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### Roles of performance measurement in local government

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## 2. A Theoretical Research Framework

*This chapter presents a brief overview of the most relevant theoretical concepts of management control, accounting information systems, performance budgets and the roles of budgets. These general accounting concepts, applicable in both the private and public sector, are used to compose a research framework for analyzing the role of budgeted performance measures in Dutch local government.*

### **Organizational and management control**

Control, next to strategy formulation and objective setting, is one of the critical management processes (Merchant, 1998; Merchant and Van der Stede, 2003). The term “organizational control” has no single generally accepted definition. Literature presents various definitions, describing organizational control as a process (of setting a standard, observing what is happening, comparison of observation and standard, and if necessary, behavior altering communication), or by its main goal (e.g. assuring implementation of strategies).

Anthony (1988) has provided a general accepted structure for organizational control. His traditional framework distinguishes three separate and distinct processes; being strategy formulation, management control, and task control. Within this concept, task control and strategy formulation form the boundaries of the management control process. Strategy formulation is the process of deciding on the goals of the organization and the strategies for attaining these goals. Task control is the process of ensuring that specific tasks are carried out effectively and efficiently. Management control fits between the two concepts, and is defined by Anthony (1988, p.8) as “*the process by which managers influence other members of the organization to implement the organization’s strategies*”.

Anthony considers management control to be a rational and systematic process; as a formal prescribed set of activities with the purpose of achieving the organization’s pre-set or emerging objectives (Anthony, 1988, Anthony and Govindarajan, 2003, p. 9, p.11). This formal and rational process is in essence cybernetic, involving some kind of standard setting, variance analysis and feedback activities.

The notion that formal systems of management control are in essence cybernetic is generally accepted within accounting literature. But defining the management control process as systematic and cybernetic is by no means to be seen as defining management control itself as cybernetic (Fisher, 1998). Even highly formalized, quantified and computerized organizational processes usually involve communication between people and their motivation, which means that they contain psychological elements (Hofstede 1978, 1981).

Although Anthony’s framework suggested that the basic source of discipline for studying control is behavioral science, it has often been narrowed down to an ac-

counting based control approach with a behavioral flavor, and as a mainly formal and functional system (Otley, 1999; Hartmann, 1997).

Taking a more behavioral and organizational approach, management control is conceptualized as a human activity, with humans as objects of management control (Hartmann, 1997). Studying only performance measurement and management methods is therefore unlikely to result in a totally coherent outline or a rational set of control mechanisms well-suited to the purpose for which they have been designed. The scope of management control should thus be wide enough to also encompass activities such as: discussing strategy, selection of personnel, management and organizational development practices and business process re-design techniques (Otley, 1999).

Following this line of reasoning, management control includes “*all the devices managers use to ensure that the behavior and decisions of people in the organization are consistent with the organization’s objectives and strategies*” (Merchant, 1998, p.2). These devices can in practice involve limitless kinds of control mechanisms, which can be formal or informal in nature. According to Merchant (1998) it is the function of management control systems to influence behavior in desirable ways. The assumption behind this function is that individuals act more in their own best interest than in the organization’s interest. Control systems are used to increase the probability that individuals will behave in such a way that the organization’s objectives will be achieved (Merchant, 1998).

This study is researching organizational control on an organizational level, and is mainly referring to management control processes. Strategy formulation and task control is beyond the scope of our study. However, strict boundaries between management control, strategy formulation and task control will mainly exist in theory. In practice, management control is part of the wider organizational context (Birnberg, 1983). Merchant’s (1998) vision of organizational control is used in this study as a reference.

Ouchi (1979) analyzed different control mechanisms and described three fundamentally different mechanisms “*through which organizations can seek to cope with the problem of evaluating and control*” (p. 833). He identified three archetypes of control mechanisms: markets, bureaucracies and clans. Taking a technical efficiency perspective, he argued that the choice between the three control mechanisms should depend on the organization’s ability to measure (individual) contributions (measured in outputs or behavior) to the achievement of organizational objectives.

If prices contain all the necessary information for decision making purposes, a market mechanism should be an effective control mechanism. But when market prices are not available, the measurability of organizational outputs or behavior should determine whether bureaucratic/administrative controls or social controls are the preferred main control mechanisms.

Bureaucratic control, as defined by Ouchi (1979), relies upon rules and close personal surveillance and the direction of subordinates by superiors. Rules are to be regarded here as “*an arbitrary standard against which a comparison is yet to be made*” (Ouchi, 1979, p. 835). Using bureaucratic control, an organization will create an explicit set of rules about behavior (e.g. budgets or cost standards), or level of production or output. This set of rules will not completely specify the duties of an employee, but will reduce the involvement of hierarchical authority to a desired level. Bureaucratic control can thus be seen as a mechanism to reduce hierarchical information overload, and as a means of improving organizational information processing capabilities (Galbraith, 1973). Galbraith (1973) argued that decision-makers attempt to find a match between the degree of information processing demanded by the environment and the processing capabilities of the organization. He argued that when uncertainty is low, tasks are well understood prior to their performance and many activities can be pre-planned. This concept of pre-planning seems to be strongly related to the image of the mechanistic organization with its hierarchy and procedures. But when uncertainty increases, tasks cannot be fully programmed and the organization’s information processing requirements will increase (Chapman, 1997).

This concept of programmability of tasks is similar to Perrow’s (1970) routineness of tasks, which expresses the extent to which tasks can be reduced to a well-defined set of rules. Perrow (1970) argued that organizational planning and control processes are related to the extent to which tasks are analyzable and homogeneous (number of exceptions).

Bureaucratic control can be classified as a formal and rational form of control. Bureaucratic control of an organization requires measurement and monitoring of, in essence, the behavior of employees or the results of those behaviors. If desired behavior can be specified and watched with reasonable precision, behavior control can create an effective control mechanism. But if the knowledge of the means-end relationships involved in the basic products or service activities is imperfect, behavior control is less effective.

On the other hand, if the results of behavior (or outputs) are measurable with reasonable precision and superiors in the organizational hierarchy can monitor multiple output objectives, output control can be effective (Ouchi, 1979, Hofstede, 1981).

