed in the mean analysis for industry and listing in stock market categories. As can be seen in Table 4 (ICS means based on industry), the results show that the implementation
of internal control principles is higher in financial institutions and manufacturing organizations in particular in control environment, risk and activities components. The agricultural, forestry and fishing organizations also scored high means, however the results are based on one observation from an individual organization. It is not appropriate therefore to conclude that this sector has strong internal control systems. Moreover, it is worth noting that the first principle of the control environment that is related to integrity and ethical values scored significantly higher means than the other principles in most sectors except for retail trade and construction sectors.

<table>
<thead>
<tr>
<th>ICS</th>
<th>Financial institution</th>
<th>Service Provider</th>
<th>Public Administration</th>
<th>Retail Trade</th>
<th>Wholesale Trade</th>
<th>Manufacturers</th>
<th>Construction</th>
<th>Transportation, Communications, Electric, Gas and Sanitary Service</th>
<th>Agriculture, Forestry and Fishing</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>C1</td>
<td>4.33</td>
<td>0.57</td>
<td>4.27</td>
<td>0.84</td>
<td>4.56</td>
<td>0.33</td>
<td>4.00</td>
<td>1.73</td>
<td>4.36</td>
<td>0.38</td>
</tr>
<tr>
<td>C2</td>
<td>3.88</td>
<td>1.09</td>
<td>3.31</td>
<td>1.25</td>
<td>3.67</td>
<td>0.71</td>
<td>3.00</td>
<td>1.00</td>
<td>4.00</td>
<td>1.44</td>
</tr>
<tr>
<td>C3</td>
<td>4.13</td>
<td>0.81</td>
<td>3.86</td>
<td>1.03</td>
<td>3.89</td>
<td>0.78</td>
<td>3.00</td>
<td>1.00</td>
<td>4.29</td>
<td>0.85</td>
</tr>
<tr>
<td>C4</td>
<td>4.06</td>
<td>0.77</td>
<td>3.80</td>
<td>1.11</td>
<td>3.56</td>
<td>1.13</td>
<td>2.67</td>
<td>1.53</td>
<td>2.00</td>
<td>1.47</td>
</tr>
<tr>
<td>C5</td>
<td>3.44</td>
<td>1.26</td>
<td>3.63</td>
<td>1.17</td>
<td>2.78</td>
<td>1.39</td>
<td>2.67</td>
<td>1.15</td>
<td>2.33</td>
<td>1.52</td>
</tr>
<tr>
<td>R1</td>
<td>3.69</td>
<td>0.95</td>
<td>3.49</td>
<td>1.09</td>
<td>3.31</td>
<td>1.12</td>
<td>2.00</td>
<td>1.00</td>
<td>2.67</td>
<td>0.68</td>
</tr>
<tr>
<td>R2</td>
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<td>0.82</td>
<td>3.51</td>
<td>0.99</td>
<td>3.67</td>
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<td>2.33</td>
<td>1.13</td>
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<td>2.93</td>
</tr>
<tr>
<td>R3</td>
<td>4.09</td>
<td>0.82</td>
<td>3.51</td>
<td>1.04</td>
<td>3.53</td>
<td>1.12</td>
<td>2.33</td>
<td>1.13</td>
<td>5.00</td>
<td>3.14</td>
</tr>
<tr>
<td>R4</td>
<td>3.94</td>
<td>0.66</td>
<td>3.63</td>
<td>1.14</td>
<td>3.33</td>
<td>1.33</td>
<td>2.33</td>
<td>1.53</td>
<td>2.67</td>
<td>1.59</td>
</tr>
<tr>
<td>A1</td>
<td>4.19</td>
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<td>1.01</td>
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<td>3.00</td>
<td>1.73</td>
<td>2.00</td>
<td>4.25</td>
</tr>
<tr>
<td>A2</td>
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<td>0.93</td>
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<td>1.00</td>
<td>1.67</td>
<td>0.58</td>
</tr>
<tr>
<td>A3</td>
<td>4.13</td>
<td>0.81</td>
<td>3.80</td>
<td>0.87</td>
<td>3.00</td>
<td>1.22</td>
<td>2.33</td>
<td>1.53</td>
<td>2.67</td>
<td>1.35</td>
</tr>
<tr>
<td>H1</td>
<td>3.94</td>
<td>0.77</td>
<td>3.57</td>
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<td>1.53</td>
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</tr>
<tr>
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<td>0.87</td>
<td>3.40</td>
<td>1.09</td>
<td>2.78</td>
<td>1.09</td>
<td>1.00</td>
<td>1.00</td>
<td>2.67</td>
<td>1.53</td>
</tr>
<tr>
<td>M1</td>
<td>4.13</td>
<td>1.06</td>
<td>4.30</td>
<td>1.12</td>
<td>3.22</td>
<td>1.20</td>
<td>1.33</td>
<td>0.58</td>
<td>2.67</td>
<td>1.57</td>
</tr>
<tr>
<td>M2</td>
<td>3.94</td>
<td>1.06</td>
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<td>1.03</td>
<td>3.31</td>
<td>1.00</td>
<td>2.33</td>
<td>1.53</td>
<td>2.67</td>
<td>1.57</td>
</tr>
</tbody>
</table>

