Commerce & Management Quarterly, Vol.16, No.3, pp.389~425(2015)

政府組織控制前提與控制方式：資源基礎觀點

CONTROLLED ANTECEDENTS AND CONTROLLED MODES ON GOVERNMENTAL ORGANIZATIONS: USING RESOURCE-BASED PERSPECTIVE

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摘要

組織控制為策略執行的關鍵因素，普遍研究證明控制與績效間存在著密切關係；過去政府組織控制的研究與控制系統的建構，大多偏重在控制的過程與結果，卻忽略了控制前提因素；注重制度面的過程與成果的控制方式，卻忽略了社會控制之情感互動及知識分享所發揮的力量，近年來已逐漸為研究者重視的議題。本文從資源貢獻觀點，探討政府部門控制前提與控制方式的關係。研究發現：控制的重要前提包括所有權基礎資源貢獻及知識基礎資源貢獻，而所有權基礎資源貢獻適合採行成果控制，知識基礎資源貢獻對成果控制、過程控制與社會控制都具有顯著影響效果。以上研究結果擴大了政府組織控制理論研究的範圍，在實務控制系統設計與應用上具有參考的價值。

關鍵字：政府組織、資源貢獻、控制方式、資源基礎觀點、台灣

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ABSTRACT

Organizational control is regarded as a key component of strategy implementation. Research has confirmed that control and performance are deeply correlated. In the past, the majority of research on governmental organizational control and the establishment of the control system focused on the process and output of the control, while neglecting its antecedents; most researchers examined the effect of control modes on the process and the output of the system itself, ignoring the power of emotional interaction and knowledge-sharing in social control, which has been increasingly valued by researchers in recent years. This thesis, adopting the perspective of resource contribution, discusses the relationship between control antecedents and control modes. The research finds that the vital antecedents of control include property-based resource contribution and knowledge-based resource contribution. Property-based resource contribution matches output control while knowledge-based resource contribution demonstrates a significant influence on output control, process control and social control. The results of the research enlarge the research scope of control theories in governmental organizations, providing a valuable reference for the design and applications of practical control systems.

Keywords: Governmental Organization, Controlled Antecedent, Control Mode, Resource-Based Perspective, Taiwan

1. Introduction

A governmental organization and association is a legal entity for a country to execute public affairs. Administrative operations are promoted via stratification and labor division among structures of central and local governmental organizations; in order to achieve the administration aims and make effective use of resources, the superior authority must conduct control on the administrating process of affiliated authorities (Geringer & Hebert, 1989；Groot & Merchant, 2000). However, researchers doubt whether the best control system exists and how to testify the relationship between the control and performance.

Organizational control is regarded as a key component of strategy implementation (Ireland & Hitt, 1999). Universal researches have confirmed that control and performance are deeply correlated (Choi & Beamish, 2004). An excellent control system, established by superior authority, could keep after affiliated or parallel authorities to reach the expected

performance (Chen, Park, & Newburry, 2009). In other words, the expected performance desired by superior authority must rely on its established control system. However, the superior authority has to be clear about control antecedents when establishing proper control system; namely, adopting what kind of resources or powers could affect affiliated or parallel authorities during the administrative process, (Luo & Park, 2004). For example, knowledge and financial distribution managed by the superior authority are greatly valued in implementation to affiliated or parallel authorities (Ghemawat, 2001). In short, the best control effect could be achieved by superior authorities appropriately use available resources and cooperate with control mode.

Strategic fit theory holds that, one organization, in some strategic situation, besides its advantage in organizational stratification, must own resources and powers matching or supporting strategic implementation or control, thus to form its competitive advantages (Grant, 2007)；Matti and Petri (2007) point out in their research that strategic fitness is beneficial for the organization to create excellent performance. Put another way, if the superior authority, in the process of implementation and control, besides its advantages on legal supervision and budget distribution, provides skills and experience on implementing policies for affiliated or parallel authorities, strategic implementation will be more effective. However, governmental policy modes (such as social administration, public construction and scientific development) are very complicated. Which control mode should be fit with resources owned by the superior authority, in order to form the best control system? It will be the major issue to be discussed in the thesis.

It is of great theoretical value on organizational management to understand key component of the control (Ghemawat, 2001；Luo & Park, 2004). The control system, the core concept of the organizational control set up by organizational and strategic theories (Scott, 1992；Kumar & Seth, 1998), is the basic structure of all organizations, which is used to link organizational aims with activities or performances (Merchant, 1985). As to organizational control, in order to fulfill administrative aims and make effective use of resources, output of the control should be known, what's more, how to establish control system should be learnt, too (Cardinal, Sitkin, & Long, 2004). In the literature relevant with organizations and strategies, earlier researchers advocated more on the control of performance outputs (Beamish, 1993；Yan & Gray, 1994；Mjoen & Tallman, 1997；Choi & Beamish, 2004); in recent years, scholars on organizational control have started to note the issues on how to establish control system and how to realize organizational aims through different control modes (Chen, Park, & Newburry, 2009).

Diversified control modes have been established by the organizational control theory (Kirsch, 1996；Cardinal, 2001). In accordance with relevant literature, three major control modes are summarized: output control (OC), process control (PC) and social control (SC). Classical theory (Cyert & March, 1963；Ouchi, 1979) and relevant researches in recent years suggest that one organization should adopt different control modes based on its possessed resources; in another word, according to its advantage in resources and powers, one organization should employ different control modes on its affiliated or parallel ones.

Most governmental organizational control studies and the establishment of existing control system tend to take transaction cost economics perspective and social exchange perspective. Transaction cost economics perspective focuses on the reason why the superior authority implements control, as an explanation to control modes of the superior authority and satisfying its demands (Choi & Beamish, 2004；Reus & Ritchie, 2004); social exchange perspective focuses on bargaining models, thinking that control output comes from the influence of the superior authority's resource distribution on bargaining process (Blodgett, 1991；Yan & Gray, 1994；Steensma & Lyles, 2000); the former one neglects social interactive influence among different authorities; the latter one neglects the nature and features of resources, as well as management roles among different authorities. In other words, previous research on governmental organizational control and the establishment of the control system, usually emphasis on the process and output of the control, while neglected its antecedents; most focused on control modes on the process and output of the system itself, while neglected power of emotional interaction and knowledge sharing in social control.