Bureaucratic controls, such as behavior and output control, are thus not always applicable. As Ouchi (1979, p. 845) concluded:

*“Under conditions of ambiguity, of loose coupling, and of uncertainty, measurement with reliability and with precision is not possible. A control system based on such measurements is likely to systematically reward a narrow range of maladaptive behavior, leading ultimately to organizational decline”*

When the assessment of performance is unclear, an organization is likely to try to reduce goal incongruity by relying more on informal, social, ritualized, or ceremonial forms of control. Social forms of control, such as clan control, are unable to monitor and evaluate anything but attitudes, values and beliefs, and “*require the stability of*

*membership which characterize the clan*" (Ouchi, 1979, p. 844). These forms of control relate to the socialization process among members of the clan or the profession. Socialization processes emphasize agreement on a broad range of values and benefits (Ouchi, 1979), or on negotiation and judgment (Hofstede, 1978).

The choice between market, bureaucracy or clan control is, according to Ouchi, in essence an economic one. However, Ouchi added that real organizations will contain some features of each of the modes of control (p. 840).

Implicit in Ouchi's analysis is the assumption that organizational control operates whilst agreement on goals and objectives exists (Birnberg e.a, 1983). It is, however, doubtful whether this assumption of unambiguous objectives is always valid (Anthony and Young, 1994; Hofstede, 1978).

Hofstede (1978, 1981) argued that ambiguity of organizational objectives is "*the most crucial criterion for management control*" (1981, p. 194), and stated:

*"When ambiguities in objectives exist, control is always political control, dependent on power structures, negotiation processes, the need for the distribution of scarce resources, particular interests and conflicting values: however, political control at the top of an organization can go together with other forms of control inside the organization, because for members, the political top may have resolved the ambiguities"* (p. 198).

Hofstede (1981) identified three main reasons for ambiguous objectives: (a) conflict of perceived interest and/or values among those having a say in the activity, (b) lack of knowledge about means-end relationships in which the activity considered represents the means, and (c) fast changing environments which enforce new objectives or make existing objectives obsolete, without immediately suggesting new ones. Hofstede (1981) underlined that every organization, public or private, contains activities that demand different forms of control and can have ambiguous or unambiguous objectives. Consequently he added:

*"unambiguous objectives exist for activities for which there are no conflicts of interests and/or values among those concerned. Then there is consensus among organization members with regard to the activity, based on shared traditions, shared indifference, or an unquestioning acceptance of a central authority that sets the objectives"* (Hofstede 1981, p. 145).

Hofstede's (1981) control framework is defined by four criteria, of which the ambiguity of objectives is considered as the first and most crucial. Measurability of outputs, knowledge of the effects of management intervention and level of repetitiveness are the remaining three criteria. Unambiguous objectives and measurable outputs are regarded as minimum requirements for applying cybernetic models of control (using variances between actual performance and pre-set norms in order to decide if intervention in the task execution or adjustment norms is appropriate). Purely cybernetic models assume rationality of the entire system. Control models will become less cybernetic when the effects of intervention are not known in advance and psychological elements enter the control system. Non-cybernetic models of control rely more on the values and rituals of the group in which decision-makers operate. Hofstede stated

that values and rituals are manifestations of the culture of a group, and because cultures between groups can differ, no universally optimal procedures for non-cybernetic models of control exist. Political control is, as he put it, “*a vague model*” (Hofstede, 1981, p.202).

Summarizing, many organizations can apply administrative or formal forms of control, such as behavior and output control, as long as their objectives and production processes are relatively stable and certain, and the organizational hierarchy can transmit control with any accuracy from top to bottom (Ouchi 1979). As discussed in more detail in chapter 1, “Introduction”, the use of formal administrative controls is mainly associated with a more technical rationale on control; with the importance of achieving formal, relatively unambiguous and clear organizational goals. This context stresses the importance of the formal organizational structure and processes, and rules and routines that serve to bring order and minimize uncertainty for boundedly rational<sup>20</sup> employees.

However, the circumstances of many organizational tasks in the public sector may not fit these specifications (Ouchi, 1979; Anthony and Young, 1994). Tasks in governmental organizations are often not stable and certain, and relate often to more ambiguous and unclear objectives, resulting in a reliance on more political forms of control instead (Hofstede, 1981).

This study takes Ouchi’s and Hofstede’s framework as the basis from which to analyze performance measures for both administrative and political forms of control. Ouchi’s framework is used to analyze whether administrative controls are to be expected. Hofstede’s criterion of ambiguity of objectives is used to give additional insights into the use of political control.

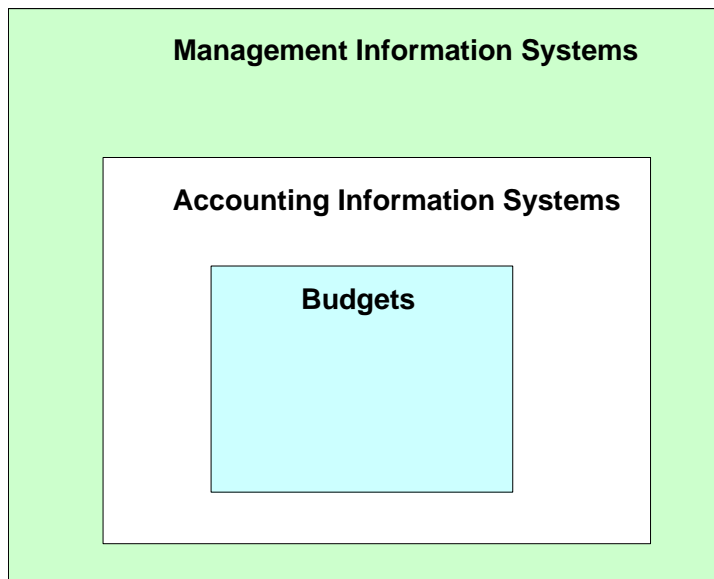
## ***Accounting Information Systems***

Forms of formal organizational control can be addressed as systems<sup>21</sup>, for example as management information systems (MIS), management accounting systems (MAS), or as accounting information systems (AIS). Although some disparities in the conceptual definition of MAS, MIS and AIS exist in literature, they all refer to formal routines and procedures, the use of information, and a focus on patterns of activities (Simons, 1992). In this study the formal control system is labeled AIS, and is defined within the context of MIS. Figure 2 gives a simplified picture of the positioning of MIS, AIS, and budgets.