Table 4: ICS principles implementation means based on industry

4.2.3 Listing in stock market

In Table 5 (ICS means based on listing in stock exchange market) the results indicate that the implementation of internal control systems is significantly higher in listed organizations than
not listed organizations. However, the first principle of control environment component that is related to integrity and ethical values is also high in not listed organizations. The third principle of control environment, which is related to the establishment of structures, reporting lines, and appropriate authorities and responsibilities in the pursuit of objectives, is slightly higher in organizations that are listed in the Swedish stock exchange market than the ones that are listed in the American stock exchange market. Moreover, the monitoring component is also higher in organizations that are listed in Swedish stock exchange market than organizations that are listed in the American stock exchange market.

4.3 Correlation analysis

4.3.1 Contingent & control factors with internal control structure

The results in Table 6 (correlation analysis between contingent and control factors & internal control structures’ components) represent the values of Pearson product-moment correlation coefficient (PCC) analysis between CF, control factors and ICS that measure the strength of linear association between the variables. The PCC values are measured on a scale from -1 (total negative) to +1 (total positive). The values that show statistical significant are marked with a star and dark grey colour and consequently reported.

The results indicate that size positively correlated with C2 (0.16), C3 (0.23), A1 (0.17), and A3 (0.16). These results confirm the first hypothesis, whereby size is positively correlated with at least 4 internal control principles and the association is statistically significant. However, the second hypothesis can be rejected, as the stability of the environment with at least 4 external factors have positive association with the presence of internal control structure, where by the association is statistically significant.

Moreover, some of the external factors under environmental (uncertainty) foreseeability contingent factor are positively correlated with internal control structure, in which the association is statistically significant. These results reject the second hypothesis of this study. For example, the foreseeability of customer demands, tastes and preferences (CUS) is positively correlated with C5 (0.16) and M1 (0.18) principles. The foreseeability of market activities and competitors external factor (MAR) is positively correlated with C4 (0.16), R2 (0.16) and A3 (0.16). Production technologies factor (TEC) is positively correlated with A3
Government regulations factor (GOV) is positively correlated to C1 (0.17), C3 (0.18), I2 (0.18), and I3 (0.18).

Furthermore, the choices of listing in stock exchange market are rearranged to 1. listed in both, 2. listed in American exchange market, 3. listed in Swedish exchange market 4. not listed. This is done to measure the changes in application of ICS principles under different laws applied to each listing choices. Moreover, organizations that are listed in the USA indicate the effect of SOX, which expected to have higher application than the 2nd and 3rd choices. The values of Pearson coefficients indicate negative correlation for most of ICS principles and ranged from -0.16 (C3) to -0.24 (A3).

