

Control Mechanisms and Perceived Organizational Support: Exploring the Relationship between New and Traditional Forms of Control

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Abstract

Purpose: Taking into account the need to make a clearer distinction between traditional and new organizational controls, this paper aims to investigate similarities and differences between those two forms and explore the extent to which new forms of control can be operationalized from a quantitative point of view.

Design/methodology/approach: Suggesting that new organizational controls can be understood also in light of quantitative paradigms, we develop and test a scale to measure the existence of these types of controls, examine its construct validity and evaluate its convergent validity.

Findings: The theoretical dimensions of new controls have empirical correspondence. Input and behaviour controls are strongly associated with the promotion of values and beliefs in organizations. New controls become responsible for employees' acceptance of companies' management, an aspect measured by Perceived-Organizational-Support (POS).

Research limitations/implications: Our study presents two challenges linked to the lack of evaluation of the possible process mediators that measure the subjectification of the individual, and to the lack of data coming from the organizational level. Limitations can be addressed by multi-level studies using measures that would avoid single variance biases. The need for companies to pay more attention to organizational discourses and to the promotion of specific values (that can enrich traditional controls), and the impact this might generate on POS and future reciprocity, are the practical implications of our study.

Originality/value: The impact of new organizational controls can be measured by scales rather than investigated only with qualitative approaches. Furthermore, it can be observed that the promotion of values and beliefs strongly increases POS. Such

dimension can reduce employees' resistance when compared to output controls or controls based on changes in surveillance technologies and structural change processes.

Keywords: traditional control mechanisms, new control mechanisms, Perceived-Organizational-Support, values and beliefs.

Article Classification: research paper

Introduction

The term *control* can be ambiguous to interpret not exclusively because of the various ways in which its meaning can be constructed, but also because of the different matters that can be subject to control and to its related and possible implications (Brocchini, 1991). Tannenbaum (1968) defines control as “any process in which a person or group of persons or organization of person determines, that is, institutionally affects, the behaviour of another person, group, or organization” (p. 5). Notwithstanding the importance of the early studies that conceptualised the issue of control informing both research and practice in this field (Tannenbaum, 1968; Etzioni, 1965; Galbraith, 1973; Ouchi and Maguire, 1975; Weber, 1947; Perrow, 1972; Blau and Scott, 1962; Thompson, 1967; Reeves and Woodward, 1970), our attention is particularly drawn by the dichotomy between traditional forms of control and new forms of control.

Traditional forms of control are related to more bureaucratic ways of constraining and evaluating employees’ performance through Human Resource policies (Ouchi and Maguire, 1975; Snell and Youndt, 1995). They are conceived to achieve organisational goals but they also tend to enact resistance (Thurlow and Helms Mills, 2009). In order to overcome issues as such, companies develop discourses and subtle practices that aim at promoting employees’ self-regulation and their less critical interpretation of companies’ purposes and management (Gabriel, 1999). These alternative forms of employees’ regulation are defined as new control mechanisms. The label ‘new’ indicates that those controls do not annihilate or substitute traditional ones. Rather, they are used by organizations simultaneously, and with a twofold purpose: reducing the pressure generated by traditional controls on employees, and winning their compliance by affecting their interpretation of the organization and its objectives. Taking into account the fact that new controls complement and reinforce traditional ones, it is worth

to further explore their characteristics and implications. From an empirical point of view, this is justified by the fact that most of the existing studies on the issue look at new controls mainly from a subjectivist, interpretivist perspective offering scope for different methodological stances. From a theoretical perspective, instead, it might be worth looking into new control mechanisms for understanding the extent of the shift from the controls inspired by Human Resource policies (Ouchi and Maguire, 1975; Snell and Youndt, 1995).

As a consequence of those reflections, on the empirical side by taking an objectivist, positivist perspective, we develop and test a specific scale, SIOCS, for evaluating what dimensions constitute new control mechanisms, and whether or not new forms of control can (at least in part) overlap with traditional ones. Empirically our study can provide evidence that new controls are not a mere theoretical conceptualization.

On the theoretical side instead, we verify the extent to which new controls can foster greater employees' perceived organizational support and, therefore, their acceptance of the organization and of its objectives. So far, extant literature pays little attention to demonstrating how new controls succeed in increasing employees' acceptance of the organization; particularly, with regard to those controls characterized by the introduction of discourses and practices that subtly influence individuals' interpretations of their workplace by increasing their perception of organizational support. Filling this gap constitutes our research goal.

The paper is structured as follows: firstly we provide an overview of the literature that is relevant to our study highlighting, in particular, the difference between traditional and new control mechanisms, and the studies that define them and compare them to traditional controls; secondly, we explain the underpinning methodology of our study, the scale construction, the item generation and the scale development; thirdly, we

illustrate the sample and the scale we developed; fourthly, we illustrate the results of our analysis and highlight the contributions of our study.

Traditional and New Control Mechanisms: an overview

Yu and Ming (2008) associate traditional forms of control to behavioural controls, output controls, and input controls. Although it is not the purpose of this paper to focus specifically on the distinction among those three types, a brief explanation of what constitutes them may be useful for understanding the way they differ from new forms of control. Behavioural controls imply a direct observational supervision on the employee serving “the quite different needs of the individual manager who has one subunit to oversee” (Ouchi and Maguire, 1975, p. 568). In particular, with behavioural controls “responsibilities are standardized and imposed top-down with an overriding concern for procedures and methods. Employees are accountable for their actions, regardless of results. Appraisals are based on supervisor observation of behaviour. Feedback is used as a remedial tool” (Snell and Youndt, 1995, p. 713). The second type of traditional controls, namely output controls, implies more clerical work measured against performance records satisfying the needs of the organization as a whole, particularly when quantification is required (Ouchi and Maguire, 1975). When discussing output controls, Snell and Youndt explain that they are “mutually set performance targets (e.g., goals, objectives). Subordinate performance appraisals are based on the results they achieve (e.g., MBO), and monetary rewards are closely linked to performance outcomes” (Snell and Youndt, 1995, p. 713). Finally, input controls imply a regulation of the “antecedent conditions of performance, such as knowledge, skills, abilities, values and motives of the employees” (Yu and Ming, 2008, p. 389). When there is incomplete information on how tasks should be performed, and/or managers cannot oversee the process of

production/service provision, input controls are an appropriate strategy for guaranteeing the type of performance desired by the organization (Yu and Ming, 2008). Selection and training are a way through which organizations implement input controls in order to align individuals with the interests of the organization. Walsh and Seward (1990) suggest that the joint use of those three types of controls in Human Resource Management can potentially regulate employees' motivation and skills.