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<sup>20</sup> Bounded rationality addresses the assumption that it is people’s intention to act rationally, but that this intention is bounded by personal and organizational limitations (Simon, 1945). Rational is referring, amongst others, to the alignment of personal and organizational goals. According to Simon (1945, p88): “*When we speak of people behaving irrationally what we generally mean is that their goals are not our goals, or that they are acting on the basis of invalid or incomplete information, or that they are ignoring future consequences of their actions, or that their emotions are clouding their judgments or focusing their attention on momentary objectives*”.

<sup>21</sup> A system is a prescribed and usually repetitious way of carrying out an activity or a set of activities (Anthony and Govindarajan, 2003, p. 6). In this study formal control and systematic control are used as synonyms.



**Figure 2** MIS, AIS and budgets

Taking an orthodox management accounting perspective, the function of AIS is to facilitate decision making and to control behavior (Zimmerman, 2000). AIS can serve decision making, or decision management, by providing information to reduce ex-ante uncertainty. Then AIS supports strategy formulation and implementation, provides information for coordination of activities, and facilitates organizational learning (Simons, 1995; Abernethy and Brownell, 1999). AIS can also serve control by providing ex-post information about the actions of subordinates (Zimmerman, 2000).

It is suggested that the design of AIS represents a response to the requirements for organizational coordination and control. AIS is perceived as effective when it is designed to provide information that meets the requirements of the user and is at the same time consistent throughout the organization (Galbraith, 1973; Anthony, 1988; Nicolaou, 2000).

The design and use of AIS can be characterized by the dimensions of AIS and by the quality of the provided information (Anthony, 1965). Accounting literature has focused mainly on the dimensions of AIS, such as financial versus non-financial, internal versus external, or historical versus future orientated (Chenhall and Morris, 1986; Abernethy and Vagnoni, 2004). The essential characteristics of the quality of AIS have been addressed within the accounting literature but especially in the information system literature. Quality of AIS is often characterized by its relevance (the importance of the information for the user), accuracy (error free), precision (exact) and completeness (meets the needs of the user) (e.g. Anthony, 1988; Doll and Torkzadeh, 1988). A generally accepted approach for capturing the quality of the provided information is by measuring the satisfaction of the user of accounting information (Doll and Torkzadeh, 1988). User satisfaction is seen as a surrogate measure for AIS effectiveness; the underlying general assumption is that better information systems would lead to higher user satisfaction, without specifying which factors contribute the most (Goodhue, 1995).

Managers need information for different purposes; management information can serve multiple roles<sup>17</sup> simultaneously. Managers can use management information, amongst other things, not only to be able to compare actual with expected performance and to manage by exception (Simons, 1990, 1995), but also for monitoring, detecting change, identifying problems and opportunities, and disseminating information (Mintzberg, 1972), or for operational planning, performance evaluation, communication of goals and strategy formulation (Hansen and Van der Stede, 2004).

Managers use both informal and formal information sources. Managers are dependent to a large extent on informal information sources. For example, these could be: informal talks, regular scheduled or ad hoc meetings, informal memorandums, and personal inspection. Informal information processes can carry news quickly, convey nuances and can process qualitative information. Informal information processes often represent actuality, provide concrete descriptions of unique situations, indicate true causality and provide private and tacit views. (Mintzberg, 1972; Earl and Hopwood, 1979). Formal information processes relate to AIS and to a variety of non-routine information processes. The formal non-routine information processes can relate to a variety of subjects, such as meetings, conferences, studies and task forces (Earl and Hopwood, 1979, Simons, 2000).

This study focuses on various different sources of formal control information. Dutch municipalities use a planning and control approach, therefore sources are included that relate to, for example, programming, budgeting, and the reporting of regular and ad-hoc tasks. Both the design criteria and the quality of AIS are researched. This is in order to characterize the relevance of information for users, and to relate this information to specific roles of AIS.

### ***Budgeting and operational planning***

Budgeting is a major component of most AIS. Budgeting refers to the budget, as formal and quantitative expressions of plans as a set of numbers, and to the budget process (Horngren and Forster, 1987). Budgeting is used by management as a means of coordinating and communicating priorities, for facilitating lower management commitment to those priorities, and is often used by management to decentralize decision making to lower-level managers.

Budgeting is a near universal organizational process, and is so important for “*day-to-day decision making guidance for managers that it might be said that the primary purpose of the other planning cycles (such as strategic planning and programming) is merely to develop a smart budget*” (Merchant, 1998, p. 336).

Budgeting can be a “top down” and “bottom up” process, and involves short-term planning. With top down budgeting, top management set lower level budgets. Top management often use the preparation of operating budgets not only for the purpose of coordination (detecting inconsistencies), assigning responsibilities, and obtaining lower managers commitment, but also to fine-tune the strategic plan. This top down budgeting process often puts emphasis on the link between the strategic plan and the operational budget.



With bottom up budgeting, lower management participates in setting budget targets. Bottom up budgeting often puts emphasis on both strategic planning and operational planning<sup>22</sup> (Merchant and Van der Stede, 2003; Anthony and Govindrarajan, 2003).

Budgeting is the cornerstone of the management control process, but it is far from perfect. Despite its ubiquitous use, and its function to serve performance planning and ex-post evaluation of actual performance versus plan, budgetary control (exercising control through the use of budgets) has many limitations. Budgeting is not only time consuming, it can also hinder allocation of organizational resources, encourage myopic decision making, and it is also a strategic game which can result in dysfunctional behaviors (Hopwood, 1972; Hofstede, 1981; Merchant 1998; Merchant and Van der Stede, 2003).

Hansen e.a. (2003) categorized the perceived criticism of practitioners of budgeting use into three groups. Firstly, budgetary control is only useful when the budget provides a valid plan for a reasonable period of time and when managers have a good predictive model for providing performance standards. Secondly, budgetary control often imposes centralized and primarily financial-oriented controls, which often support "*such mechanical practices as last-year-plus budget setting and across the board cuts*" (Hansen e.a., 2003, p. 97). Thirdly, budgetary control focuses on responsibility centers, and will impede empowered employees from making the best decisions. Budgetary control seems thus to be the most valid approach under relatively certain environmental circumstances. Under more uncertain circumstances the validity of strict budgetary controls is assumed to diminish. Organizations that face unpredictable environments are likely to use budgets in combination with more subjective performance evaluations (Hopwood 1972; Simons, 1987; Ittner and Larcker 1998; Abernethy and Brownell, 1999).