### 4.3.2 Internal control structure and organizational performance

In Table 7 “correlation analysis between internal control structure’s components and organizational performance” the values of Pearson correlation coefficients indicate positive correlation between all organizational objectives (FI= financial reporting objective, OP= operations objective, and LA= compliance objective) and internal control structure. The values of Pearson correlation coefficients for financial reporting objective and ICS range from 0.17 (C5) to 0.66 (M2). C2, R3, and I3 recorded relatively low correlation values, in sequence (0.24), (0.33), and (0.34). All other ICS principles recorded a relatively high positive correlation with financial reporting objective ranging from 4.1 (C1) to 0.59 (R1).

The correlation values for ICS and operation objective (OP) ranges from 0.21 (C5) to 0.59 (A2). In addition, most values are relatively high scoring more than (0.4). Lastly, all the correlation values for ICS principles and compliance objective (LA) are positive and relatively high scoring more than (0.4). The lowest value of correlation is scored for C5 as well (0.26).

However, it is worth noting that the independent variables (ICS principles) are highly correlated with each other. For example, the value of correlation coefficient peaks at 0.82 (between A2 and A1). Asher (1983) suggests that strong intercorrelation between independent variables points out a problem of multicollinearity, which will be discussed further in the next chapter.
Table 6: Correlation analysis between contingent and control factors and internal control structures' components

<table>
<thead>
<tr>
<th>C1</th>
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Note: The table presents the correlation coefficients between different factors and components of internal control structures. Each value represents the strength and direction of the relationship between the variables.
Table 7: Correlation analysis between internal control structure’s components and organizational performance

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Table 7: Correlation analysis between internal control structure’s components and organizational performance
5 Further analysis

5.1 Multicollinearity problem

Mason and Perreault Jr (1991) discussed the conditions under which multicollinearity may create problems in regression analysis. They suggest that multicollinearity problems lead to inaccurate estimates of coefficients and standard errors. Mansfield and Helms (1982) argues that it is always necessary to initially examine the existence of multicollinearity in the data before running multiple regression analysis. One of the know methods to detect multicollinearity is variance inflation factor or (VIF) (Grewal, Cote, & Baumgartner, 2004).

The values of VIF are reported in table 8 (variance inflation factor values for ICS principles). The values ranges from 1.21 (C5) in the bottom of the table to 4.80 (A1) in the top of the table. There is no specific criteria in the literature for VIF value that can confirm the existence of multicollinearity (O’brien, 2007). One of the lowest values suggested in the literature is 3.33 (Diamantopoulos & Siguaw, 2006), which is adapted in this study. Consequently, it can be seen in Table 8 that there are at least 4 variables that have VIF value higher than 3.33, therefore multicollinearity is confirmed. The multicollinearity can be understood in the data due to the fact that, according to COSO (1992 & 2013), internal control system is integrated dynamic process. Thus, the application of any of the components is interrelated to the application of another component of the process. Therefore, structural model is built to

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<td>C5</td>
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*Table 8: Variance inflation factor values for ICS principles*
measure the ICS variable based on the principles observations, which is discussed further in the next chapter.

5.2 Structural model

To measure the linear relationship between ICS and organizational performance, it is necessary to run a regression analysis between the dependent variables (FI, OP & LA) and the independent variables (C1-5, R1-4, A1-3, I1-3 & M1-2). Yet, the existence of multiple dependent variables and a large number of independent variables would make regression analysis a complicated process, in particular with the existence of multicollinearity.

Structural Equation Modeling (SEM) is a combination of confirmatory factor analysis (CFA) and path analysis. SEM provides the ability to estimate and test the relationships among constructed variables (Weston & Gore, 2006). The sample size should be considered initially before the use of SEM. In the literature, the ratio for the number of parameters and the number of observation is set at between 5/1 and 20/1 (Bentler & Chou, 1987; Kline, 2005). The number of parameters used in this study is 21, which requires sample size between 105 and 420. Thus, the sample size is eligible for constructing structural model.

Harman (1960) distinguishes latent variables as hypothetical constructs. Therefore, as it can be seen in Figure 4, the structural model is established on STATA to construct one latent variable that represent Internal Control Structure (ICS, exogenous variable or independent latent) based on the 17 principles (indicators) and one latent variable that represent the Organizational Performance (PREF, endogenous variable or dependent latent).