The goal of a government organization differs from that of a business organization. The goal of a government organization is to serve the public interest, and the goals of a business organization are profit and survival. However, both organizations rely on the same theory for organizational management. For example, resource-based theory, knowledge-based theory and property-based theory are widely used in public administration. Furthermore, the outcome control, process control and social control of the organizational control are common in the management, accounting, marketing researches of governmental organizations. Through relevant literature, the thesis tries to discuss the relationship between control antecedents and control modes as to the government from the perspective of resource contribution. Chen, Park, and Newburry (2009) hold that resource contribution of the superior authority will allow it to implement special control modes. The resource-based perspective provides a new penetrating channel for control theories.

Therefore the purposes of the research in the thesis include: 1.Discuss control antecedents of governmental organizations; 2.Study and analyze the relationships between property-based resources of governmental organizations and different control modes; 3.Understanding the relationships between knowledge-based resources of governmental organizations and different control modes.

Besides issues and purposes brought up in this section, literature on control antecedents and modes is discussed and hypotheses, theoretical basis of the demonstration in the thesis, are also brought up from the relationship between resource contributions as control antecedents and different control modes in Section Two. Research methods and process will be introduced in Section Three. Next, conducts statistical analysis in followed section. Final section will bring out the conclusions and implications of the thesis.

2. Literature Review and Hypotheses

The concept of resource-based theory was first introduced in the book “The theory of the growth of the firm” by Penrose (1959). According to Kuo, Chen, Hwang, and Liu (2012), Penrose claims that the organization is the resource allocator; the main function of the management is to give or distribute resources to the users of the organization at different times according to decisions made by the management. Wernerfelt (1984) states that the tangible and intangible resources acquired or learned by an organization can serve as weapons when running a business. Barney (1991) proposes two hypotheses based on resource-based theory. If an organization has heterogeneity and non-liquid (immobile) resources, it can survive for a long time. Therefore, the main concepts of resource-based theory are: if an organization has resources that are competitive (Barney, 1991；Grant, 1991；Penrose, 1959；Wade & Hulland, 2004), and if these resources are valuable, rare, cannot be copied, and cannot be replaced, they can contribute to the continuing competitive advantages of an organization. (Barney, 1991；Wade & Hulland, 2004).

Based on the relationship between the resource-based view (RBV) and organizational control, Choi and Beamish (2004) claim that an organization should employ a variety of control modes according to its resource advantages. Mjoen and Tallman (1997)；Luo, Shenkar, and Nyaw (2001)；Yan and Gray (2001) suggest that an organization should adopt a range of control modes based on its strategies or functions. Even though the various

control modes are correlated, (Chen, Park, & Newburry, 2009) advocate that each has a different meaning both in the construct and in the performance.

Given this view, it seems apparent that the strategic action of the connection of the resource and the outcome affects the performance of the organization. The resources of an organization will determine what belongs to the organization or the attraction of the strategic partners, the mode of control and the choice of the management structure (Eisenhardt & Schoonhoven, 1996；Das & Teng, 2000；Yan & Child, 2004；Jolly, 2005). At the same time, an effective control mode requires a suitable resource (Morgan, 1983；Green & Welsh, 1988). Organizational resources are employed to execute strategies and to provide different modes of control.

Organizational resources are the resources possessed by an organization, and have a great impact on its operation (Luo & Park, 2004). Organizational resources can be tangible and intangible, or can be categorized into physical, human, financial, technological and organizational resources (Barney, 1991；Grant, 1991). According to Miller and Shamsie (1996) an organization should focus on its property-based contribution (PBC) and knowledge-based contribution (KBC) because these two kinds of resources have barriers that prevent outsiders from obtaining and imitating those resources. Property-based resources are protected by the law. Knowledge-based resources are hidden, complex and vague (Miller & Shamsie, 1996). If an organization acquires these resources legally or accumulates them over time, these resources can be used to become the control mechanism. Based on the above analysis, this thesis employs the resource-based view to explore organizational control modes, and adopts the view of Miller and Shamsie (1996) to propose two kinds of contribution: property-based contribution (PBC) and knowledge-based contribution (KBC).

Furthermore, Das and Teng (2000) think that property-based and knowledge-based resources are vital management factors in the coordination of an organization. Property-based contribution is based on the resource-based theory that resources are valuable, rare, cannot be copied, cannot be replaced and can create continuing competitive advantages (Barney, 1991；Wade & Hulland, 2004). According to the property right theory, if an organization has assets that are exclusive, these assets can maximize the benefit of the organization. Knowledge-based contribution is derived from the resource-based and knowledge-based theories. Resource-based theory emphasizes that the organization's resources are the source of its competitive advantages. A mature and well-known theory in

the field of organizational and strategic management, knowledge-based resource theory stresses that knowledge is a key resource of an organization and that an organization is dynamic, evolving, self-controlling, knowledge-creating, and can create value for the organization.

Therefore, using resource-based theory as its core, this thesis incorporates knowledge-based theory and property-right theory, and reviews the literature on property-based resources, knowledge-based resources and control modes. It then explores the relationships among the different concepts, and presents several hypotheses and theories.

2.1 Property-based resources

Property-based resources are the assets, like financial ability, tangible assets and the power of a position, that have value (Barney, 1991；Miller & Shamsie, 1996). According to the resource-based theory, if the organization has resources which are valuable, rare, cannot be copied and cannot be replaced (Barney, 1991；Wade & Hulland, 2004), these resources can have a great impact on the management process of an organization and its strategic partners. From the property-right theory, if an organization has assets that are exclusive, these resources can maximize the benefit of the organization (Fu, 2005). Organizational resources can be tangible and intangible, or categorized into physical, human, financial, technological and organizational resources (Barney, 1991；Grant, 1991). In governmental organizations, if the supervising agency has the power to allocate the budget, the right to use the property, and the authority to monitor a policy, the corresponding agencies or partner agencies must obey the supervising agency. Therefore, property-based resources must be the first priority, and these resources serve as a powerful control mechanism for the supervising agency (Miller & Shamsie, 1995). Based on the above-mentioned resource-based theories and the view of the property-right theory, this thesis takes the attributes of governmental organizations into account, thinks that property-based resources are valuable assets of an organization. Assets like financial ability, tangible assets and the authority and power associated with a position are valuable, rare, cannot be copied and cannot be replaced. These assets have a great impact on the management process of an organization and its strategic partners. The property-based resources of the government can be categorized into the power to allocate a budget or property, the right to use certain facilities, legal supervision of a policy and the power to reward and punish.