Budgets can contribute considerably to the tightness of formal controls, but budgetary control is only one way to exercise tight control; personnel and cultural control can also contribute to tight control (Simons, 1995; Merchant, 1998; Anthony and Govindarajan, 2003). Budgetary control is considered to be tighter if it has a greater effect on decision making or if it provides a higher degree of certainty that employees act in a desirable way (Merchant, 1998). Tight budgetary control can be achieved by: defining complete and specific goals, congruent with organizational objectives, effective, timely, frequent, and convincing communication, frequent, detailed and timely monitoring of actions or results, and enhancing the value of rewards for employees (Merchant and Van der Stede, 2003).

According to Van der Stede (2001) tight budgetary control involves, in order of importance, (a) low tolerance for interim budget deviation, (b) detailed line-item follow-ups, (c) intense discussions of budget results, and (d) strong emphasis on meeting short-run budget targets.

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<sup>22</sup> The link between budgeting and operational planning is not intensively researched. According to Hansen e.a. (2003), this lack of research evidence is probably due to the focus on management control and strategic management (and on top management), and less on operational or task control (and on functional or operational management levels).

Control tightness is in general related to diagnostic controls, using variance analysis on important targets to focus managers' attention (Simons, 1995). Control tightness is however, not exclusively related to diagnostic controls. Tightness can also be obtained when managers frequently exchange information, analyze and debate action plans, and when top management is strongly involved in the day-to-day activities of subordinates (Van der Stede, 2001). Van der Stede(2001), empirically analyzing large diversified Belgium firms, suggested that especially detailed line-item follow-up and intense discussions by top management contributed to this more interactive use of the control systems.

A fundamental distinction must be made between the use of budgets for measurement and control of individual performance or organizational performance. Control of individual performance is in principle directly related to human behavior, to aspects of possible dysfunctional behavior, and to the incentives to managers to misinterpret information (Hopwood, 1972; Simons, 1995; Merchant, 1998). There is an implied connection between the performance of individuals and organizations. If AIS is found to be useful at an organizational level, it is likely to be used by individuals, who then can improve their decision-making and better achieve organizational goals. There are however "*broad leaps in logic*" from useful AIS, to improved job satisfaction and enhanced organizational performance, and "*there is no compelling evidence that such links exist*" (Chenhall 2003, p. 132).

This study is not addressing the possible impact of performance measure use on organizational and managerial performance.

Budgets can be financial and non-financial, and can relate to operational cost and expenditure or capital spending decisions. Concentrating on operational budgets, two basic types of budgets can be discerned: (a) budgets for cost centers (or expense centers or input budgets) and (b) budgets for profit centers (Hofstede, 1981; Anthony and Govindarajan, 2003). Cost centers are responsibility centers associated with financial controls (price or cost) and efficiency (price or cost per unit quantity); inputs are measured in monetary terms, but outputs are not. There are two general types of cost centers, engineered and discretionary, of which only the first can optimize the physical output in relation to the input. Engineered cost centers (or production centers) can be used for loosely coupled financial and non-financial control. Profit centers express both inputs and outputs in monetary terms and can be applied for inter-related financial and non-financial control.

Budgets of governmental organizations are a dominant part of public sector resource allocation and performance measurement (Bordewijk and Klaassen, 2001; Van Helden and Johnsen, 2002). Dutch municipalities use budgets in their hierarchical planning and control documents, which support various functions such as: information provision, accountability and control (Van Helden and Ter Bogt, 2001).

### ***Performance measures in budgets of Dutch local government***

Performance can have various meanings, but in general it relates to qualitative and quantitative descriptions of results which can help to shape employees' views of what

is important (Merchant and Van der Stede, 2003). The relevance of performance measures can be stated by the popular quote “*what you measure is what you get*” (Kaplan and Norton, 1996). In general, performance measures relate to organizational activities, production or output. In the Dutch government sector, performance measures relate primarily to activities, outputs and outcome (Ter Bogt, 2004).

Organizational performance measures are often multi-dimensional in nature and can be divided into financial and non-financial measures. Financial information refers to quantitative monetary information. Non-financial information refers to both quantitative and qualitative non-monetary information (Ittner and Larcker, 1998) and can refer to, for example, efficiency, productivity, product quality, and to citizen, customer or employee satisfaction.

A general conception of the use of performance measures is that they are used to support the formulation and implementation of organizational strategy (Kaplan and Norton, 1996; Merchant, 1998; Otley, 1999; Simons, 2000; Anthony and Govindarajan, 2003). Profit organizations, with their financial “bottom line”, can view non-financial performance measures as an indicator of financial performance (Kaplan and Norton, 1996) or can calculate the financial consequences of increased non-financial performance (Nørreklit, 2000). Profit organizations aim to use the financial and non-financial performance measures to reflect the interest of shareholders, organization and customers, and probably strive to ensure a fairly strictly balanced and integrated relationship between actions, objectives, and organizational strategy (e.g. Kaplan and Norton, 1996; Ittner and Larcker, 1998).

Objectives of governmental organizations are often regarded as more ambiguous, and seldom apply a business “bottom line” of integrating multiple goals into single financial targets. Consequently, performance measures in governmental organizations tend to be less balanced (often controlling financial and non-financial performances separately) and less integrated (often resulting in loosely coupled performance measures between different hierarchical levels) than in profit organizations (e.g. Kaplan and Norton, 1996; Brignall and Modell, 2000; Bordewijk and Klaassen, 2001).

Performance measures are an important part of governmental budgets (Johnsen, 1999; Bordewijk and Klaassen, 2001; Van Helden and Johnsen, 2002; Van Helden, 2005). Dutch municipalities use budgeted performance measures (BPM) widely, e.g. in output and outcome budgets, in performance reports, for setting performance standards, and for the purpose of benchmarking (Van Helden and Ter Bogt, 2001; Bordewijk and Klaassen, 2002). These BPM are related to various stages of the transformation process (input, throughput, or output measures) and are used to provide a broad set of indicators on the goals, on the organizational activities, or on specifications of resource availability (Van Helden and Jansen, 2003). In terms of relevance and controllability the applied performance measures are often assumed to be rather poor. Performance measures in output and outcome budgets give little information on the volume of the service and its quality, are often heterogeneous or meaningless (Van Helden and Johnsen, 2002; Van Helden and Jansen, 2003).