The model is divided between measurement and structural level. The measurement level illustrates the linear relationships between the indicators (Internal Control Principles & Internal Control Objectives) and the latent variables (ICS & PREF) represented in the arrows that points at the indicators from the latent variables. In contrast, the structural model represent the relationship between the endogenous and exogenous variables (ICS & PREF). The little circles attached to the indicators represents the error terms or residuals and given the sign $\varepsilon$. 
In the Measurement Table (9), the values show that the relationships on the measurement level between the latent variables and all indicators are statistically significant, whereby $P < 0.5\%$ and $Z$ is relatively high. The relationship between the indicators and latent variables is based on these two equations: $X_i = \lambda_i \cdot ICS + \varepsilon_i$ and $Y_i = \lambda_i \cdot PREF + \varepsilon_i$.

**X**: The value of ICS principles

$\lambda$: the coefficient value of the latent variable.

**ICS**: exogenous variable

**PREF**: endogenous variable

$\varepsilon$: variance error

Furthermore, the structural level that measures the linear relationship between the constructs, endogenous and exogenous variables (ICS & PREF) is presented in Table 10. The relationship between ICS and PREF is statistically significant with $P < 5\%$ and $Z$ is relatively high. The increase in the value of ICS leads to increase in the value of PREF by 1.19. Thus, the 3rd hypothesis of this study can be confirmed.

**Table 9**: The measurement table for the constructs (latent variables).
Finally, Weston and Gore (2006) argues that models established by a researcher must be evaluated in terms of fit to the data after the estimation process. The goal is to determine whether the associations among measured and latent variables in the study’s estimated model sufficiently reflect the observed associations in the data.

This study use Goodness of Fit (GFI) indices, in which GFI is equivalent to $R^2$ used in regression analysis. The difference is that $R^2$ summarizes the variance explained in a dependent variable, whilst GFI refers to the variance indicated in the entire model (Jöreskog & Sörbom, 1982). The criteria is that values that is greater than 0.90 for GFI represents a good fitting model (Bentler & Bonett, 1980). The value of 0.90 illustrates a threshold of fitted model on a scale that ranges between zero (no fit) and one (perfect fit), (Schermelleh-Engel, Moosbrugger, & Müller, 2003). The GFI value in this study’s model is 0.916, which means that the model is well fitted to explain the variances in the examined data.

| Structural | Coef. | OIM Std. Err. | z    | P>|z|
|------------|-------|---------------|------|-----|
| PREF <- ICS | 1.19  | 0.18          | 6.67 | 0   |

Table 10: The linear relationship between ICS & PREF
Figure 4: Structural model for the ICS & PREF relationship
6 Discussion

6.1 Results

The results show that internal control structures are positively related to the size of organization, whereby the information & communication and monitoring components are relatively higher in larger organizations. This can be understood due to the fact that the number of employees implies a crucial need for more structured and tight control system.

The intervention of the supervisory authority (Finansinspektionen, FI) plays a decisive role in determining the application of internal controls in financial institutions by instrumental regulations such as FFFS (2001:1), in which such regulations boost the presence of internal control structures in financial institutions.

Moreover, manufacturing organizations show a high level of internal control structures. Sweden is known for traditional world-leading manufacturing organizations such as Atlas Copco, Scania and Husqvarna Group. Many underlying factors such as the experience and age of firms in this sector can be considered as the causes of greater internal control. In addition to that, it is worth noting that the level of the first principle of control environment component that is related to the commitment to integrity and ethical values is high in all sectors, which reflects the overall stability and transparency that exist as a traditional norm in the Swedish culture and Swedish business model.