As opposed to traditional controls, subtle and deep forms of control that reach the core of employees' sense of selfhood and identity have also been observed and theorized in literature; such controls are often referred to as new control mechanisms (Gabriel, 1999) or socio-ideological controls (Alvesson and Karreman, 2004). The key aspect that differentiates such controls from the traditional ones is that they attempt to enact a particular form of organizational experience for others on the basis of the definition of interpretations and meanings that can become widely understood and shared by organizational actors (Alvesson and Karreman, 2004). Thurlow and Helms Mills (2009) suggest how the relationship between sites of power and the ability to affect the way actors make sense of their lived experience in organizations is strongly influenced by 'swift' aspects as organizational talk. Although Thurlow and Helms Mills' study does not link directly to new control mechanisms, some connections to this topic can be identified. Their work, in fact, emphasizes how processes that would normally generate employees' resistance (e.g. organizational change) can be implemented through subtle mechanisms aimed to win actors' understanding and support.

A key difference between traditional controls and new control mechanisms is that for the former it is possible to identify the source as external to the individual. Many researchers (e.g. labour process theorists, post-structuralists, managerialists, psychoanalytic researchers and emotion theorists) have looked at the impact of new

forms of control on individuals, aiming to understand their effectiveness, costs, and consequences at a business, psychological and social level. Labour process theorists (Braveman, 1974; Burawoy, 1979; 1983; 1985; Edwards, 1979), for example, were concerned about the changing nature of capitalist controls and the types of resistance and opposition which they engender. Post-structuralists (Knights, 1990; 1992; Knights and Vurdubakis, 1994; Marsden, 1993; Barker, 1993) focused on understanding the construction of individuals' subjectivity in the workplace and the dynamics of resistance to organizational controls. Managerialists (Peters and Waterman, 1982) described new controls as 'loose and tight' forms of control because, at the same time, they reduce employees' perception of the presence of traditional controls and they foster self-regulation by the internalization of a strong culture. Psychoanalytic researchers, finally, examined the ways in which organizations create dependencies among their workers and control their behaviour by becoming surrogates of parental authority figures. Central to the psychoanalytic tradition are the psychological costs of organizational controls and the coping strategies adopted by employees. Emotion theorists (Mumby and Putnam, 1992; Fineman, 1993) illustrated how new controls reach the most intimate spheres of individuals' life affecting their interpretation of the workplace in a way that benefits the organization (e.g. working harder toward targets, accepting performance appraisals, providing high-standard customer service, working toward high quality standards, etc.). Fineman's (2001) view, in particular, suggests that feelings and emotions "underpin the very essence of control" (Fineman, 2001, p.234). Therefore, by understanding emotions researchers can have a more comprehensible picture of control, one that goes beyond its mechanistic nature. The importance controls exert over emotions can be highlighted by their possible mediating effect on the adoption of resistance behaviours (Collinson, 1994; Fineman and Sturdy, 1999) as well as on

fostering employees' greater commitment to organizations, readiness for action, and cooperation (Elfenbein, 2007; Van Kleef, 2010).

Drawing on those ideas, one could argue that new controls enhance individuals' identification with the company, fulfil socio emotional needs, and foster individuals' belief that the organization cares for them. In turn, this makes them willing to reciprocate such perceived support with greater collaboration and engagement (Eisenberger, Cummings, Armeli, and Lynch, 1997; Rhoades and Eisenberger, 2002). Extant research on control, trust and reciprocity (Berg, Dickhaut and McCabe, 1995; Mayer, Davis and Schoorman, 1995) suggests that control mechanisms are often used to encourage compliance and avoid broken trust that can otherwise negatively impact on employees' reciprocity (Berg, Dickhaut and McCabe, 1995). According to Mayer, Davis and Schoorman's (1995) research, reciprocity is a basic element of human behaviour which is accounted for in the trust extended to a counterpart; the latter can often be represented by the organization individuals work in, rather than by another individual.

Overall, one can argue that new controls will enhance employees' identification and future reciprocity, rather than resistance or sense of constraint. An attempt to pin down more specifically the areas new control mechanisms fall into emerges from Gabriel's (1999) work. Gabriel describes four interrelated categories that reflect new control mechanisms. Such categories, though, are based on the outcomes of the five research streams we have illustrated above and relate to: structural changes, changes in manufacturing and/or service provision technologies, changes in surveillance technologies, and concerted attempts by management to promote new sets of values, attitudes and beliefs. By looking at those categories individually, one can argue that, apart from surveillance technologies, they do not necessarily represent new ways of

controlling individuals because they relate, respectively, to structure, manufacture/service provision, and corporate culture. Nevertheless, the difficulty in associating such categories to control is what offered scope for the development of 'the control side of the coin' for each one of them (Gabriel, 1999; Thurlow and Helms Mills, 2009; Author, 2010). Structural changes, associated to flatter hierarchies and flexible working practices, favour control by offering opportunities for individuals' continuous benchmarking and measurement. Changes in manufacturing and/or service provision technologies, associated with lean management practices, favour control by reducing individual's decisional discretion in the tasks and activities that are being carried out. Changes in surveillance technologies favour control by implementing systems that can make single individuals accountable for operational failures. Last but not least, concerted attempts by management to promote new sets of values, attitudes and beliefs (socio-ideological values) - privileging quality, service excellence, and teamwork – favour control by instilling greater trust and perceived organizational support into individuals (Gabriel, 1999; Alvesson and Karreman, 2004; Thurlow and Helms Mills 2009; Author, 2010).

Although all of those four categories reflect new control mechanisms, there is a distinction to be made with regard to which ones portray control through discursive practices and which ones do so through non-discursive practices. The first three categories are more linked with a set of non-discursive practices while the one expressing socio-ideological values is directly linked with a more discursive perspective of management. The latter directly promotes meanings and influences actors' ways of thinking, feeling and interacting with other workers in a way that increases their perception of organizational support and their sense of commitment for achieving organizational goals.

The controls associated with non-discursive practices have a different nature from one another and, therefore, form different dimensions that can, or cannot, be implemented simultaneously by the organization (e.g. the implementation of structural changes may or may not be followed by changes in manufacturing or surveillance technologies). However, the fact that they can generate the same response in individuals (e.g. from a psychological perspective, or from a behavioural one) makes them a coherent factor. On the contrary, the promotion of socio-ideological values through discourses that privilege quality, excellence, teamwork, and loyalty acts separately from the previous types of controls, thus, constituting a distinct dimension.