2.2 Knowledge-based resources

Knowledge is the most vital asset of an organization and is also the key factor of success (Bohn, 1994). According to the resource-based theory, knowledge-based resources are hidden, complex and vague (Miller & Shamsie, 1996) and the knowledge that an organization acquires through time can be used as a control mechanism. Knowledge-based resources include not only technical skills, technical knowledge, expertise and experience, but also the cooperation of the organization with other organizations (Roos & Roos, 1997). Stewart (1997) comments that knowledge-based resources are the accumulation of intellectual assets, which include knowledge, information, intellectual property rights and experience, and these assets in turn can create riches, value and competitive advantages for the organization. Evensong and Malone point out that an intellectual asset is the possession of knowledge, experience, technical skills of the organization, the relationship with the customers and professional skills, which enable the organization to have competitive advantages on the market. Integrating the various scholars' definitions, Bontis (1999) conclude that knowledge-based resources are intellectual assets and the collection of the intangible assets of an organization, which create value for the organization through its control. Combining the definitions of Stewart (1997)；Bontis (1999)；Wu, Ay, and Lee (2010) assert that knowledge-based resources are the accumulation of knowledge, information, intellectual property and experience both inside and outside of an organization. These resources not only create value for the organization but also strengthen its competitive advantages. Wang, Lee, and Chiu (2012) state that knowledge-based resources are the sum of the unseen knowledge and ability that can bring value and competitive advantages for the organization. From the above-mentioned definitions and analyses, this thesis, according to the views common to all scholars, proposes that knowledge-based resources are the sum of the accumulation of professional knowledge, professional skills, the experience of solving problems and the external relationships that can create value for the organization.

2.3 Organizational control

According to the organizational-control theory, the essence of organizational control is a series of communication activities, i.e. it is a person with the power or ability to say or take physical actions to influence others (Gossett, 2009). Tannenbaum (1968) states that control is the behavioral process that occurs when an individual, group or organization decides or attempts to influence individuals, a group or an organization. Many scholars

believe that control is the mechanism employed to adjust and stabilize the internal structure of an organization. Therefore, the mode of the organizational control must indeed match its strategies in order to achieve the desired performance. From the function of control, control is used to measure and correct the performance of the corresponding people to ensure that the goal and plan can be reached. When an organizational goal is set, one often finds that there are discrepancies between the outcome and the expectation, and these discrepancies can be resolved through the control of the management (Robbins & De Cenzo, 1998). Control is a process of detecting, comparing, and correcting, and it must build a feedback system to monitor the actual performance of an organization. If there are significant differences between the actual and the expected performance, the managers must find the cause and take action to correct the situation. Therefore, the definition of control is the monitoring process that corrects any deviation from the achieved goal. Having examined the above-mentioned scholars, this thesis defines organizational control as a series of monitoring, communicating and supplementing activities to find and resolve problems and to make improvements in order to ensure that the goal of the performance can be reached.

A widely studied field, organizational control is heavily influenced by three schools of thought. Economist Edwards (1979) proposes two kinds of controls: simple control and structural control. Simple control is the direct intervention of a supervisor. Structural control is the use of the law and operational procedures to control. Barley and Kunda (1992) categorize organizational control into normative and rational controls. Normative control emphasizes the working environment of the employees. It encourages the employees to take on the attitudes and behavior that support the goal of the organization. Rational control provides employees with good work, clear goals and suitable incentives. Tompkins and Cheney (1985), scholars of communication, categorize organizational control into two types of controls: obtrusive and unobtrusive controls. Obtrusive control is the control that is employed when the employees are not willing to participate in the work, therefore the law, standards and monitoring are required. Unobtrusive control asserts that it is the decisions or strategies that enable the employees to work willingly for the organization, thus creating value for the organization. Combining these schools of thought, Gossett (2009) categorizes organization control into 5 kinds of controls: simple control, technical control, bureaucratic control, cultural control, and concertized control. Simple control is performed through command, evaluation, and rewards and punishment. Technical control is executed through the machines or the software of the computer. Bureaucratic control is

achieved through the law. Cultural control encourages one to immerse oneself into the organization and self-management. Concertized control extends the view of cultural control; it emphasizes team-work, self-management, authorization to others and mutual support.

Ouchi (1977) categorizes organizational control into behavior control, output control and clan control. Behavior control is the direct monitoring of an individual. Output control is the use of output as a means of control. Clan control is also called cultural control (Wilkins & Ouchi, 1983), which works through selection, training and other social methods to form the value for the employees in order to achieve the goal of control. Applying the system point of view, Snell (1992) divides organizational control into behavior control, output control and input control, which is similar to the clan control or cultural control suggested by Ouchi. Later, the researchers of organizational control induct the theories and propose three widely used organizational control modes: outcome control, process control and social control. Outcome control is similar to output control. Process control is similar to behavior control and social control is similar to clan control or cultural control. These three modes of control have different effects on an organization (Ouchi, 1979；Kirsch, 1996；Cardinal, 2001). They are related but can not yet replace each other (Ouchi, 1979). They co-exist in the organization, have different combinations and they achieve the diversity of the goal of the organization (Cardinal et al., 2004；Long, Burton, & Cardinal, 2002). This model is widely used in the management, accounting, marketing researches of businesses, government agencies and non-profit organizations. Therefore, this thesis relies on this common model to categorize the organizational control into the three modes of control: outcome control, process control and social control.

2.4 The relationship of constructs and the hypotheses

Next, what needs to be noted is that the organization tends to apply diversified control modes to complicated work (Cardinal, 2001). One resource type might be connected to one control mode or over (Chen, Park, & Newburry, 2009). Analyze and explain them as follows and propose relevant hypotheses.

2.4.1 The relationship between property-based resources and different organizational controls

Property-based resources mean that an organization owns valuable properties, such as financial capability, tangible properties, power, etc. (Barney, 1991；Miller & Shamsie, 1996). Resource-based perspective argued that resources or powers possessed by the

superior authority exert a great effect on administrative process of affiliated or parallel authorities (Luo & Park, 2004). As to different resource contributions of the superior authority, they can be divided into tangible resources and intangible resources (Penrose, 1959), or divided into physical resources, human resources, financial resources, technological resources and organizational resources (Barney, 1991；Grant, 1991). In governmental offices, the superior authority is possessed with powers on overall budget allocation, specifying access to properties and faculties, and commanding, guiding or supervising of legal policies, which must be relied on or obeyed by affiliated or local parallel authorities. Therefore, property-based resources are designed as a top priority, offered to the superior authority as a highly controlled tool (Miller & Shamsie, 1995).

Organizational control theory regards when an organization focuses on measuring final performance output, the controller will adopt output control (Ouchi, 1979；Kirsch, 1997). When the superior authority provides or assists affiliated and parallel authorities budget and faculties on administrated plans, or grants them power, it must demand affiliated or parallel authorities to bring up their administrative purposes and output indexes, and thus confers whether they will reach the expected goals if they are given property-based resource contribution. In a word, the superior authority, adopts output control on property-based resources, and expects to clearly obtain the expected information on output (Snell, 1992；Turner & Makhija, 2006；Chen et al., 2009). Based on explanations above, hypothesis is raised.