Dutch local governments also use BPM in their relationships with external parties, such as with central government or government agencies. Examples of this kind of use of BPM are the performance contracts with central government which are used for main city policies<sup>23</sup> or for controlling police organizations.

### ***Roles of budgeted performance measures***

The roles of AIS in general and the specific functions of budgets have been studied by management accountants for a long time and from various perspectives, mostly focusing on the profit sector. Although no clear single starting point for these studies can be pointed out easily, the formal start can be attributed to the “founding fathers” of management accounting, such as Taylor (1911)<sup>24</sup> or Simon (1945)<sup>25</sup>. Contemporary interest in the roles and functions of (budgeted) accounting information often approaches these aspects as attributes of control systems (e.g. Simons 1987, 1990, 1995; Merchant and Van der Stede, 2003), or as servants of decision making (e.g. Burchell e.a., 1980), or as instrumental for various planning and control reasons (Hansen and Van der Stede, 2004).

One of the more current studies on the roles of AIS in profit sector organizations is documented by Simons (1990). Simons (1990) was researching the relationship between the use of AIS and the implementation of organizational strategy, and concluded that the same management information was used differently, depending on what managers did with it. He observed that organizations with different strategic stances use AIS in different ways: in a diagnostic or interactive way. Simons later defined diagnostic control systems as prototypical cybernetic feedback systems or as *“the formal information systems that managers use to monitor organizational outcomes and correct deviations from preset standards of performance”* (Simons 1995, p.170). Interactive control systems were defined as the formal information systems that managers use to personally involve themselves in the decision-making activities of subordinates, with the purpose of focusing everyone in the organization on emerging strategic uncertainties, on the emerging threats and opportunities that could invalidate the assumptions upon which the current business strategy is based (Simons, 1995, p.171).

Simons articulated that the differences between the two control systems are not their technical design features, but the way senior managers use these systems. When managers use diagnostic control systems, periodic exception reports are used to monitor a limited amount of critical performance variables. Managers are only ex-

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<sup>23</sup> In Dutch: “Grote Stedenbeleid” or GSB.

<sup>24</sup> F.W. Taylor’s Principle of Scientific Management (1911) relates mainly to the execution of operational tasks. For example, as stated on page 17: *“The work of every workman is fully planned out by management at least one day in advance, and each man received in most cases complete written instructions, describing in detail the task which he is to accomplish, as well as the means to be used in doing the work”*.

<sup>25</sup> H.A. Simon’s Administrative Behavior (1945) focuses on decision making processes in administrative organizations. Simon suggested that accounting systems were designed to inform and to influence operating decisions, for example by attention directing, scorekeeping, and problem solving.

pected to invest time and attention to the causes of variances when significant variations occur. Interactive control systems are used by managers for ongoing debate and dialogue in order to signal what is important. The debate is focused on new information, assumptions, and action plans.

This notion of the different roles of AIS was earlier normatively explored by Burchell e.a. (1980) and Earl and Hopwood (1979). These two conceptually interlinked studies related organizational decision-making and the roles of AIS<sup>26</sup> by using two dimensions of organizational uncertainty: uncertainty of objectives and uncertainty of the patterns of actions which determine the consequences of action. Earl and Hopwood (1979) defined several roles, and used “*an all too unsatisfactory machine analogy*” (p.8) to address them.

They argued that when uncertainty on both dimensions is low, decision-making is structured and control is assumed to be programmable. The associated role of AIS is labeled as “*answering machines*” and is comparable with the use of Simons’ diagnostic control systems.

They continued that in situations with clear objectives but increased uncertainty of cause and effect, “*we need to explore problems, ask questions, analyze the analyzable and finally resort to judgment. Here MIS [AIS] cannot provide the answer but they can go part of the way, providing assistance.*” (Earl and Hopwood, 1979, p. 8, [AIS] added by the author). This role of AIS is labeled as “*learning machines*”.

The emphasis on the role of AIS as a learning machine was expected to be limited. They argued that instead of using AIS to confront the uncertainty of cause and effect, AIS is likely to be used to reduce or even camouflage it. Algorithms, formulas and standardized rules were seen as tools for making a significant portion of organizational decision making programmable, which can complement or replace human judgment (Burchell e.a. 1980). Earl and Hopwood (1979, p.9) concluded:

*”In other words our parent disciplines of computing, accounting and management science have sought for answers where they cannot always be specified, aiming for technocratic solutions regardless of the context of either the user or the organizational environment.”*

Earl and Hopwood (1979) also explored situations with low uncertainty of cause and effect but increased uncertainty of objectives. Here they argued that the values, principles, perspectives and interests of people can conflict. Political processes are expected to be important. They formulated a normative view on the role of AIS, which suggested that information processes would support discussion and problem sharing and would be used as “*dialogue machines*”. In practice however, they expected that AIS would often be used to articulate and promote particular interested positions and values.

Burchell e.a. added that, under these circumstances, organizations are not to be seen as cohesive mechanisms for rational action, but as arenas in which members of the organization, with a diversity of interest, participate. Under these uncertain cir-

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<sup>26</sup> Earl and Hopwood (1979) referred to the wider concept of MIS, instead of the more narrow defined concept of AIS that is used in this study.

cumstances control will be political. This role of AIS is labeled as “*ammunition machines*”.

The last defined role is related to uncertainty of causation and objectives. Here Earl and Hopwood assumed another way of using AIS. They argued that, with the need for inspiring and creativity triggering information, AIS can be used as “*idea machines*”. Notwithstanding this inspirational concept, this “*idea machines*” role was likely to be more normative than practical. They expected that the context of extreme uncertainty can create the need for AIS to serve as “*rationalization machines*”. The main purpose for this role is to legitimize and justify the organization and its actions with its external constituencies. This need for retrospective understanding might be particularly the case where there are dominant external interests in the decision making context (Meyer and Rowan, 1983; Burchell e.a. 1980).

Although the distinction between basic variations in the roles of AIS is admittedly simplistic, it is nonetheless suggestive and can help to articulate archetypes for a variety of use (Burchell e.a., 1980, p.15). The Earl and Hopwood/ Burchell e.a. framework of archetypal roles is used here as a basis to identify aspects that can be analyzed empirically.