New control mechanisms: pinning them down and exploring the similarities with traditional controls

In the previous section we provided an overview of new control mechanisms highlighting how extant literature portrays them as being different from traditional controls as well as *complementary to*, rather than *surrogates of* the latter. Although the literature we examined so far identified four key categories that constitute new control mechanisms – structural changes, changes in manufacturing/service provision technology, changes in surveillance technologies, and concerted attempts by management to promote new sets of values attitudes and beliefs - it offered little empirical evidence of the extent to which every single category represents a new control mechanism *per se*, or can be seen as part of an overarching factor which encompasses all the other categories. Such considerations suggest testing a hypothesis that emphasizes two aspects, namely (1) the possibilities that the four control categories are distinct from one another; and (2) the possibility that the concomitant implementation of the four types of changes enacts a homogeneous type of new control that presents an

internal coherence and that, although considers four different categories, can be seen as a higher order factor. The components of construct validity worth of attention are, respectively, the discriminant and convergent validity (Campbell and Fiske, 1959) of the four types of controls. Establishing discriminant validity of these four dimensions requires that they reflect distinct components, in spite of being related to one another and of establishing a second order factor. Thus,

H1: New organisational controls can be considered a homogeneous factor composed by four distinct dimensions.

Gabriel (1999) suggests that new control mechanisms parallel traditional controls that never stopped existing and, to some extent, reinforce them (e.g. values and cultural controls can be used to make surveillance practices acceptable or invisible).

By considering the characteristics of traditional controls alongside to those of new control mechanisms a clearer relationship between the two types can be traced. The characteristics of traditional controls can be summarized as follows: the source of control is external to the individual; responsibilities are formalized and standardized; procedures and methods are clearly defined; there is a close supervision of employees; feedback is provided; goals and targets are set in advance; rewards are extrinsic; training is provided; organizational values and goals are formalized.

Instead, new control mechanisms: play leverage on the organizational culture; are stable, profound and implicit; reach the core of the individual's identity; have an impact on individuals' psychological and social aspects; affect organizational identity; affect the role of the worker in the organization; are based on the manipulation of values,

attitudes and beliefs; and are characterized by having the source of control internal to the individual.

In terms of similarities between traditional and new controls, the concern with organizational values and with the integration of new employees can be noticed in both types of controls, although at different levels. In terms of differences instead, the two types of controls generate a different impact on employees.

By looking at the similarities and possible convergence between old and new forms of control we can identify two main trends. The first one relates to the convergence between practices that encompass traditional controls (and that have indirect effects over individuals) with practices that promote the use of socio-ideological values (for aligning individuals' perceptions to organizational goals). The second trend, instead, relates to the convergence between controls that are an expression of human resource policies (that aim at directly promoting performance results) with practices more inspired by organizational behaviour initiatives (that aim at modelling individuals' perceptions toward overarching values, attitudes and beliefs).

HR policies linked to know-how and to employees' adaptation to the culture of the organization (Input Controls) tend to evidence an overlap with the category of new control mechanisms that emphasizes the promotion of socio-ideological values. This is due to the fact that both have a deeper impact on workers because they affect their beliefs, values and the *interiorization* of the organization's implicit rules. HR policies designed for indirectly affecting employees' perceptions can be closely associated with the promotion of ideological values that guide employees' self-regulation. On the basis of such considerations we would expect that the promotion of discourses that foster organisational goals tend to prevail in companies that opt for *softer* HR policies for managing their employees. In order to verify this, we test a hypothesis that puts close together traditional

controls - in the form of HR policies aimed at affecting individuals in an indirect way (also known as input controls) -, and new controls - in the form of socio-ideological values portrayed by means of discourses. Testing this hypothesis would enable us to verify the extent to which there is an overlap between the above types of traditional and new controls.

H2a: There is a positive relation between the promotion of socio-ideological values and input controls

Traditional controls that influence individuals' work (Behavioural Controls) and their objectives (Output Controls) tend to constrain, respectively, employees' behaviours and their expected results in a more explicit way. This is reflected in the identification of clear procedures and responsibilities, performance measurement processes, and feedback to the extent to which employees' performance matches organizational expectations. Those two types of traditional controls are more operational and we would expect them to be associated with the categories of new control mechanisms that express changes in manufacturing/service provision technologies and in surveillance technologies. Our expectation draws on the idea that the above types of traditional and new controls reflect a *less soft* way of managing employees that is expressed by the direct definition of regulations. For evaluating the extent to which our assumption on this second type of overlap between traditional and new controls can be supported by empirical evidence, we propose testing the following hypothesis:

H2b: There is a positive relation between changes in surveillance technologies, and manufacturing technologies and output and behavioural controls

Apart from the discriminant validity we propose in Hypothesis 1 and the concurrent validity that we propose in Hypothesis 2a and 2b, we posit that the specific scale we constructed (SIOCS) can be tested on the basis of its predictive validity; specifically with regard to how employees evaluate organizations.

Styhre (2008) reflects on the fact that there has been a shift from traditional, bureaucratic forms of control to post-bureaucratic controls (which is similar to our conceptualization of new controls): organizations moved away from detailed rules guiding daily work in favour of forms of control that 'rely on enculturation, identification with company objectives, and forms of processes of subjectification' (Styhre, 2008, p. 640; El-Sawad and Korczynski, 2007). Those forms of control can be implemented by management's concerted promotion of new sets of values, attitudes and beliefs (socio-ideological controls) through discursive practices. The values, attitudes and beliefs that are spread throughout the organization aim at affecting employees' perceptions of the organization. Specifically, they aim at fostering the perception of greater organizational support in the eyes of employees. As a consequence, employees' views of organizational policies and initiatives can turn out to be less critical. While a sense of trustworthiness and organizational support (Gabriel, 1998) can spread in the organization as a result of those socio-ideological controls, the potential for employees' resistance tends to decrease (Casey, 1996).

Styhre's (2008) concept of shift refers to the shift from Human Resource Management approaches to Organizational Behaviour ones in terms of organizational controls. In the first instance, control was mainly inspired by reflections on agency theory and the definition of bureaucratic systems (Ouchi and Maguire, 1975) while now the concept is made sense of with respect to the role of the individual in the workplace and to how individuals interpret the relationship between them and the organization. This shift of

focus is driven by the renewed attention to the organizational identity of individuals (Albert and Whetten, 1985; Dutton, Dukerich and Harquail, 1994; McAuley, Duberley and Johnson, 2007) as an aspect that favours compatibility between personal ideals and organizational ones. In this scenario, the idea of individuals' perceived support by the organization (POS), and the negotiation between the ways in which they wish to present themselves and the norms of the organization (McAuley et al., 2007) become key points in informing organizational control strategies, particularly in terms of understanding how those strategies are framed and what the possibilities of employees' accepting them can be.