H1a: Property-based resource contribution of the superior authority has significant influence on the adopted output control.

In accordance with organizational control theory, process control would be adopted when the controller wants to know the resource converted process of the organization (Ouchi, 1979；Turner & Makhija, 2006). Property-based resources allow the superior authority to observe or evaluate administrative activities of affiliated or parallel authorities, and expect them to take proper measures or actions; the superior authority owns property-based resource contribution, and is allowed to involve in information system of affiliated or parallel authorities, master power on demanding or supervising, accounting operations and administrative reports (Geringer & Hebert, 1989). In all, the superior authority owns property-based resources, which entrust it the power to determine which are proper measures or actions. It can adopt process control to get the expected measures or actions as possible. Hence, here hypothesis is put forward.

H1b: Property-based resource contribution of the superior authority has significant influence on the adopted process control.

However, property-based resource contribution can prompt the adoption of output or process control, but does not suit social control. Property-based resource design focuses on guaranteeing its investing effectiveness, emphasizing individual purpose, but not common ones. When measuring the output, the organization tends to adopt formatted control mechanism, but not social interaction, which is just interactive influence indirectly (Kirsch, 1997). Therefore, the superior authority adopts property-based control, mainly to guarantee the effective use of its properties, although with a little social interaction or collaboration in the process; property-based resource contribution cannot prompt social interaction among different authorities. Hence, hypothesis is proposed:

H1c: Property-based resource contribution of the superior authority does not have significant influence on the adopted social control.

2.4.2 The relationship between knowledge-based resources and different organization controls

Knowledge-based resources mean intangible knowledge and skills, such as technique and management (Das & Teng, 2000). What's more, tacit knowledge cannot be shown specifically (Hall, 1992). That is to say, when an organization owns professional knowledge and skills, it will be able to assist valuable innovative procedures effectively, and even develop new products. It is because knowledge is hard to be learnt by other organizations, as well as it cannot be easily imitated or converted due to its essence in vague and subtle; thus it can create competitive advantages for the organization (Grant, 1996). Wu et al. (2010) assert that knowledge-based resources are the accumulation of knowledge, information, intellectual property and experience both inside and outside of an organization. These resources not only create value for the organization but also strengthen its competitive advantages. Wang et al. (2012) state that knowledge-based resources are the sum of the unseen knowledge and ability that can bring value and competitive advantages for the organization.

Knowledge-based resources are not very specific or explicit due to its difficult and tacit nature, so their value is hard to be known or measured (Lado & Wilson, 1994). When different authorities implement a task together, the output contributed by hidden knowledge is hard to be measured or sorted out. Hidden knowledge and skills are not fit for the superior authority to adopt output control. Hence, hypothesis is presented:

H2a: Knowledge-based resource contribution of the superior authority does not have significant influence on the adopted output control.

However, knowledge-based resources might be suitable for the superior authority to conduct process control, due to they are vague and subtle in essence (Kedia & Bhagat, 1988). Based on knowledge is hidden in the implemented procedures, it must be learnt and obtained in the operation; hence, the superior authority must be involved in the operation, in order to enhance its contribution in knowledge, and it can also observe practical measures and actions of affiliated or parallel authorities; Superior authority will probably adopt process control once it eager to keep an eye on the implemented measures or actions (Govindarajan & Fisher, 1990；Kirsch, 1996).

According to Ouchi (1979), as well as Turner and Makhija (2006), when the controller knows the converted process, some measures or actions will be converted from investment into output, and the organization will adopt behavior-based control. Knowledge-based resources will offer knowledge. For example, the accumulation of skills or professional knowledge will make the implementation more smooth and efficient (Von Hippel, 1988). Management skills will determine vital investment, shape growing direction and the implementing organization's strategies (Mahoney, 1995), as well as the application of other resources, such as techniques, innovation, collaboration, marketing, reacting to uncertain environment flexibly, etc. (Miller & Shamsie, 1996). Therefore, the superior authority must rely on knowledge-based resource contribution, in order to adopt process control. Then hypothesis is put forward:

H2b: Knowledge-based resource contribution of the superior authority has significant influence on the adopted process control.

Knowledge-based resources might influence social control. Past control theory advocates that social control can be adopted when behavior-based process control is relatively week (Ouchi, 1979；Eisenhardt, 1985), in which it highlights that social control is hard to be implemented if social network and mechanism have not been set up (Chen, Park, & Newburry, 2009), as these contributions are hidden in humans' experience and skills (Osborn & Baughn, 1990). The superior authority, to convert knowledge, must conduct social interaction constantly; put another way, the establishment of social mechanism can prompt the flow of knowledge, thus assisting understanding, communication or solving problems between the superior authority and its affiliated or

parallel authorities. This implicates that the superior can adopt social control when it contributes its knowledge-based resources. Therefore, hypothesis is proposed:

H2c: Knowledge-based resource contribution of the superior authority has significant influence on the adopted social control.

2.5 Research framework

Based on the above hypotheses, the research construct of this thesis is shown as Figure 1.

3. Methodology

3.1 Research Setting and Date Collection

Questionnaires are designed mainly to survey the relationship between organizational resource contribution and control modes; as to the design on the items, it mainly refers to the view of Miller and Shamsie (1996) in terms of organizational resource contribution, that property-based resources are the power entrusted by organizational regulations, and legally protected; knowledge-based resources are experience and skills accumulated by the organization via constant learning, with disturbances like tacitness, complexity and vagueness (Miller & Shamsie, 1996).

As to control modes, it is mainly based on control theories and relevant literature on governmental control. Control theories provide different control modes (Ouchi, 1978；Snell, 1992；Kirsch, 1997；Cardinal, 2001；Cardinal et al., 2004) and relevant organizational control literature has defined different control modes (Makhija & Ganesh, 1997；Yan & Gray, 2001；Luo et al., 2001；Fryxell, Dooley, & Vryza, 2002). For example, output and process control is measured via output and behavior indexes; social control is measured via informal social interaction index between the controller and the controlled. The thesis designs questionnaires by referring to the literature above and adopts seven-point Likert scale as the measurement on the items.