## ***Building a research framework***

### **From research questions to a research framework**

The next step is to compose a research framework of measurable aspects by which the different roles of BPM can be explained. The three basic building blocks of the research framework (antecedents, roles of BPM, and use of BPM) have already been introduced in the first chapter (see Figure 1 on page 14 and Figure 3 on page 32), and are now given further consideration.

#### *The first antecedent: control context*

Two different contexts of organizational control are constructed in this study, these being a businesslike and a political context.

The businesslike control context stresses the importance of the formal organizational structure and processes, rules and routines. This context is associated with relatively certain, clear, or unambiguous organizational objectives (Earl and Hopwood, 1979; Hofstede, 1981; Birnberg e.a, 1983). These clearly defined organizational objectives are assumed to be achieved by a comprehensive and coordinated set of goals, targets at various levels of the organization, or by sets of integrated performance indicators through organizational hierarchy (Kaplan and Norton, 1996; Hyndman and Eden, 2000).

Budget systems are considered to be important managerial control systems, and are part of the formal control structures and processes. Budget systems can contribute considerably to the degree of certainty that employees act in desirable ways (Merchant, 1998). Budget tightness is therefore used as an aspect of a businesslike control context.

The political control context stresses the importance of the gain for organizational legitimacy, and addresses the organization and its confrontation with internal and external institutions (Hofstede, 1981; Meyer and Rowan, 1983). This perspective attaches meaning to the budgeting process beyond the role of formal control (Covaleki e.a, 2003).

The presence of a political control context can be identified by focusing on possible conflicting pressures on organizational objectives by groups of people<sup>27</sup>, or the possible results of conflicting pressures such as uncertain<sup>28</sup> or ambiguous objectives.

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<sup>27</sup> Differences in perceived interests between groups of people can, amongst others, be related to differences in subcultures between organizational groups, e.g. between top management and middle management (Hofstede, 2003), or to possible role conflicts between organizational levels, e.g. between managerial and professional organizational units (Abernethy and Stoelwinder, 1995), or to the ability of organizations to conform to multiple conflicting pressures (Scott 1987).

<sup>28</sup> Relatively certain objectives are in this study associated with a more businesslike control context, and relatively uncertain objectives are associated with a more political control context. Using these two contexts has the advantage of using two separate but interlinked constructs, both with different theoretical and philosophical bases. By using the businesslike and political context instead of the single dimension of uncertainty of objectives, extra caution is taken in order to prevent some unification between different theoretical approaches (Chenhall, 2003).

This study primarily uses uncertainty and ambiguity as aspects of a political control context.

One of the assumed effects of organizational resistance to institutional pressure for an increased degree of multiplicity is involvement in tactics of resistance, and the attempt to decouple technical activities from external contacts (Ansari and Euske, 1987; Abernethy and Chua, 1996; Oliver, 1991). By decoupling (or loose coupling), organizations can protect their formal structures from evaluation on the basis of technical performance, e.g. by performing activities beyond the purview of managers, by making objectives more ambiguous, by the avoidance of integration, and by making human relations very important (Meyer and Rowan, 1983). In some cases loose coupling can lead to more ceremonial posturing, which may involve a preferred departure from technical efficiency (Powell, 1991). Although differences between ceremonial and operational structures cannot easily be generalized into one single factor, loose coupling is often used as an indication of the existence of disconnections between both (Fogarty and Rogers, 2005). Loose coupling is also expected to affect the balance (integration of financial and non-financial measures) between the integration (throughout the hierarchy of an organization) of performance measures (Brignall and Modell, 2000). Management control systems can be decoupled at different hierarchical levels, which may result in crude financially-oriented budgetary control and limited integration of performance measures (Abernethy and Chua, 1996; Ansari and Euske, 1987; Brignall and Modell, 2000). Loose coupling is not explicitly included in this study as a measurable aspect of a political control context; it merely serves as a concept which can be referred to later on.

#### The second antecedent: task uncertainty

Task uncertainty, or uncertainty over the consequences of actions, is one of the dimensions of Earl and Hopwood's (1979) framework. Task uncertainty relates to both the businesslike and political control context.

One possible trajectory for researching task uncertainty is to research the measurability of output and processes. Ouchi (1979) offers clear relationships between mechanisms of task control and measurability of tasks, and these insights can be used for analysis when output or process measures are to be expected. This framework is however less clear on the possible different roles of information use. Another option is to apply the information-use related aspects of task uncertainty, based on Galbraith's (1973) principle of information gap, but this concept is only indicatively being used to construct measurement instruments<sup>29</sup>. The third option is to use Perrow's (1970) framework, and apply the level of routines of tasks as an indication for task uncertainty. This framework is in accordance with Galbraith's notion of programmability and information deficit, and various accounting studies have applied measurement instruments, based on this framework (Chenhall, 1998). This study therefore refers to Perrow's aspect of routineness in order to frame task uncertainty.

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<sup>29</sup> One possible approach is to estimate the total amount of information that managers require and can process (Jansen, 2000). Existing accounting literature has however not yet rigorously tested this conceptual instrument empirically.



### Roles of BPM

Four of the archetypical roles are used as reference: the “answering” role<sup>30</sup>, the “learning” role, the “ammunition” role, and the “rationalization” role. The more normatively defined roles, such as the “dialogue” and “idea creation” machine role, are not directly included in this research. The explorative nature of the research design and analysis, however, does not preclude the possible application of these roles. Simons’s interactive control systems could probably be regarded as a “dialogue”, “learning” and “idea creation” machine for implementing strategy (Abernethy and Brownell, 1999), and can function as a reference for research later on.

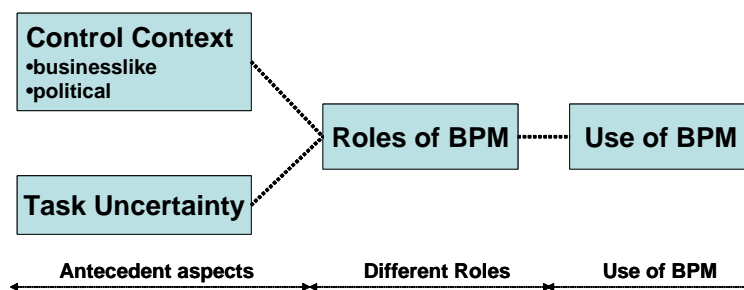
In order to express the expected essential functions of the four roles, Earl and Hopwood’s descriptions of roles are used to compose a descriptive phrase per role. These phrases are used to express the main characteristics of the roles.