Furthermore, Vosselman and Van der Meer-Kooistra (2006) compare alternative patterns of management control and situational and institutional features. Although their work is set in the context of transactional relationships, some of their insights can foster a deeper reflection on the concept of perceived organizational support. The two authors underline trust as a "control mechanism and control instrument" (Vosselman and Van der Meer-Kooistra, 2006, p. 323) used by institutions for facilitating transactional relationships. Their illustration of trust can be widely assimilated with the effects of new control mechanisms (Gabriel, 1999; Alvesson and Karreman, 2004). Moreover, their understanding of how trust can be deployed by managers links to the desire of the latter of being accepted by workers. Thus, it links to the implementation of strategies aimed at increasing employees' perception of organizational support.

We draw on the fact that the implementation of socio-ideological controls (e.g. management's promotion of values, attitudes and beliefs) reduces employees' criticism, and, consequently, we argue that new controls will produce a direct effect on employees' acceptance of the organization and on their perception of receiving greater support from it compared to traditional controls. In our attempt to trace a

comprehensive picture of organizational controls and understand one of the processes that lead to their effectiveness, we contend that the predictive validity of our scale (SIOCS) can be considered with regard to how likely new controls affect employees' perceived organizational support. The hypothesis that we aim to test is, therefore:

H3: Promoting new controls will have higher impact on Perceived Organizational Support (POS) than promoting traditional controls.

Having set the hypotheses, in the following section we illustrate the sample, the procedure and the scale we use to test the hypotheses.

Methodology

We took an objectivist, positivist stance for pursuing our research objective. We assumed that social phenomena constitute external facts that go beyond the researcher's influence (Bryman, 2012). We adopted a deductive approach for the generation of theory, and framed our study within a cross-sectional survey design. We used the self-administered questionnaire for collecting data. We conducted the survey among Portuguese companies. For the purpose of our research we developed and tested a scale (SIOCS) to measure the existence of Socio-Ideological Controls, to examine its construct validity, and evaluate its convergent validity - the Human Resource Management Controls scale (Snell and Youndt, 1995) and the Perceived Organisational Support Scale (Eisenberger, et al., 1997). To test our hypotheses we split the sample into two subsamples for evaluating the stability of the factorial structure. This enabled us to conduct the exploratory factor analysis on a subsample first, and then to confirm its structure on the other subsample (Judge and Douglas, 2009). Consequently, we

tested its convergence comparing the SIOCS dimensions of new controls with the scale measuring traditional controls. We evaluated the possible correlations or, conversely, the possible aggregation of dimensions in one factor. This allowed us to draw conclusion on possible collinearity. Finally, we tested the scale's predictive validity, regressing it over Perceived Organisational Support against the predictions made by the dimensions portraying traditional controls.

Participants

We selected companies on the basis of a convenience sampling method according to those which showed interest in participating in the study. Within companies, we then selected participants on the basis of a simple random sampling method. The sample was constructed as to include employees covering different roles and working in different sectors of activity. Specifically, the sample is composed by 334 participants (63,8% female). The average age of participants is 37.0 (SD= 9.29); their average tenure is of 8.9 years (SD= 8.20) from different sectors of activity (industry 18.9%, retail and commercial 8.2%, I.T. 8,5%, civil service 5.5%, other services 52.1%) and belonging to organisations with different dimensions (9.9% were under 10 people; 24.9% were between 10 and 50 people; 13.2% between 50 and 100; 18.0% between 100 and 250 people; 15.9% between 250 and 500 people; 18.3% were over 500 people); participants cover different jobs and hierarchical roles (21.6% managers, 42.0% professional and scientific jobs; 28.5% qualified and mid-level professionals and 7.8% other jobs). In order to test the factorial structure we divided the main sample into two sub-samples randomly extracted with approximately 50% of the cases in each one of them; 14 cases were taken out due to missing values in the scale. The first sub-sample, where the principal components analyses were run comprised 160 participants (60.6% female)

with an average age of 36.7 (SD 9.6). The second sub-sample, where the confirmatory factor analyses were run, included 160 participants (64.4% females) with an average age of 37.2 (SD 9.36).

Data collection procedure

Participants were invited to take part in the study via e-mail and social networks (LinkedIn, Facebook and other). We developed a self-administered questionnaire that was run on the Internet. Participants were given a web address that led them to the questionnaire and where they could start filling out the scales and their socio-demographic characterization measures, namely gender, age, professional background and characteristics of their organization. At the beginning of the questionnaire, full anonymity and confidentiality in the data collection process was guaranteed. At the end, participants were provided with a small debriefing text and thanked.

New Controls, scale development and item generation

To measure New Controls we developed the Socio-Ideological Organisational Controls Scale (SIOCS) using the theoretical concepts suggested by Gabriel (1999). Such concepts enabled us to generate a list of statements that reflected the assumptions related to each type of control. Those assumptions were theoretically driven, and were written to highlight the extent to which a worker would have evaluated the dominant beliefs and procedures promoted by organisations. Therefore the SIOCS is a scale that aimed to measure the four socio-ideological dimensions of organisational control proposed by Gabriel (1999). On the basis of this author's considerations we expected to find four distinct dimensions: 1) promotion of new values and beliefs; 2) structural changes; 3) changes in manufacturing technologies; 4) changes in surveillance

technologies. We also expected that, these four dimensions could be integrated in a second order factor and considered in a homogeneous way, in spite of being originally distinct from one another.

In order to generate the items we used the theoretical definitions of the four dimensions proposed by Gabriel (1999), which led us to identify 30 initial statements related to such dimensions. Following their identification, the items were evaluated by two independent judges in order to understand the extent to which they accurately reflected the dimensions they were supposed to measure, and to understand the degree of potential redundancy they generated. In accordance with the output of this independent evaluation, we carried out some amendments to the original formulation in order to increase its accuracy. As a consequence of this process, 24 statements were chosen for the survey. These final statements were then presented to participants who were asked to choose their answer from a 5-point Likert scale (1- strongly disagree, 5- strongly agree). The items were originally illustrated in Portuguese; for the present version, however, an accredited translator translated all the items into English. The accuracy of the translation was proven by a reverse translation that showed that no major discrepancies were found.

Traditional Controls

To examine Traditional Controls we used the three subscales of HRM Controls developed by Snell (1992): input control, behaviour control and output control, all of them offered answers based on a 5-point Likert scale (1- strongly disagree, 5- strongly agree). In our study, firstly, input control measures the attempts to regulate the antecedent conditions of performance, namely knowledge, skills and values. In turn, this measure is composed by 7 items and shows an adequate reliability (Cronbach $\alpha = 0.87$).