As to the questionnaire survey, it sent out 1000 questionnaires via my3q questionnaire system on the Internet. Take central authorities and local authorities in Taiwan as objects. In the government in Taiwan, the highest administrative authority is Executive Yuan, all

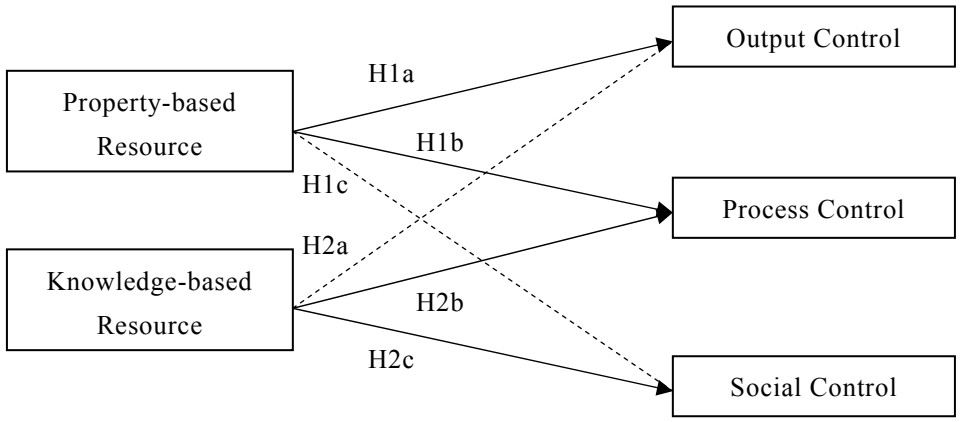

Figure 1 Research framework

governmental affairs of which should be promoted through its affiliated authorities, such as departments, associations, bureaus, etc. (Previously there were 37 affiliated authorities. Since 2012, after the organizational reform, 29 ones will have been left), or be commissioned on local county or city governments or newly added ones to implement [Currently there are 22 local authorities, including municipalities directly under the central authority and counties (cities)]. Therefore, the thesis will take the affiliated 29 authorities of Executive Yuan (after organizational reform) and 22 local governmental authorities as objects and the samples are mid-senior officials of the central authority and local authorities, mainly thinking that mid-senior officials have had amounts of experience and knowledge on the overall business in the government, and then can collect more accurate information.

3.2 Operational Definition and Measurement

The operational definitions of the construct of this study, and the source and the process of design of various measurement tables are explained as follows.

3.2.1 Property-based resources

From the literature reviewed, this thesis observes that property-based resources are valuable assets of an organization. Assets like financial ability, tangible assets, the authority and power associated with a position or a job are valuable, rare, cannot be copied and cannot be replaced. These assets have a great impact on the management process of an

organization and its strategic partners. The property-based resources of the government can be categorized into the power to allocate a budget, property, the right to use certain facilities, supervise a policy and the power to reward and punish. Therefore, this study defines the operational definition of property-based resources as the power to allocate a budget, the right to use property, the authority to monitor a policy and the power to reward and punish personnel, and uses these definitions to design 4 kinds of measurements. For example, "When the supervising agency has the power to allocate the budget, it is better able to execute and monitor a policy." In order to ensure a clearer semantic meaning, this study asked the chief secretaries of governmental agencies, both central and local, to correct the questionnaire, and had the officials of the Research, Development and Evaluation Commission, Executive Yuan take the pre-survey. 35 questionnaires were sent out and all were returned. The pre-respondents had no questions or doubts during the pre-survey, and Cronbach's alpha was higher than 0.7, therefore the questionnaire was finalized. All of the questions regarding property-based resources use the Likert 7-point scale.

3.2.2 Knowledge-based resources

Knowledge-based resources-Based on the views of Stewart (1997) and Bontis (1999), this thesis concludes that knowledge based resources are the sum of those that can create value for an organization expertise, special techniques, the experience in solving problems and the relationship with outside organizations. This thesis refers to the measurements in Subramaniam and Youndt (2005). Their measurements are analyzed through factor analysis, and are reliable and valid. The results of the analysis are GFI=0.87, CFI=0.91 and IFI=0.92, and the factors in each question are significant. At the same time, Cronbach's alpha was higher than 0.7, therefore the original measurements are reliable and valid.

The operational definition of knowledge-based resources is the professional knowledge, professional skills, the experience of solving problems and the relationship with external organizations that can create value for the organization, and this definition is employed to design 4 kinds of measurements. For example, "When the supervising agency has the professional knowledge, it is better able to execute the control of a policy." All of the questions regarding knowledge-based resources use the Likert 7-point scale.

3.2.3 Organizational control

From the literature review, this thesis sums up the views of the scholars, defines organizational control as a series of monitoring, communicating and supplementing activities to find and solve problems, and make improvements in order to ensure that the goal of the performance can be reached. This thesis employs the three modes of control, output, process and social control, they are commonly used in businesses, government agencies and non-profit organizations. The measurements for the three modes of organizational control: outcome control, process control and social control come mainly from Chen, Park, and Newburry (2009). Their measurements are analyzed through factor analysis, and are reliable and valid. The results of the analysis are GFI=0.82, CFI=0.93, NFI=0.85 and NNFI=0.92, and the factors in each question are significant. At the same time, Cronbach's alpha was higher than 0.7, therefore the original measurements are reliable and valid.

The operational definition of the outcome control of organizational control is the outcome expected by the supervising agency, and this includes questions concerning the establishment of a clear policy goal, performing a risk evaluation of a policy and setting the expected effects for the policy. For example, "When the supervising agency asks for a clear goal for the policy, it is better able to achieve the outcome of a policy." Process control is the monitoring carried out by the supervising agency, which includes five related questions: the establishment of the regulations for the execution and control of a policy; setting up a project team to execute a policy; assigning responsibility; setting a fee back on the execution; and regularly controlling the budget for the execution. For example, "When the supervising agency has the regulations for the execution of a policy, it is better able to execute a policy." Social control has three questions, and this includes the communication mechanism used by the supervising agency and in turn, it includes holding exercises or explanation meetings for the policy, holding regular meetings within the organization and communication among the managers. For example, "When the supervising agency holds exercises or explanation meetings for the policy, it is better able to execute a policy." All of the questions regarding organizational control use the Likert 7-point scale.

3.3 Reliability, Validity and Model Fitness

The thesis conducts analysis with SEM21 software of AMOS. SEM (Structural Equation Modeling) has been gradually popular in fields like social science, action

research and education, and is now even valued in biology, economics, marketing and medicine (Raykov & Marcoulides, 2006). Researchers set up models with SEM, trying to understand underlying meanings among variances, thus to evaluate and test the assumed relationships and further to validate them with collected data. SEM can evaluate the fitness between theoretically assumed models and practical data, and can also analyze and observe correlations among variances through covariance matrix reset from the data. SEM can not only develop and test models, but compare the fitness between oppositional models derived from different theories and the data, thus to strengthen reliability and accuracy of the research.