### BPM-use

As has been documented in the previous sections, AIS can be defined by its design characteristics and by its quality. Both aspects are used in this study in order to define the use of BPM.

### **Measuring the research framework**

In this section the defined constructs and aspects of the research framework are documented in more detail and made operational for empirical research. Figure 3 presents a picture of the constructs.



**Figure 3** Research framework

### Measuring the control context: uncertainty and ambiguity of objectives

Measuring uncertainty of objectives is an area that is not well covered within management accounting literature. Most of the accounting contingency literature is focused more on the effects of specific forms of uncertainty, e.g. of environmental uncertainty on organizational structures or performance, and often uses risk, hostility, diversity, or complexity as contextual factors (e.g. Otley 1980; Chapman, 1997; Chenhall, 2003).

At an organizational level, certainty of objectives can be replaced by the concept of clearness of objectives. Clearness of objectives, or goal clarity, is a concept that is frequently used in RAPM-literature, and can combine elements of goal specificity and

<sup>30</sup> For convenience of the reader the “machine” additive is left out in the rest of the research.

role ambiguity (Hartmann, 1997). Role ambiguity is related to an individual's perception of others' expectations of him- or herself, and can be conceived as a shortfall of information relevant for performing a role adequately (Marginson and Ogden, 2004). Role ambiguity thus relates to individual and psychological aspects, and is not included in this study. Aiming to capture organizational objective related aspects, only Hartmann's (1997) instrument for measuring goal specificity (see appendix) is used in this study to estimate the relative level of uncertainty of objectives.

Indications of the level of ambiguity of objectives can be obtained by measuring possible conflicts of interest between relevant groups of persons (Hofstede, 1981). Oliver's (1991, p. 162) notion of multiplicity, as "*the degree of multiple, conflicting, constituent expectations exerted on an organization*" is used to capture the likeliness of ambiguous objectives. Oliver (1991) suggested that organizational awareness of these conflicting institutional pressures can be used as a predictive factor of multiplicity. A specially designed instrument for the purpose of measuring multiplicity in this research is used to apply this aspect.

#### *Measuring the control context: integration*

Limited accounting research has been published on the integration of BPM in governmental organizations. The majority of research is more descriptive and qualitative in nature, and mainly suggests specific relevant aspects instead of testing more general hypotheses. This study is therefore only using the more qualitative aspects.

Two different concepts of integration are used in this study; between financial and non-financial BPM and between lower and higher hierarchical levels in the organization. The integration between financial and non-financial BPM is researched by analyzing both financial and non-financial BPM separately, using the planning and control documents of responsibility centers as an indication. The concept of integration of BPM throughout the hierarchy can be qualitatively researched by capturing the presence of loosely coupled performance measures (e.g. Kaplan and Norton, 1996; Brignall and Modell, 2000).

Integration throughout the hierarchy can also be captured by Hartmann's measurement of goal specificity. This measurement applies, among others, to the concept of integration of goals with tasks as an indication of the clearness of objectives. Clear objectives are here related to greater integration of goals and tasks. Hartmann's measurement is used to capture integration, and adapted for use in a more qualitative case-based research setting within Dutch local government.

#### *Measuring the control context: tight budgetary control*

According to Merchant (1981), budgetary tightness can be obtained by: definition of goals (more complete, specific, and congruent), communication of goals (more efficiently, timely, frequently and convincingly), monitoring of actions and results (more frequent, detailed, and timely), and by rewarding (stricter relationship between rewards and achieved performance).

Van der Stede (2000) suggested to measure tight budgetary control by four factors:

- (a) tolerance of interim budget deviation,
- (b) detailed line-item follow-ups,

- (c) intense discussions of budget results, and
- (d) strong emphasis on meeting short-run budget targets.

Van der Stede's instrument for measuring tight budgetary control is used in this study, and adapted for use in a more qualitative case-based research setting within Dutch local government.

#### Measuring routineness of tasks

Routineness is defined by two dimensions: well established or analyzable techniques for task execution and the degree of variety in the tasks encountered. The routineness of tasks is high when tasks are highly analyzable and the number of exceptions is low (Perrow, 1970). A conventional way of measuring task uncertainty is by using the instrument originally developed by Withey e.a. (1983). This instrument is a well-established method for measuring both task analyzability as well as the number of exceptions (e.g. see Abernethy and Brownell, 1997, Hartman 1997), and is adapted for used in Dutch local governmental organizations (Budding, 2004).

#### Measuring the roles of BPM

In order to capture the four archetypical roles of BPM, each role is characterized by a characteristic phrase, and is related to its antecedents (context of control and tasks uncertainty). In order to apply the characteristic phrase in empirical research, for each phrase one or more key characteristics are added. These key characteristics do not replace the phrase, but aim to highlight the most important characteristics.

The *answering role*:

- is characterized by the following phrase: The "answering" role stresses the assumption that the control process, by using pre-set standards, formulae and rules, can evaluate performance variances by itself; act as an automatic mechanism for providing answers (Earl and Hopwood, 1979; Simons, 1995). Applying this phrase, the key characteristic is to diagnose performance variances (compare actual and budgeted performance),
- is expected to relate to the businesslike context of organizational control,
- is expected to relate to relatively high levels of task routines.

The *learning role*:

- is characterized by the following phrase: It is the function of the "learning" role to assist decision making and to reduce ex-ante uncertainty (Burchell e.a., 1980; Earl and Hopwood, 1979). Applying this role, managers or politicians use the control systems for decision support, using a trial-and-error approach. With this trial-and-error approach the focus is on learning to achieve desirable outputs. But if the ability to measure outputs is low, output control is not feasible and only informal controls (such as clan control) can be applied (Ouchi, 1979). Applying this phrase, the key characteristics are: to learn and to change ways of doing, and unequivocal signaling of what is important (focus on key issues);
- is expected to relate to the businesslike context of organizational control,
- is expected to relate to relatively low levels of task routines.