Secondly, behaviour control is associated to the reinforcement of idiosyncratic actions through the clear definition of responsibilities, and through standardized methods and procedures. This measure is composed by 9 items and shows a good reliability (Cronbach $\alpha = 0.82$). Finally, output control focuses mainly on setting goals so that workers would be concerned with achieving the desired objectives regardless of the procedure they implement for achieving them. This measure is composed by 12 items and shows a good reliability (Cronbach $\alpha = 0.80$).

Perceived Organizational Support (POS)

To examine the Perceived Organisational Support we used the short scale developed by Eisenberger, et al. (1997). This construct reflects the workers' beliefs about the degree to which the organization cares about their wellbeing and values their contribution. This measure is composed by 8 items and shows an excellent reliability (Cronbach $\alpha = 0.92$).

Analysis and results

To evaluate construct validity we conducted an exploratory factor analysis on a subsample and, after that, a confirmatory factor analysis on the second subsample. Subsequently, we calculated the correlations between the scales to evaluate the convergent validity, and then we conducted several structural models to evaluate possible convergence or collinearity.

Exploratory factor analysis and reliability analysis

We conducted a principal components analysis (PCA) with *promax* rotation for the first sub-sample described above, using the 24 items (see table I). The analysis revealed some ambiguous items that were eliminated. A new PCA was run and led to a final

solution comprising 18 of the 24 original items distributed by four components (KMO = 0.81). These four components were retained through the application of the Kaiser rule (i.e., all factors retained had eigenvalues greater than 1.00; Kaiser, 1960).

The analysis of the components allowed us to conclude that they generally aggregate the 18 items in accordance with the theoretical dimensions proposed by Gabriel (1999). This four-components solution accounts for 65,3% of the variance and loadings of items associated with the dimensions were moderate to high with marginal ambiguity between factors. The first component was characterized by items such as “The demand for increased efficiency in all areas of the company is one of the most valued aspects”, “Managers always stress the excellence of products / services provided by our company”. This component measured an underlying dimension of promotion of new values and beliefs related to how people should behave, and presented an excellent reliability (Cronbach α = 0.90); the second component was characterized by items such as “managers of our company do not hold the same job for many years”, “this company is always creating new departments and extinguish others” which measured an underlying dimension of structural changes by explaining them in a general and abstract way, and presented a good reliability (Cronbach α = 0.78); the third component was characterized by items such as “there are regular changes in how work is done”, “regular changes are made to computer applications” which measured an underlying dimension of changes in manufacturing technologies evaluated in a quite abstract way, and also presented a good reliability (Cronbach α = 0.75); the last component was characterized by items such as “due to new technology, work is increasingly controlled”, “much of my work is now directly controlled by automatic systems” that could measure an underlying dimension of changes in surveillance technologies and

presented the greater level of importance attributed to such technologies, and presented a reasonable reliability (Cronbach $\alpha = 0.69$).

Insert table I here

Confirmatory factor analysis

After conducting the exploratory factorial analysis we conducted a confirmatory factorial analysis (CFA – see table II) on the second subsample as described above. This enabled us to evaluate the extent to which the initial solution presented good fit indexes and, in turn, allowed us to accept such solution as a good measure of socio-ideological controls.

Three models were tested with the CFA: the first one tested an uncorrelated four factor structure derived from exploratory factor analysis; the second model tested the same structure but allowed the factors to be correlated; the last model tested a second order factor which aggregated the four dimensions. The results of this analysis are presented in table II and described below.

Both relative and absolute goodness of fit indexes were obtained for the three models tested: the chi-square fit index (χ^2); the relative chi-square fit index (χ^2/df); the Tucker Lewis Index (TLI; Tucker and Lewis, 1973); the Comparative Fit Index (CFI; Bentler, 1990); and the Root Mean Square Error of Approximation (RMSEA; Browne and Cudek, 1989). The comparisons of the fit indexes of those models allowed us to conclude that the first uncorrelated model (model 1) showed poorer fit indexes when compared to the second one (model 2) that allowed the factors to be correlated, or to the third one (model 3) that, instead, tested the four dimensions as forming one aggregated factor (see figure 1). These results led us to accept the last model. Its indexes, in fact,

were better than those shown by the first model and not different from those related to the second model. Moreover, those indexes were kept within the minimum standards established by the literature on fit measures: TLI= 0.92; CFI= 0.94; RMSEA= 0.06 (0.05; 0.08). In sum, the confirmatory factor analysis allowed us to accept the theoretical dimensions already found in the exploratory factor analysis, and also allowed us to consider the SIOCS as an effective way to evaluate the dimensions proposed by Gabriel (1999), thus, enabling us to accept *HI*. The four types of changes (e.g. structural, in manufacturing/service provision, in surveillance technologies, and in values, attitudes and beliefs) can be seen as distinct dimensions correlated between one another (model 2), but that can be aggregated in a second order factor that maintains them distinctly (model 3).

Insert table II here

Insert Fig I here

Associations between new control mechanisms and traditional controls

After conducting the exploratory and confirmatory analyses we considered the entire sample to evaluate the convergent validity between the new controls measured by the Socio-Ideological Controls Scale, and the traditional controls measured by HRM Controls. As we had anticipated, we found some convergence between some of the four dimensions linked to new control mechanisms and some of the dimensions linked to HRM controls. Nevertheless, the convergence we found might be due either to the fact that some dimensions of both types of controls are related and tend to be used

simultaneously; or to the fact that they measure the same aspects, thus, presenting some possible collinearity. Therefore, in order to evaluate the predicted convergence we tested three structural models (see Table II) for each of the hypotheses: in the first structural model we tested the existence of no relation between dimensions; in the second structural model we tested the correlation between dimensions as it is stated in the hypotheses; and, finally, in the third structural model we tested all items as integrating into one factor. Then, by comparing the first and the second models we could test the extent to which the one portraying the correlations among dimensions highlighted a better fit than that proposing the existence of no relations at all.

Furthermore, by comparing the second model with third one we could test the extent to which the dimensions of new controls and those relating to traditional controls showed a better fit if considered, respectively, as one superordinate factor. By looking at the third model we concluded that the items do not form distinct dimensions, rather they make more sense if looked as one construct. This highlighted collinearity.