Furthermore, the mean analysis of internal control components shows that organizations that are listed in American stock exchange market and Swedish exchange market apply internal control to a relatively similar level. This denotes that the Swedish stock market is regulated with a relatively similar law to SOX (2002), which ensures internal control is applied to a good standard. However, it is worth noting the un-listed firms show notably less presence of internal control structure than listed ones, which highlights again the vital role that Finansinspektionen (FI) plays in regulating the stock market and enhancing the transparency of the Swedish stock exchange market.
The level of environment foreseeability in some parts has a positive association with the presence of internal control structure, which supports the initial suggestions from Stalker (1961) that a stable environment is associated with more mechanistic organizations. This positive association might be due to the consistent long-term stability in Sweden, which reflects a rational mentality in allocating funds into the system unless the environment is foreseeable.

6.2 Contribution

The study contributes to both academic and practical knowledge. It gives an insight on the application of internal control structures in the Swedish context, in particular the difference in application among different sectors. Moreover, it highlights how internal control structures differ under the existence of different laws such SOX (2002) and FFFS (2004:1), whereby many more unexplored laws have visible effects on organizations that are listed in the Swedish exchange market.

Additionally, acknowledging the effects of different factors on the examined systems adds to the prior research concerning the contingency approach. The contingency perspective applied in this study can be recognised from a practical point of view as well, whereby managers have to deal with plenty of external and internal factors. Thus, the study contributes to the practical realm by highlighting some of the external factors that affect internal control structures in the Swedish context.

Whilst the evidence of internal control application remained unexplored, this study quantifies statistically the impact internal control structures have on organizational performance. Furthermore, the positive association between internal control structure and organizational performance reflects practical implications for the importance of internal control in enhancing the overall organizational performance.

6.3 Limitation and further studies

This study is constrained by some interrelated issues that have a direct impact on the work quality, in particular the time limits and access for information. Whilst a survey was developed to overcome the issue of accessibility for information, it can be argued that the
extracted data is subjective in nature and might be subject to bias. Therefore, different measures were taken, such as the anonymity of participants, to enhance the quality of the data.

However, it is important to conduct further studies, in particular using case study strategy, with full access for information. Full access to a particular organization could enhance the data quality, in addition to giving a deeper insight on how contingent factors affect the application of internal controls and the overall organizational performance.

One more issue that can be discussed is the generalizability of the sample. Even though, the use of professional network (LinkedIn) can be considered innovative and effective method, the sample frame of this study is based on convenience and might be subject to bias. It is worth noting that the time limits given to this study imposed extreme challenge for data collection. In addition, some technical issues such as the limits of invitation requests applied by LinkedIn website have a direct impact on the sample size. Therefore, the use of LinkedIn can be further improved in further studies by the procurement of premium package, which can increase drastically the sample size and enhance its generalizability.
7 Conclusion

This study explores internal control structures in Sweden based on industrial sectors and organizational size, in addition to the association between the environmental uncertainty and the presence of internal control structures.

This study provides evidence on the presence of internal control structures. The results from 147 organizations illustrate that the presence of internal control structures is higher in financial institutions and manufacturing organizations. In addition, the results show positive association between internal control structure and organizational size. In addition, unexpectedly environmental uncertainty was shown to have a negative effect on internal control structure.

In addition, based on the literature control factors that are expected to have implications on the presence of internal control structures are added to the study, such as listing in stock exchange market. The gap between management and investors in publically traded firms has an impact on the demands for transparency. This high level of required transparency in turn gives rise to a higher need for internal control structures. The study supports this assumption. The results indicate that organizations which are listed in the Swedish stock exchange market have an equivalent presence of internal control structures to those listed in the American stock exchange market, in contrast to unlisted organizations which have a notably lower presence of internal control structures. The increased presence of internal control structures in financial institutions and listed companies reflects the decisive role that the supervisory authority, FI, plays in controlling the financial market in an attempt to increase the transparency and stability of that market. The FI’s instrumental regulations that stipulate the presence of internal control structures can increase the trust of investors in the financial market.