SEM is a confirmatory analysis approach and the basis of SEM is Confirmatory Factor Analysis (CFA). Each CFA is part of SEM as a collection; if CFA is not good in reliability and validity, neither will SEM. When the fitness among models is not good, the significance and direction of all paths might be false, so CFA is the first step in SEM.

When SEM is used to validate theoretical models, good model fitness (Byrne, 2013) is a must. The better the fitness is, the closer the model is to the sample. To reach the goal, researchers should refer to important relevant statistical indexes provided by SEM. Chang (2011) refers to views from Schreiber (2008)；McDonald and Ho (2002)；Boomsma (2000)；Jackson, Gillaspy, and Purc-Stephenson (2009)；Hoyle and Panter (1995)；Schreiber, Nora, Stage, Barlow, and King (2006), and selects some indexes to evaluate the fitness of the overall models, including χ^2 test, ratio between χ^2 and freedom, goodness of fit index (GFI), adjusted-goodness-of-fit index (AGFI), and Root Mean Square Error of Approximation (RMSEA) (Torkzadeh, Koufteros, & Pflughoeft, 2003).

CFA on dimensions is shown in Table 1. To meet convergent validity, the dimension should be qualified in the following criteria (Hair, Anderson, Tatham, & Black, 2009): a. measurement weight of the factor should be larger than 0.7; b. composite reliability should be larger than or equal to 0.7; c. the average variance extracted (AVE) should be larger than 0.5. As shown in Table 3, measurement weight of the factor for each item is between 0.534 and 0.930, which is acceptable (Nunnally, 1978); CR of items is between 0.786 and 0.914, all larger than 0.7; AVE is between 0.553 and 0.781, all larger than 0.5, showing all variance dimensions own good convergent validity.

Table 1　Confirmatory Factor Analysis（CFA）

Variables	Indexes	Non-standardized Measurement Weight	Standard Deviations	C.R. (t-value)	P	Standardized Measurement Weight	C.R	AVE	X^2	DF	X^2/DF	GFI	AGFI	RMSEA
Property-based Resources	a1	1.000				.876	.837	.570	4.351	2	2.175	.991	.954	0.072
	a2	.994	.069	14.476	***	.874								
	a3	.796	.071	11.207	***	.682								
	a4	.467	.056	8.280	***	.534								
Knowledge-based Resources	k1	1.000				.723	.883	.656	14.065	2	7.032	.969	.847	.162
	K2	1.006	.093	10.800	***	.740								
	K3	1.362	.105	13.013	***	.919								
	K4	1.327	.108	12.290	***	.843								
Output Control	O1	1.000				.816	.914	.781	-	-	-	-	-	-
	O2	1.275	.078	16.414	***	.901								
	O3	1.263	.075	16.790	***	.930								
Process Control	P1	1.000				.828	.866	.566	16.979	5	3.396	.970	.910	.102
	P2	.895	.088	10.171	***	.649								
	P3	1.059	.077	13.704	***	.832								
	P4	.985	.083	11.858	***	.736								
	P5	.790	.071	11.110	***	.698								
Social Control	S1	1.000				.806	.786	.553	-	-	-	-	-	-
	S2	.892	.101	8.801	***	.785								
	S3	.786	.095	8.232	***	.627								

Note: $^{*}p<0.05$、$^{**}p<0.01$、$^{***}p<0.001$

As to model fitness, Chang (2011) suggests conducting evaluation via the ratio between χ^2 and freedom, GFI, AGFI and RMSEA. It is shown in Table 1 that，as to output control and social control, there are three variances in saturated mode, while for three other dimensions, as to the ratio between χ^2 and freedom, it is 2.175 on property-based resources, 3.396 on process control, both of which are acceptable fitness according to Schumacker and Lomax (2004) that the ratio should be smaller than 5. It is a bit higher on knowledge-based resources, that is 7.032; as to GFI, it is 0.991 on property-based resources, 0.969 on knowledge-based resources, and 0.970 on process control, catering to the ideal criteria, larger than 0.9; as to AGFI, it is 0.954 on property-based resources, 0.847 on knowledge-based resources, and 0.910 on process control; the ratio on knowledge-based resources caters to the suggestion of MacCallum and Hong (1997) that it can be slightly loosened to 0.8; another two cater to the ideal criteria, larger than 0.9; as to RMSEA, it is 0.072 on property-based resources, 0.162 on knowledge-based resources, and 0.102 on process control, catering to the suggestion of Schumacker and Lomax (2004) that RMSEA should be no larger than 0.5 and that means a good fitness for the model. In a word, models on the dimensions fit well in the thesis

4. Results Analysis

4.1 Analysis on Sample Features and Means

230 valid questionnaires are returned, with an effective response rate 23%. Among them, male participants take up 56.5% and female 43.5%; their ages assemble from 40 to 49, taking up 43.9%, next with the group from 50 to 59, taking up 31.7%; as to the education, masters take up the majority, with the highest percentage, 46.6%, next with college graduates 35.3%, and then doctors 6.1%; as to years of service, those between 20 and 29 take up the majority, with the highest percentage, 37.8%, next with those from 10 to 19, 34.3% and then separately, those over 30 and below 10, with percentages 14.8% and 13.0%; as to the served authorities, those with central authorities take up the percentage of 75.2%, while those with local authorities, 24.8%; as to their business, those working as advisors take up 54.3% and those line (business) staff take up 45.7%; as to current positions, senior supervisors take up the majority, 32.6% and next are associate supervisors, 26.2%, and separately, associate and senior non-supervisors take up 25.2% and 12.6%.

Analyzed from the statistics on sample features above, it fits well with the set sample of mid-senior staff in the government.

Observed from means in Table 2, participants' identity on property-based resources (M=5.48), knowledge-based resources (M=5.66), output control (M=5.74), process control (M=5.67) and social control (M=5.58), all larger than the median in seven-point Likert scale, shows that participants are highly identified with organizational resource contributions which are the antecedent of the control and the three control modes adopted by the thesis.

Conduct t-test or variance test between population statistic variables and other variables and then conduct Scheffe's test. Analysis in Table 3 shows that gender and served authorities of participants do not cause significant difference on the variances. Position types cause significant difference on process control, while the further Scheffe's test shows no significant difference. When it is in the case of $p<0.01$, ages show significant difference on four variances, knowledge-based resources, output control, process control and social control. After further Scheffe's test, it shows that participants below 40 own obviously lower identity on variances than those above 50, meaning that the younger they are, the less they like the control mechanism of the organization. When it is in the cases of $p<0.01$ and $p<0.05$, education shows significant difference on two variances, property-based resources and social control. After furthe Scheffe's test, it shows that education does not show significant difference on social control, while as to the identity on property-based resources, those with degrees of high school or lower are obviously lower than those with degrees of masters and bachelors, showing that the higher his degree is, the more important he thinks property-based resources are.