By looking at the models associated with *H2a*, the comparisons between the fit indexes of both models allowed us to conclude that the first uncorrelated model (model 4) showed poorer fit indexes when compared to the model that allowed correlation between factors (model 5). In turn, this model also showed better fit indexes than the one highlighting all items as part of just one overarching factor (model 6). These results led us to accept the second model since its indexes were better than those of, respectively, the first and third model. Those results were also in line within the minimum standards established by the literature on fit measures: TLI= 0.94; CFI= 0.95; RMSEA= 0.07 (0.06; 0.08)

By observing the correlation emerging from the model with higher fit indexes (model 5), we can confirm *H2a* stating that the promotion of values and beliefs (factor 1 of the

SIOCS) is highly correlated with input control ($\Phi = 0.75$) leading us to conclude that HR policies are more linked to the need for workers to value their know-how through training and compatibility with the company – achieved via rigorous selection (input control) are further supplemented by the promotion of a range of organisational values like teambuilding, and organisational efficiency. In this sense, the promotion of values - which is most of the times present in the discourse perspectives of organisational actors - seems to be part of a wider HR view that aims at selecting individuals and promoting identities that are congruent with an efficient way of looking at organisations, and that also tries to inculcate the values that should guide employees while experiencing organizational life.

By looking at the models associated with *H2b*, the comparisons between the fit indexes of both models also allowed us to conclude that the first uncorrelated model (model 7) showed poorer fit indexes than the one allowing the factors to be correlated (model 8). In turn this model also showed better fit indexes than the one highlighting all items as part of just one overarching factor (model 9). These results led us to accept the second model since its indexes were better than those of respectively, the first and third model. Those results were also in line within the minimum standards established by the literature on fit measures: TLI= 0.90; CFI= 0.92; RMSEA= 0.07 (0.06; 0.08).

By observing in detail the correlations in the model with higher fit (model 8) we can accept the *H2b*. In fact, as we stated in *H2b*, the promotion of new surveillance technologies is related to output control, ($\Phi=0.40$). This relation highlights that the need to improve the quantification part of performance is associated with surveillance technologies. These technologies play a major role in controlling results, make individuals an extension of production lines, and are less concerned with what people think of and how they integrate organizational values in their everyday work

experience. A medium correlation between changes in surveillance technologies and behaviour control ($\Phi=0.27$) can also be observed; this evidences that companies tend to update technologies that lead to greater control of existing procedures and of ways in which work must be performed.

We can further observe that there is also a high correlation between the introduction of new technologies and the promotion of new surveillance technologies ($\Phi =0.62$). This result allows us to argue that surveillance tends to be more linked with a bureaucratic perspective on management of HR, and in contrast with the perspective that relies more on the needs of supporting and defining individual identities at work, and managing the subjectification of workers.

Additionally, by looking at the correlations obtained by considering the calculated indexes of the variables (see table III), we can observe that the different types of controls are related to the acceptance of the company policies, measured by POS. It can be observed that the promotion of values and beliefs is related to HR policies and to a general way of managing people that is more in line with the development of trustable relationships. Such relationships focus on valuing individual contributes and promote more positive exchange relations, which in turn generate a greater perception of support in employees. In fact, as we predicted, data shows these associations by highlighting higher correlations between the promotion of beliefs and values with POS ($r=0.72$), but also the high relations with input control ($r=.60$), and behavioural control ($r=0.68$).

Insert table III here

These correlations also show a second perspective of managing HR, less bureaucratic and more centred on the individual, on the promotion of actors' autonomy (behaviour

control) and on the adoption of organisational values, which, in the eyes of employees, will emphasize the solidity and security of the relationship between the actor and the organisation.

These results suggested considering the extent to which there can be an overlap between the different types of controls and employees' acceptance of the organisation's policies. Such aspect emerged by testing our last hypothesis, *H3*. For doing so we ran linear regressions (see table IV) and evaluated the added value of New Controls on predicting POS when compared with Traditional Controls.

From the results we can observe that, only including Traditional controls, model 1 presents lesser explained variance than model 2 which instead considers both types of controls ($R^2_{\text{model1}} = 0.36$; $R^2_{\text{model2}} = 0.63$). This allows us to support the stated hypothesis.

In addition, by looking at coefficients we can observe that not all the three dimensions of Traditional Controls can contribute to POS, while the four dimensions of New Controls do influence it instead. In fact behaviour control ($\beta_{\text{model 1}} = 0.56$) and input control ($\beta_{\text{model 1}} = 0.15$) positively predict POS while output control doesn't influence it.

By looking at New Controls we can observe that the promotion of values and beliefs ($\beta_{\text{model 2}} = 0.55$) and the introduction of changes in manufacturing technologies positively predict POS ($\beta_{\text{model 2}} = 0.12$), while the promotion of structural changes ($\beta_{\text{model 2}} = -0.25$) and the implementation of surveillance technologies ($\beta_{\text{model 2}} = -0.14$) negatively predicts such support. We can also observe that the introduction of New Controls (model 2) annuls the explanative value of input control and reduces the value of behaviour control. This allows us to speculate that new forms of control and the way actors' might make sense of them are more effective than the traditional HRM control practices. In addition, data also show that introducing surveillance technologies and promoting structural changes reduces the perception of support. This could lead us to

speculate that both of those aspects might enhance employees' resistance to those changes. Generally, we might argue that new controls are more linked to the subjective aspects of human resources, thus, contributing to a greater, or lesser sense of support depending on the dimensions that companies tackle. Drawing on this point companies should pay particular attention to the promotion of specific values and beliefs, as well as to the way in which the changes of technologies, structures and surveillance procedures are articulated in light of traditional controls and corresponding HR policies.

Insert table IV here

Conclusions

Discussion and implications

In this paper we pursued a twofold objective. On the empirical side, we developed and tested a specific scale, SIOCS, for evaluating what dimensions constitute new control mechanisms, and whether or not new forms of control can (at least in part) overlap with traditional ones. On the theoretical side instead, we verified the extent to which new controls can foster greater employees' perceived organizational support and, therefore, their acceptance of the organization and of its objectives. Our work enabled us to identify some implications for organizations when facing the issue of control.

Our study drew on the existence of a gap in the literature on new control mechanisms, both from an empirical perspective and from a theoretical one. With respect to the former, we observed that most of the studies that considered new control mechanisms showed a lack in the operationalization of this concept. By developing and testing our scale, SIOCS, on the new control mechanisms suggested by the literature (Gabriel, 1999; Vosselman and Van der Meer-Kooistra, 2006) we provided evidence that those

controls are not a mere theoretical conceptualization. Rather, not only can they be 'real', they can also - to some extent - overlap with traditional controls (Ouchi and Maguire, 1975; Snell and Youndt, 1995). With respect to the theoretical point of view, we observed that extant literature showed limited attention to the links between new control mechanisms and their ability to affect employees' acceptance of the organization - measured by perceived organizational support. Deepening existing knowledge on this aspect can prove the different impact that new control mechanisms have on employees compared to traditional controls in a way that has not clearly been demonstrated so far. For addressing our research goals we drew a set of hypotheses from existing literature.

