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Managers' preferences for aggregation and disaggregation in internal reports for target ratcheting and performance evaluation purposes

Preferências dos gestores por agregação e desagregação em relatórios internos para fins de *ratcheting* de metas e avaliação de desempenho

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Tese apresentada ao Programa de Pós-Graduação em Controladoria e Contabilidade da Faculdade de Economia, Administração e Contabilidade da Universidade de São Paulo, como parte dos requisitos para obtenção do título de Doutor em Ciências.

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“Tenho a impressão de ter sido uma criança brincando à beira-mar, divertindo-me em descobrir uma pedrinha mais lisa ou uma concha mais bonita que as outras, enquanto o imenso oceano da verdade continua misterioso diante de meus olhos”. (Isaac Newton)

RESUMO

Os relatórios internos ajudam as organizações a manter seus sistemas de controle gerenciais atualizados e subsidiam vários propósitos, como a definição de metas e a avaliação de desempenho. A literatura prática apresenta como preocupação a quantidade de detalhes que os gestores devem fornecer aos seus superiores nesses relatórios de desempenho. Este estudo considera os relatórios dos gerentes de centros de lucro devido à posição estratégica que possuem nas empresas e a quantidade de informações que detêm. Com base na teoria da contabilidade mental, apresenta-se como hipótese que os gerentes preferem um formato de apresentação que aumenta a utilidade do desempenho apresentado. Além disso, considera-se o *framework* dos níveis de raciocínio, pois os gerentes podem escolher um formato de apresentação pensando em uma futura decisão de seus superiores. Quando o propósito do relatório interno é a revisão metas, apresentam-se dois argumentos opostos, razão para o desenvolvimento de uma questão de pesquisa em vez de uma hipótese. O primeiro argumento é que os gerentes não seguem os pressupostos da contabilidade mental, ou seja, eles preferem apresentar seu desempenho em um formato que faz com que esse desempenho pareça menos favorável para evitar a definição de metas mais difíceis para o futuro. Como apoio a esse argumento, considera-se a evidência de que os gerentes que sentem uma pressão externa não seguem os pressupostos da contabilidade mental. O segundo argumento para o *ratcheting* das metas é que os gerentes seguiriam os pressupostos da contabilidade mental, ou seja, preferem apresentar seu desempenho em um formato que torne o desempenho mais favorável. Este argumento leva em consideração evidências que sugerem que o processor de definição de metas pode servir para fins de gerenciamento de impressões para gerentes. Ao se reportar para avaliação de desempenho, seguindo as previsões de contabilidade mental, elaboro a hipótese de que os gerentes preferem apresentar seu desempenho de forma a aumentar a utilidade de seu desempenho. Neste estudo, os gerentes devem apresentar relatórios internos que contenham os desvios de desempenho em relação às metas, e ganhos e perdas são os resultados das variações. Para testar tais questões e hipóteses de pesquisa, empregou-se uma abordagem experimental 2 × 2 *between-subjects*, em que se manipula o sinal dos desvios do desempenho em relação à meta (perdas ou ganhos) e o propósito do relatório (revisão de metas ou avaliação de desempenho). Quando os gerentes precisam reportar um ganho, tanto para propósito de revisão de metas quanto para a avaliação do desempenho, os resultados indicam que os gerentes possuem preferência similar por agregar ou desagregar um ganho combinado nessa situação. Consequentemente, não há resultados significativos para a questão de pesquisa sobre o propósito da revisão de metas e nenhuma diferença significativa para a hipótese de avaliação de desempenho. Quando os gerentes precisam reportar uma perda, tanto para propósito de revisão de metas quanto para a avaliação do desempenho, os resultados são significativos e indicam que os gerentes preferem desagregar uma perda. Desagregar uma perda mista está de acordo com os pressupostos da contabilidade mental. Considerando um relatório para a revisão de metas, esse resultado é interessante pois os indivíduos preferem apresentar seu desempenho em um formato que melhora o resultado, mesmo que um bom desempenho resulte em uma meta mais difícil para o futuro. Estas conclusões têm implicações práticas. Embora os gerentes possam usar a materialidade para justificar a informação que eles escolhem informar, os superiores devem exercer ceticismo quanto à informação de desempenho reportada.

Palavras-chave: Contabilidade gerencial. Relatórios internos. Formatos de apresentação. Ratcheting de metas. Avaliação de desempenho.