When it is in the cases of $p<0.05$ and $p<0.01$, current positions show significant difference on two variances, output control and social control. After further Scheffe's test, they do not show significant difference on output control, while as to the identity on social control, those ordinary non-supervisors are obviously lower than those senior or ordinary supervisors, showing that supervisors own high identity on social control. When it is in the case of $p<0.01$, as well as in the one of $p<0.01$ and $p<0.05$, years of service show significant difference on three variances (knowledge-based resources, output control and social control). After further Scheffe's test, as to the identity on the three variances, it shows that those serving less than 10 years are obviously lower than those serving more

Table 2 Statistics on Means

Variables	N	Mean	S.D
Property-based Resources	230	5.479	1.120
Knowledge-based Resources	230	5.657	0.955
Output Control	230	5.745	0.945
Process Control	230	5.670	0.784
Social Control	230	5.581	0.838

Table 3 Analysis on Variances

Items		Property-based Resources	Knowledge-based Resources	Output Control	Process Control	Social Control
Gender	T	.200	1.434	.350	.685	1.557
Age	F	.488	6.168**	4.458	4.309**	6.188***
Education	F	3.549**	1.046	1.648	1.939	2.406*
Served Authority	T	-.330	.195	-.679	.625	-1.300
Position Type	T	.534	-.461	-1.011	-2.178*	-3.71
Current Position	F	1.063	2.253	2.492*	1.691	3.976**
Years of Service	F	1.323	4.162**	4.004**	.868	3.578*

Note: *p<0.05、**p<0.01、***p<0.001

than 20 years, showing that the longer the staff serves, the higher the identity on the three variances is.

4.2 Correlation Analysis

This thesis uses the Pearson product-moment correlation coefficient to test the correlation among variables. The Pearson product-moment correlation coefficient should be between 1 and -1. If the coefficient is positive, the correlation between the variables is positive. If the coefficient is negative, the correlation between the variables is negative. If the absolute value of the correlation coefficient is higher than 0.8, the relationship between the variables is perfectly correlated. If the coefficient is between 0.7 and 0.8, the relationship between the variables is highly correlated. If the coefficient is between 0.3 and 0.7, the relationship between the variables is moderately correlated. If the value is smaller than 0.3, the relationship between the variables is modestly correlated (Deng, 2004). The correlation coefficient in this thesis is between 0.097 and 0.678, all of the correlations between different variables are smaller than 0.8, therefore this study concludes that the variables do not have a linear relationship. The results of the analysis are shown on Table 4.

Table 4 Correlation Analysis

Variables	PBR	KBR	OC	PC	SC
PBR	1				
KBR	.177**	1			
OC	.241***	.622***	1		
PC	.186**	.533***	.678***	1	
SC	.097	.516***	.607***	.666***	1

Note：*p<0.05；**p<0.01；***p<0.001；PBR: Property-based Resources；KBR: Knowledge-based Resources；OC: Output Control；PC: Process Control；SC: Social Control.

4.3 Path Analysis and Hypotheses Test

Test whether hypotheses in the thesis are right through path analysis of SEM in AMOS. The results are shown in Figure 2 and Table 5. H1a: Property-based resource contribution of the superior authority has significant influence on the adopted output control. Its standardized coefficient of the path is 0.135 and t is 2.608 ($p<0.01$). H1a is right. H1b: Property-based resource contribution of the superior authority has significant influence on the adopted process control. Its standardized coefficient of the path is 0.092 and t is 1.648. H1b is false; participants might think, it is a set routine that the superior authority, with powers on legal supervising, budget allocation, etc., conducts control over affiliated or parallel authorities. H1c: Property-based resource contribution of the superior authority does not have significant influence on the adopted social control. Its standardized coefficient of the path is 0.006 and t is 0.104. H1c is right.

H2a: Knowledge-based resource contribution of the superior authority does not have significant influence on the adopted output control. Its standardized coefficient of the path is 0.599 and t is 11.558 ($p<0.001$). H2a is false; according to systematic theories, knowledge-based resources assist the planning and implementation of policies, prompt the effectiveness of output control in the meanwhile. H2b: Knowledge-based resource contribution of the superior authority has significant influence on the adopted process control. Its standardized coefficient of the path is 0.536 and t is 9.641 ($p<0.001$). H2b is right. H2c: Knowledge-based resource contribution of the superior authority has significant influence on the adopted social control. Its standardized coefficient of the path is 0.515 and t is 8.954 ($p<0.001$). H2c is right.

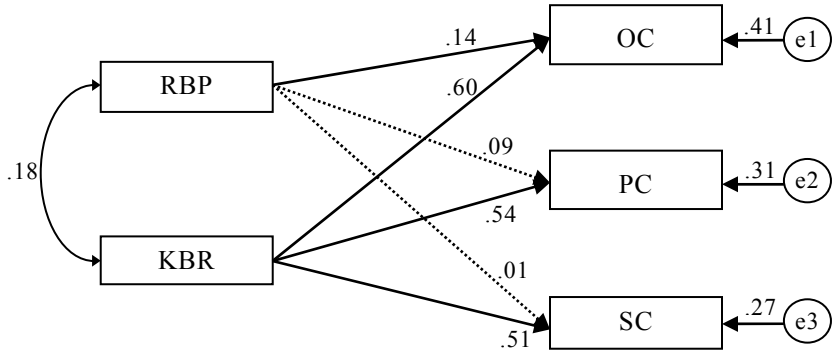

Figure 2 Path Analysis

Table 5 Hypotheses Test

Hypotheses	Paths	Standardized Structural Indexes	t	Validated Results
H1a	PBR→OC	0.135	2.608**	Right
H1b	PBR→PC	0.092	1.648	False
H1c	PBR→SC	0.006	0.104	Right
H2a	KBR→OC	0.599	11.558***	False
H2b	KBR→PC	0.536	9.641***	Right
H2c	KBR→SC	0.515	8.954***	Right

Note：*p<0.05、**p<0.01、***p<0.001；PBR: Property-based Resources；KBR: Knowledge-based Resources；OC: Output Control；PC: Process Control；SC: Social Control

5. Conclusion and Implications

5.1 Conclusion

Several conclusions can be obtained based on analyses above. Firstly, the thesis, in accordance with resource-based theory, brings up control antecedents: property-based resource contribution and knowledge-based resource contribution, and three control modes: output control, process control and social control. It is highly identified by participants. This conclusion fits well with views of Miller and Shamsie (1996) on resource contribution and control modes defined in relevant literature on organizational control (Makhija & Ganesh, 1997；Yan & Gray, 2001；Luo et al., 2001；Fryxell et al., 2002). Secondly, property-based resource contribution has significant influence on output control, but not on process control or social control. This conclusion is a bit different from the view of Chen,

Park, and Newburry (2009) who think that property-based resource contribution has significant influence on both output control and process control when conducting the research on Parent contribution and organizational control in international joint ventures. Thirdly, knowledge-based resource contribution has significant influence on the three control modes: output control, process control and social control. This conclusion is a bit different from the view of Chen, Park, and Newburry (2009) who think that knowledge-based resource contribution does not have significant influence on output control.