The first hypothesis draws on four different dimensions to which new control mechanisms have been associated (namely, structural changes, changes in manufacturing/service provision technology, changes in surveillance technologies, concerted attempt by management to change values, attitudes and beliefs) in research conducted by labour process theorists, post-structuralists, managerialists, emotion theorists, and psychoanalytic researchers, and summarized in Gabriel's (1999) work. Specifically our first hypothesis tested the extent to which new controls can be considered one homogeneous, overarching factor composed by the above four distinct dimensions.

The second set of hypotheses draws on Gabriel's (1999), Yu and Ming's (2008), and Styhre's (2008) work and aimed at testing the existence and the extent of possible overlaps between traditional controls (that literature identifies with input, output and behavioural controls) and new controls. We set this to verify whether new control mechanisms are complementary to traditional controls, or surrogates of the latter.

Finally the third hypothesis draws on Gabriel's (1999), El-Sawad and Korczynski's (2007), Styre's (2008), and Casey's (1996) work and aimed at testing the extent to

which new controls can positively affect employees' perceived organizational support compared to traditional ones. Since controls are used to achieve organizational goals, literature considers important to evaluate the extent to which employees understand and accept those controls (Vosselman and Van der Meer-Kooistra, 2006), and specifically feel more supported by the organization.

Our research highlighted the quality of the SIOCS specifically with regard to construct validation and reliability. In particular, after conducting the exploratory factor analysis and the confirmatory factor analysis we found a sound correspondence between the indicators and the theoretical dimensions which emerged from Gabriel's (1999) work, furthermore we observed that the four distinct dimensions - namely, structural changes, changes in manufacturing/service provision technology, changes in surveillance technologies, concerted attempt by management to change values, attitudes and beliefs - can be explained by a higher order factor. The good reliability indexes of the dimensions belonging to the SIOCS and to the measures of Traditional controls using the Human Resource Management controls scale (Snell, 1992) and Perceived Organizational Support (Eisenberger et al., 1997) allowed us to evaluate the convergent validity of the different types of controls object of our study.

The first finding related with the discriminant validity of SIOCS, suggests a high correlation between input controls, behaviour controls and promotion of values and beliefs by organizations. As a consequence we can argue that the promotion of beliefs and values as teamwork, effectiveness, initiative, flexibility, etc. are linked to HR policies concerned with knowledge, skills and abilities as it is for the case of training and selection. These policies also tend to place emphasis on the process of actors' subjectification that, in our findings, is associated to greater pressure by organizations to influence the way individuals make sense of their workplace and interpret the

relationship with customers, organizational activities, and fellow employees. The theoretical implication that springs from this finding is that such HR policies strongly foster the emergence of individuals willing to reinforce the values and beliefs promoted by the organization through their acceptance of those values and beliefs. From a practical point of view, it appears that organizations that are more careful in choosing and training their employees also evidence discourses that willingly influence the construction of actors' organizational identity by affecting the interpretation of the relationship between the individual and the organization (Dutton et al., 1994). From this perspective, companies that aim to develop stronger ties with their employees should consider, both, the characteristics of the individuals at the moment of recruitment as well as the HR policies that lead towards the socialization of the values and beliefs the company intends to promote. Our study highlights that employees associate input and behaviour controls with the promotion of values that support and reinforce companies' strategies. Their 'exposure' to certain policies might make the assimilation of the values portrayed by companies easier to share within the workplace.

The second finding related with the convergent validity of the tested scale, suggests that when organizations change their manufacturing technologies and surveillance technologies they show an interest in sustaining output controls, which in turn shows concern for definition of goals and objectives, performance appraisals and monetary rewards linked with them. Moreover, the promotion of values and beliefs can also be associated to output controls, however to a lesser extent than for input and behaviour controls. This finding generates a twofold theoretical implication: on the one side it can be argued that organizations tend to pay less attention to discourses when they rely more on surveillance and work procedures; on the other side it can be argued that when changes in surveillance and manufacturing technologies occur they can shift

employees' attention on the values that are promoted, namely to be more focused on the goals they must achieve and the rewards associated with their quantitative results.

From a practical standpoint we can argue that organizations that are concerned with surveillance and manufacturing technologies will be more concerned in establishing goal oriented policies tied to rewards that, most probably, will foster employees' extrinsic motivation, such as satisfaction with the results of one's work, and less on the interpretation and the sense they make of their lived work experience. In such cases, policies that tie the pay to one's performance might be more effective in meeting the company's goal. Having surveillance systems that allow a direct relationship between production and rewards would make the actual performance measurement less contested and, ultimately, support the implementation of changes in manufacturing processes. This finding seems to identify a more 'mechanical' approach to the management of HR; it suggests that implementing changes to standardized processes can be better achieved if there is correspondence with the output goals defined for employees.

The third finding, related with the predictive validity of the SIOCS, suggests that perceived organizational support is strongly predicted by the promotion of values and beliefs and by input control. This illustrates that individuals operating in environments characterized by the promotion of values and beliefs that inspire work organization, show greater acceptance toward their organization, feel supported by it, and have more trust in it. Such conclusion links to Vosselman and Van der Meer-Kooistra's (2006) argument on the power of trust in facilitating the relationships within the organization. From a theoretical point of view, this third finding leads us to imply that a strong perception of organizational support enhances identification-based trust, such as trust inspired by a sense of friendship, open commitment, and intensive interaction (Vosselman and Van der Meer-Kooistra, 2006). This finding supports the perspective

according to which new controls reduce employees' criticism (Gabriel, 1998, 1999). From a practical point of view for organizations this can represent a strong signal emphasizing the importance of communicating strategically with employees. Organizational discourses fostering socio-ideological values like success, cooperation, loyalty, and quality are recognized as guiding principles that can foster employees' greater acceptance and involvement. Based on these findings we can further speculate that for guiding and influencing employees' behaviours, organizations' exclusive reliance on formal policies has limited outcomes. However, if to those policies organizations associate widely shared meanings they will be more legitimized in the pursuit of their objectives and generate less resistance in employees. A strengthening of perceived organizational support might lead actors to attribute more value to positive exchanges, enhance future reciprocity and commitment towards organizations.

However, this result cannot be extended to the other dimensions of new controls. On the contrary, it is likely that organizations opting for the implementation of structural changes and changes in surveillance technologies will reduce perceived support, and maybe generate more uncertainty and less favourable exchanges. Enhancing perceived support could facilitate transactions, coping with uncertainty, sharing of information, and contribute the creation of a more informal organization. From a practical perspective, one could expect that companies that value less bureaucratic ways of organizing might promote input controls, but most of all they might display *involving discourses* in order to achieve their objectives effectively, and support occurring change and challenging processes. The results of our study highlight the attention companies should pay to the generation of discourses coherent with their practices. Ensuring such coherence can, to some extent, guarantee that the discourses promoted by the organization actually contribute to the sharing of values and beliefs in line with its aims.