ABSTRACT

Internal reporting helps organizations to keep their management control systems updated and subsidizes several purposes, such as target setting and performance evaluation. A concern from practitioner literature regards on how much detail managers should provide for their superiors in these performance reports. This study considers the reporting from profit center managers due to the strategic position these managers have in firms and the amount of information they hold. Relaying on metal accounting theory, I hypothesize that managers prefer a presentation format that increases the utility of their presented performance. Additionally, I consider the levels of reasoning framework because managers can choose a presentation format thinking in a future decision by their superiors. When the purpose of the internal report is target revision, I have two opposing arguments, which makes me develop a research question instead of hypothesis. The first argument is that managers might not follow mental accounting predictions, that is, they prefer to present their performance in such a format that makes this performance looks less favorable to avoid harder targets for future. Supporting this argument, I consider evidence that managers feeling an external pressure do not follow mental accounting predictions. The second argument for target ratcheting is that managers would follow mental accounting predictions, that is, they prefer to present their performance in such a format that makes this performance looks more favorable. This argument takes into account evidence suggesting that target setting can serve an impression-management purpose for managers. When reporting for performance evaluation, following mental accounting predictions, I hypothesize that managers prefer to present their performance in a way to increase the utility of their performance. In this study, managers have to present internal reports with performance-target deviations, and gains and losses are the results of the variances. In order to test my research questions and hypothesis, I employ a 2 × 2 between-subjects experimental design, that manipulates the sign of performance-target deviations (losses or gains) and the reporting purpose (target revision or performance evaluation). When managers have to present a gain both for target revision and performance evaluation, results indicate that managers prefer either to aggregate or to disaggregate a mixed gain in this situation. Consequently, there is no significant result to the research question regarding the target revision purpose, and no significant difference for the hypothesis regarding performance evaluation. When managers have to present a loss for target review and performance evaluation, results are significant and indicate that managers prefer disaggregate a loss. Disaggregating a mixed loss is in line with metal accounting predictions. Considering a report for target revision, this result is interesting because individuals prefer to present their performance in a format that make their result looks better, even if a good performance results in a harder target for future. This conclusion has some practical implications. Although managers can use materiality to justify the information they choose to report, superiors should exert skepticism regarding the reported performance information.

Keywords: Management accounting. Internal reports. Presentation formats. Target ratcheting. Performance evaluation.

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1 INTRODUCTION

Employees may vary the format of internal reports that they present to their superiors based on the recipient's level within the organization. For example, employees may present reports with a greater level of detail to lower-level managers because these managers focus on specific activities and thus need performance reports with more details. Alternatively, employees may present reports with less detail to higher-level managers because these managers oversee more employees and divisions and therefore need more aggregated reports to keep the amount of information manageable. As a result, subordinates preparing performance reports are concerned about exactly how much detail to include in the reports they should provide to managers at varying levels within the organization (Starovic, 2003). This study considers the reporting from profit center managers due to the strategic position these managers have in firms and the amount of information they hold. Although profit center managers are compensated over their unit's profit, they are also held accountable to specific budget targets for costs and expenses (Merchant & Manzoni, 1989), and because of that they are expected to report the related performance to each target. On internal reports, managers typically report their performance based on responsibility and using materiality judgments to aggregate some accounts or classes of accounts into higher-level categories in order to avoid information overload.

Prior empirical evidence on presentation formats indicates that such formats might affect decision-making in managerial accounting settings and firms should carefully consider how to organize and present information (Cardinaels, 2008; Cardinaels & van Veen-Dirks, 2010). A survey conducted by IOMA (Institute of Management & Administration) shows that internal reporting was ranked as the best way to boost corporate value and it suggests the increase of timeliness reports and avoidance of information overload to improve internal reporting (IOMA, 2005). Accordingly, a study that examines how managers choose to present their performance in internal reports matters because it helps to understand how varying the level of details provided in these reports affects the decision-making. Internal reports are a fundamental component for budgeting and performance measurement process. Specially, firms that use past performance information for target revision (ratcheting) can benefit from managers' private information in internal reports for budgeting (Hannan, Rankin, & Towry, 2006). Similarly, subordinates who have the opportunity of participating in the performance evaluation process with self-performance reports may perceive more fairness in the organization (Korsgaard &

Roberson, 1995). For instance, Coca-Cola encourages a performance evaluation process with interaction between subordinates and managers because it "gives everyone the opportunity to assess their annual performance against set goals and objectives"[1]. However, the information subordinates provide in self-reports for their own performance evaluation might differ from that they provide for target revisions.