5.2 Implications

Apply organizational control theories into the research on governmental organizational control system, thus to learn more clearly about the complicated governmental organizational control system. It can be found from the results in the thesis that, as to control antecedents of governmental organizations, besides tangible property-based resource contribution, intangible knowledge-based resource contribution also plays a key role in control system; as to control modes of the governmental organizations, besides traditional output control and process control, social control is another new mode of control. These conclusions will enrich the scope of the research on governmental organizational control system. Next, antecedent of resource contribution and three control modes in the thesis have references value on practical control system design and application in governmental organizations.

The knowledge-based resource perspective should be applied to the research on governmental organizational control system in order to gain a more in-depth understanding of the complicated governmental organizational control system. Given the results produced by the thesis, it is clear that in addition to tangible property-based resource contribution, intangible knowledge-based resource contribution also plays a key role in the control system; as regards control modes of the governmental organizations, aside from traditional output control and process control, social control is a new mode of control. These conclusions will enrich the scope of research on the governmental organization control system. Next, knowledge-based resource and three control modes in the thesis are good references for the practical control system design and application in governmental, non-profit or business organizations.

This study explains how the superior authority develops certain types of control in various dimensions according to its individual resource contributions, irrespective of the other partner's. By examining the extent and type of control by each partner in the governmental organization, this study complements prior research from the relational view, which mainly examines control dynamics based on inter-partner relationships. Furthermore, while most studies of governmental organizations focus on the performance consequences of parent control, this study explores how control is established in a governmental organization. The findings on the key antecedents of parent control increase our knowledge of an important, but under-researched area of governmental organization.

This study also broadens the literature on organizational control by demonstrating how various knowledge-based resources from parent companies impact their usage of three important control types. While the classic work categorizes control types based on the availability of output/process/social-related information (Ouchi, 1979), recent studies stress the configuration of multiple control types in various task environments (Cardinal et al., 2004；Turner & Makhija, 2006). However, it is still unclear which means can be employed by the organization to adjust and balance the control types to achieve various objectives. This study is a rare attempt to address this question by empirically investigating the relationships between knowledge-based resource and parent control in governmental organization. Our findings suggest that different types of knowledge-based resources provide access to a variety of output/ process/ social -related information and mechanisms. As a result, the superior authority may change its control usage over governmental organization operations by modifying its knowledge-based resource contributions.

In addition, this study links knowledge-based resource and organizational control activities in governmental organization, thus contributing to the resource-based view. While traditional applications of the resource-based view mainly focus on the resource-performance link, more recent studies argue that alignments of organizational actions are required to realize the potential value of resources (Eisenhardt & Martin, 2000；Priem & Butler, 2001；Hult, Ketchen, & Slater, 2005). More research is needed on the resource-actions relationship (Ketchen, Hult, & Slater, 2007). This study is an effort to address the relationships between knowledge-based resources and parent control activities. The findings suggest that the control types exercised by the superior authority are significantly influenced by the decision to make property or knowledge contributions to a governmental organization. In other words, the parent firms' control activities vary depending upon the resources they contribute.

In order to effectively influence governmental organization operations, the superior authority should pay attention to the distinct characteristics of these control types. According to our findings, the superior authority may adjust control mechanisms by changing their resource contributions. They may increase their knowledge contributions to intensify output, process and social control. By focusing on the superior authority resource contributions, this study provides important implications regarding the effective design and establishment of control.

5.3 Limitation and Future Work

Admittedly, this study has several limitations. First, this study focused on governmental organization management's perception of the superior authority control, and data was mainly collected from governmental organization managers. We believe this method is suitable for this study since the governmental organization is both the party utilizing the resource-based contribution and the object of the superior authority control. Nevertheless, it would be ideal to have data from multiple sources, such as the central authority and local authorities in Taiwan. Owing to the conservative nature of governmental staff, the return rate of questionnaires is low, which reduces the reliability and validity of the research. It is suggested that in the future diversified research modes can be adopted, such as field research and in-depth reviews.

Next, resource types could be further researched as well. In this study, we divided the superior authority contributions into knowledge-based resources. This classification focuses on whether the resources are protected under knowledge barriers. Despite the commonality, resources within the same category may have distinct features with respect to other aspects. For example, technological know-how and local knowledge are unevenly distributed between the governmental organizations (Blodgett, 1991). This might have been the underlying cause of a number of unexpected findings in this study. Future research could focus on other aspects of the superior authority contributions or examine more specific resource types. Moreover, relationships and networks could also be considered as a type of resource. Governmental organizations develop and maintain various relationships with non-profit or business organizations, and local communities (Peng & Heath, 1996；Nahapiet & Ghoshal, 1998). These relationships are a significant source of competitive advantage for a governmental organization, and may enable the superior authority to exercise certain types of control over a governmental organization.

Lastly, additional contingency factors for the relationships between governmental organization contributions and control types might exist. In this study, we only examined the moderating effects of venture importance and goal incongruence. Particularly with respect to the relational variable of goal incongruence, it would be useful for future studies to examine the impacts of other potential sources of relational conflict between governmental organizations. It would also be interesting to study how the superior authority reacts to other organizational and contextual factors, such as cultural differences, institutional restrictions, and other conditions. For instance, the superior authority control in governmental organization may evolve over time (Wang & Nicholas, 2007). In the initial stage of a Governmental organization the superior authority might rely more on formal control mechanisms, but as the governmental organization matures, the superior authority control is likely to become institutionalized and social control may become a relatively more important form of influence. In fact, current understanding of the resource-based view has evolved into a contingency theory of organization (Ketchen et al., 2007), suggesting that the impact of strategic resources may be subject to organizational and contextual factors.

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103 年 **04** 月 **11** 日收稿

103 年 **04** 月 **28** 日初審

103 年 **10** 月 **22** 日複審

104 年 **01** 月 **07** 日接受

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