In addition, the study highlights the positive impact that internal control structures have on the reliability of financial reporting, efficiency of operations, and compliance objectives. This positive impact of internal control presence reflects the increased need for the system, in particular as organizations grow larger and more complex.
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http://doi.org/10.1177/0049124189017003004


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Appendix 2

1* What is the number of employees in the organization?
1. ☐ 10 or less
2. ☐ Between 10 _ 50
3. ☐ Between 50 _ 250
4. ☐ More than 250

2* What is your position/title?
1. ☐ Board Director
2. ☐ CFO
3. ☐ CEO
4. ☐ Financial controller
5. ☐ Business Controller
6. ☐ Internal Auditor
7. ☐ Risk Officer
8. ☐ Unit/Brunch Manager  
9. ☑ Accountant  
10. ☑ Owner  
11. ☑ Other  

3* What is the industry of your organization?  
1. ☐ Financial institution  
2. ☐ Service Provider  
3. ☐ Public Administration  
4. ☐ Retail Trade  
5. ☐ Wholesale Trade  
6. ☐ Manufacturing  
7. ☐ Construction  
8. ☐ Transportation, Communications, Electric, Gas and Sanitary service  
9. ☐ Agriculture, Forestry and Fishing  
10. ☐ Mining  
11. ☑ Other  

4* Please state the level of predictability of each of the following external factors?  

<table>
<thead>
<tr>
<th>Factor</th>
<th>Not foreseeable</th>
<th>Little foreseeable</th>
<th>Neutral</th>
<th>Foreseeable</th>
<th>Very foreseeable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier actions</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Customer demands, tastes and preferences</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Market activities and competitors</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Production technologies</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Government regulations</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Economic environment</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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</tr>
</tbody>
</table>

5* Is your company/organization listed in the stock exchange market?  
1. ☐ Yes, listed in U.S. exchange markets  
2. ☐ Yes, listed in Swedish exchange markets  
3. ☐ Yes, listed in both  
4. ☐ No, not listed  

6* To what extent do you agree with each of the following statements?  

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1. The organization demonstrates a commitment to integrity and ethical values</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>C2. The board of directors demonstrates independence from management and exercises oversight of the development and performance of internal control.</td>
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<tr>
<td>C3. Management establishes, with board oversight, structures, reporting lines, and appropriate authorities and responsibilities in the pursuit of objectives.</td>
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<tr>
<td>C4. The organization demonstrates a commitment to attract, develop, and retain competent individuals in alignment with objectives.</td>
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<td>C5. The organization holds individuals accountable for their internal control responsibilities in the pursuit of objectives.</td>
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<tr>
<td>R1. The organization specifies objectives with sufficient clarity to enable the identification and assessment of risks relating to objectives.</td>
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<td>R2. The organization identifies risks to the achievement of its objectives across the entity and analyzes risks as a basis for determining how the risks should be managed.</td>
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<td>R3. The organization considers the potential for fraud in assessing risks to the achievement of objectives.</td>
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<td>R4. The organization identifies and assesses changes that could significantly impact the system of internal control</td>
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<tr>
<td>A1. The organization selects and develops control activities that contribute to the mitigation of risks to the achievement of objectives to acceptable levels.</td>
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<td>A2. The organization selects and develops general control activities over technology to support the achievement of objectives.</td>
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<td>A3. The organization deploys control activities through policies that establish what is expected and procedures that put policies into action.</td>
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<td>I1. The organization obtains or generates and uses relevant, quality information to support the functioning of internal control.</td>
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<td>I2. The organization internally communicates information, including objectives and</td>
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<td>responsibilities for internal control, necessary to support the functioning of internal control.</td>
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<td>I3. The organization communicates with external parties regarding matters affecting the functioning of internal control.</td>
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<tr>
<td>M1. The organization selects, develops, and performs ongoing and/or separate evaluations to ascertain whether the components of internal control are present and functioning</td>
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<td>M2. The organization evaluates and communicates internal control deficiencies in a timely manner to those parties responsible for taking corrective action, including senior management and the board of directors, as appropriate.</td>
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<td>F. The financial reports are accurate and trustworthy</td>
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<td>O. The efficiency of operations is on ultimate level</td>
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<td>L. The legislation introduced by the government are easy to understand, and has been incorporated into the company's guidelines and applied by all employees.</td>
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</table>
Appendix 3: Participants' industries