The *ammunition role*:

- is characterized by the following phrase: It is the function of the “ammunition” role to make specific information visible in order to promote particular interested positions and values to obtain resources (Burchell e.a., 1980). By applying this role, top managers and politicians are using political processes and political control. Control is here in essence non-cybernetic and is applied more via a control structure than a control process (Hofstede, 1978). Top managers and politicians are using the “ammunition” role to try to influence decision making, and to obtain resources to be spent. Applying this phrase, the key characteristics are: unequivocal signaling of what is important (focus on key issues), and influencing future budget increases;
- is expected to relate to the political context of organizational control,
- is expected to relate to relatively high levels of task routines.

The *rationalization role*:

- is characterized by the following phrase: It is the function of the “rationalization role” to provide retro-active understanding of actions, specifically to external constituencies. By applying this role, top managers and politicians are using performance measures for the need to justify and legitimize actions already taken. Applying this phrase, the key characteristic is: to report on past performances for reasons of justification,
- is expected to relate to the political context of organizational control,
- is expected to relate to relative low levels of task routines.

### Measuring BPM use

In order to capture the information-related aspects of budget roles, BPM use is characterized by the design characteristics and the quality of the AIS (Anthony, 1988). Aiming to include budget-related design characteristics of AIS in governmental organizations, both the short-term<sup>31</sup> financial and non-financial information must be included (Van Helden and Ter Bogt, 2001; Merchant and Van der Stede, 2003). The first design characteristic thus captures the use of financial or non-financial information.

Secondly, the time horizon of information is included; the historical or future orientation of the information. Accounting information on past and actual performances is viewed as historical, and information relating to estimates, forecasts, and future events is classified as future oriented (e.g. Kaplan and Norton, 1996).

Thirdly, often formal information for organizational control purposes is not exclusively restricted to budget related information. Often additional formal information is used for planning, communication, and evaluation purposes (Simons, 2000). Additional formal information is included as a design characteristic.

In conclusion, four general information-related characteristics of budget control are included: (I) financial or non-financial pre-defined quantitative norms (budget), (II) information on actual accomplishments (actual), (III) variance information between

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<sup>31</sup> The planning horizon of cost budgets in governmental organizations is on average one year (Ter Bogt, 2001). The planning horizons of capital spending budgets are assumed to vary with the length of capital spending-project.

actual and budget, (IV) additive information (on past performances, estimates, forecasts, and future events).

The four archetypical roles are assumed to relate to specific design characteristics of BPM-use. Using the descriptive phrases as indications, some suggestions can be made. The answering role stresses the use of variance information, using actual and budgeted performance measures as a reference. The learning role underlines the importance of additional information, using actual and budgeted performance measures, and information on performance variance as a reference. The ammunition role focuses on influencing decision makers to obtain future budget provision. However, no assumptions are made on the extent to which actual, variance or additive performance measures can be of importance. The rationalization role addresses historical information, and is expected to relate to reported measures on achieved performances. No assumptions are made on the extent to which information on budget, variance or additive performances can be relevant. Table 29 in the appendix documents a comprehensive overview.

Quality of AIS is captured by using user satisfaction as a surrogate measure.

End-user computer satisfaction (EUCS) is considered in the information system literature as a respectable and reliable measure that can assess the success of the AIS use (McHaney e.a., 1999). EUCS consists of five components: ease of use, content, accuracy, format and timeliness (Doll and Torzadeh, 1988). Table 32 in the appendix documents the twelve questions in the EUCS-test. The questions of the EUCS-test are adapted for use in a more qualitative case-based research setting within Dutch local government.

By characterizing the design criteria of AIS through the user satisfaction measure, AIS is identified by its perceived relevance for the user. It is being assumed that this user-satisfaction is positively related to the use of AIS for control purposes.

### **Overview of the research framework**

The research framework is composed using three main constructs: the antecedents of roles of BPM (being the contexts of organizational control and task uncertainty), the roles of BPM (represented by four archetypical roles), and the use of BPM (see Figure 3 on previous page).

Using existing accounting theory, the use of two separate contexts of organizational control are called for; the businesslike and the political context. These contexts are not mutually exclusive, but are expected to highlight specific aspects that are assumed to relate to both contexts. Four aspects are used to define the two contexts: uncertainty of objectives, ambiguity of objectives, integration, and tightness of budgetary control (see Table 28 in Appendix VIII Summary of Aspects). Assumed values of aspects are motivated and linked to the two contexts, but no assumptions are made on the various combinations of aspects that can occur<sup>32</sup>.

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<sup>32</sup> For example, perceived certainty of objectives or integration between objectives and BPM (as indications of a businesslike context) and higher levels of ambiguity of objectives (as an indication of a

Measures for the aspects are selected<sup>33</sup>. Uncertainty of objectives is captured by valuing goal specificity, ambiguity of objectives by using multiplicity, tight budget control by using four interrelated aspects (tolerance for deviation, detailed follow-ups, intensity of discussions, and emphasis on targets), and integration of BPM is measured by goal specificity.

Task uncertainty is captured by using routines of tasks, measuring both task analyzability as well as the number of exceptions as aspects.

		control context	
		businesslike	political
task uncertainty	low	<b>“answering” role</b> providing variance information	<b>“ammunition” role</b> promoting particular interests
	high	<b>“learning” role</b> assist decision-making	<b>“rationalizing” role</b> providing retro-active understanding

**Table 1** Positioning of the archetypical roles of budgets

Four identified roles of BPM are explicitly characterized by a descriptive phrase, and are related to the perspectives and to task uncertainty (see Table 1).

Referring to the descriptive phrases of the roles of BPM, several information-related aspects are abstracted:

- to diagnose, to compare actual and budgeted performance (answering role)
- to learn and to change ways of doing (learning role)
- unequivocal signaling what is important (learning role, ammunition role)
- influencing future budget increase (ammunition role)
- to report and explain past performances (rationalization role)

The quality of BPM use is captured by using user satisfaction (applying the user satisfaction measurement instrument of Doll and Torkadeh, 1998), which captures the aspects: ease of use, content, accuracy, format and timeliness.

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more political context of control) can occur simultaneously. Empirical information will indicate the actual mix of factors, which can suggest the presence of one or both contexts.

<sup>33</sup> see Table 28 in the Appendix.