The attention companies should pay when promoting values and beliefs works towards understanding how specific discourses favour the construction of meanings among employees. Ultimately, the promotion of values can exert an impact on employees' acknowledgement of being more or less supported by their organization and, in turn, determine their way of reciprocating such support and responding to organizational demands.

Limitations and future research

It can be noticed that our study presents some limitations. In particular we dealt with individual perceptions on organizational control rather than coupling this with the information that sits at an organizational level (meso-level). This could be overcome by conducting a multi-level study with different measures that could avoid the single variance bias. In terms of sample, one could observe that this study would benefit from adopting a more systematic sampling method. Moreover some inferences that we make in this paper might become more robust if we include more mediator variables to better explain the actors' evaluation processes on organizational controls and the effects those exert on them. As a direction for future research, a quantitative, empirical testing of the resistance that might be generated as a response to the new control mechanisms measured by the SIOCS can further existing understanding of the topic. In particular, more attention could be paid to exchange processes and possible effects generated on employees' reciprocity behaviours and trust. Studies in this direction would complement the existing theoretical reflections by showing the material effects that culture and subjective approaches to individuals' identities can have over organizations.

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List of tables

Table I - Exploratory factor analysis of New HRM control mechanisms scale

Items	Factor 1	Factor 2	Factor 3	Factor 4
<i>α de Cronbach</i>	0.90	0.78	0.75	0.69
1 - Promotion of Values and Beliefs				
x1 - This organization values teamwork	0.86	-0.10	0.08	-0.15
x2 - This organization promotes individual initiative of employees.	0.86	-0.13	0.14	-0.16
x3 - This organization values flexibility.	0.83	-0.08	0.08	-0.16
x4 - This organization promotes events to enhance teambuilding.	0.80	0.19	0.10	-0.16
x5 - Managers always stress the excellence of products / services provide by our company.	0.78	0.00	-0.11	0.16
x6 - The demand for increased efficiency in all areas of the company is one of the most valued aspects.	0.73	0.16	-0.14	0.33
x7 - It is frequently reported to us that customer care is the most important value.	0.61	0.03	-0.11	0.31
2 - Structural changes				
x8 - Managers of our company do not hold the same job for many years.	0.12	0.76	-0.23	0.04
x9 - People are often changed between work teams.	0.22	0.74	0.17	-0.01
x10 - Frequently there is information that changes in the company will occur.	-0.09	0.73	0.07	-0.03
x11 - People change between professional roles with great frequency.	-0.07	0.69	.037	-0.12
x12 - This company is always creating new departments and extinguishing others	-0.28	0.58	-0.08	-0.03
3 - Changes in manufacturing technologies				
x13 - There are regular changes in how work is done.	0.02	0.08	0.81	0.08
x14 - Regular changes are made to computer applications.	-0.14	0.18	0.69	0.18
x15 - I feel more and more new technologies are introduced in order to perform my job.	0.26	-0.12	0.69	0.15
D - Changes in surveillance technologies				
x16- Much of my work is now directly controlled by automatic systems	-0.15	-0.17	0.26	0.81
x17 - Due to new technology, work is increasingly controlled.	0.04	-0.15	0.26	0.77
x18 - There is a need to set quantitative goals to evaluate my performance.	-0.01	0.37	-0.14	0.61
Note: Kaiser-Meyer-Olkin index = 0,836. The total variance is explained by the factor 1 in 22,2%; in 14,7% by factor 2; in 11,7% by factor 3; and 10,3% by factor 4. The factor loadings were obtained by Varimax rotation.				

Table II - Confirmatory factor analysis of SIOCS

Models	N	df	X2	X2/df	TLI	CFI	RMSEA (CI)
Models testing discriminant validity							
Mod 1 - Uncorrelated dimensions	160	131	285.52	2.18	0.86	0.88	0.09 (.07; .10)
Mod 2 - Correlated dimensions	160	128	212.63	1.66	0.92	0.93	0.06 (.05; .08)
Mod 3 – Second order factor	160	127	210.20	1.66	0.92	0.94	0.06 (.05; .08)
Models testing convergence between promotion of socio-ideological values and input control							
Mod 4 – Uncorrelated factors	301	74	352.89	4.77	0.84	0.87	0.11 (.10; .12)
Mod 5 – Correlated factors	301	73	180.35	2.47	0.94	0.95	0.70 (.06; .08)
Mod 6 – One factor	301	74	372,11	5.03	0.83	0.86	0.12 (.11; .13)
Models testing convergence between changes in surveillance technologies and manufacturing technologies and output and behavioural controls							
Mod 7 – Uncorrelated factors	301	119	475.36	3.99	0.77	0.80	0.10 (.09; .11)
Mod 8 – Correlated factors	301	107	259.99	2.43	0.90	0.92	0.07 (.06; .08)
Mod 9 – One factor	301	113	897.01	7.94	0.48	0.57	0.15 (.14; .16)

Table III – Descriptive statistics and correlation matrix

	Mean	SD	1	2	3	4	5	6	7	8
1 Promotion of values beliefs	3.32	1.00	(.90)							
2 Structural changes	2.29	.87	-.02	(.78)						
3 Manufacturing technologies	3.04	.93	.23**	.32**	(.75)					
4 Surveillance technologies	3.34	.98	.24**	.15**	.49**	(.69)				
5 Input control	2.99	.84	.64**	.03	.23**	.23**	(.87)			
6 Behavior control	2.29	.77	.71**	.00	.16**	.20**	.68**	(.82)		
7 Output control	3.01	.70	.36**	.17**	.26**	.41**	.42**	.36**	(.80)	
8 Perceived organizational support	3.09	1.00	.72**	-.20*	.13*	.07	.60**	.68**	.21**	(.92)

Note: Significance at: ** p< 0.01; * p < 0.05; the diagonal shows the values of Cronbach's α

Table IV – Results of linear regressions

Independent Variable	POS	
	Model 1	Model 2
Intersection	1.56 *	1.55 *
Input control	0.15 *	0.09
Behaviour control	0.56 *	0.23 *
Output control	- 0.10	- 0.07
Promotion of values and beliefs		0.55 *
Structural changes		- 0.25 *
Manufacturing technologies		0.12 *
Surveillance technologies		- 0.14 *
ΔR^2		0.27
Adjusted R ²	0.36	0.63
F value	64.576 *	80.765 *

Note: All β standardized coefficients presented a *t test* with * $p < 0.01$

Fig I - Confirmatory factor analysis of SIOCS with second order factor (model 3)