I argue in this study that managers may choose to present their performance either in more aggregated or detailed formats (hereafter aggregated or disaggregated) depending on the sign of performance-target deviation and on the purpose of the internal report. Regarding the sign of performance-target deviation, gains or losses, Mental Accounting theory predicts how managers can choose to report. When preparing information, this theory suggests that individuals would aggregate a loss comprised of several losses and disaggregate an overall gain comprised of multiple gains (Thaler, 1985, 1999). The theory also has predictions for mixed results, when an outcome has gains and losses simultaneously. Bonner, Clor-Proell, and Koonce (2014) test mental accounting predictions in a financial accounting setting. Considering mental accounting predictions in the context of their results, managers prefer to aggregate their outcomes when the result is a mixed gain; on the other hand, managers' preferences for presenting mixed losses depend on relative magnitude of the gain and loss components of this outcome.

Regarding the purposes of internal reports, I also use mental accounting theory. I suggest that managers' preferences of presentation formats may vary according to the target revision or performance evaluation purposes because these purposes are intended to different decisions. While reporting for performance evaluation have an immediate impact on compensation, the report for target revision first affect the target for the next year, which may impact the compensation depending on the difficulty of the set target. Because mental accounting suggests that individuals prefer aggregate or disaggregate performance information in order to look better, a participant's preference of presentation format for target revision might be different from his preference of presentation format for performance evaluation. This interpretation is due to evidence showing that variables such as transparency might interact with mental accounting (Bonner et al., 2014). For instance, for outcomes that mental accounting predicts aggregation, Bonner et al. (2014) report that managers feeling transparency pressure have a higher preference for disaggregation. Investors prefer disaggregated information because they

[1] Website, http://www.coca-colacompany.com/stories/associate-training, accessed September 23, 2017.

see it as more transparent, and managers aware of this preference tend to report disaggregated information.

On one hand, when reporting for performance evaluation, it would be reasonable that managers would follow mental accounting predictions to make their performance looks more favorable. This argument takes into account that managers believe that this report will support their superiors' decision regarding their compensation, and presenting a good performance may result in a better compensation. On the other hand, managers' reporting preferences for target revisions might not follow these predictions. Specifically, managers could anticipate that target ratcheting will increase the difficulty of their next targets for the next period, and because of this, they will choose a presentation format that would most likely not punish their good performance in the current period. In other words, employees will choose the format that would make their performance looks less favorable. In this way, I examine in this study the determinants—that is, sign of performance-target deviations and internal reporting purpose—of employees' preferences of different presentation formats, aggregated or disaggregated.

As expectations of my study, I examine whether the choice of aggregate or disaggregate is affected by the presentation format and sign of performance-target deviations. As bonuses are linked to performance, subordinates would prefer to present their performance in a more favorable format for a scenario of performance evaluation. In turn, for a scenario of ratcheting, in which the report does not change the current evaluation, subordinates would prefer to look worse to avoid harder targets for the next period. Because current targets attainment may turn into higher targets for the next period, employees' attainment of future bonuses would be harder. An argument for that is because ratchet is often referred to as a punishment of good performance (Murphy, 2001), which may cause employees to reduce their output to avoid being held in a higher (i.e., ratcheted) standard in the future (Indjejikian & Nanda, 1999). Assuming superiors' decision that current performance serves for performance evaluation and target revisions, subordinates would present their performance, aggregated or disaggregated, in line with a better or less favorable performance in order to receive a better evaluation or to avoid harder targets.

The levels of reasoning is a framework for decision-making in strategic settings (Zimbelman & Waller, 1999). Considering this framework, employees' choice of a presentation format is a first-order reasoning that they anticipate a superior's decision. When reporting for performance evaluation, managers prefer to present a good performance because they anticipate the benefits

of a good evaluation, and managers presenting for target revision might prefer to present a less favorable performance anticipating an increase in target difficulty. However, the preference for a less favorable presentation format for a ratcheting scenario is not clear, since evidence shows that managers use the target setting process to manage impression (Webb, Jeffrey, & Schulz, 2010) or even exaggerate in their records about employees' accomplishments (Cunha, 2013).

Looking at performance results in an internal report, different combinations may exist. For example, firms have targets for both revenues and costs (or expenses) and employees can reach some of them and fail to reach others. In the context of variance analysis, a target attainment may configure as a gain and a failure to attain as a loss. Considering mental accounting theory and the levels of reasoning framework, I present predictions for mixed results, with net gain or net loss comprised of gains and losses. According to mental accounting predictions, managers prefer to aggregate a mixed net gain because it makes the performance looks more favorable. Considering the expectations for a performance evaluation, I predict that managers will prefer to aggregate a net gain. When reporting for target revisions, managers could prefer to disaggregate the net gain in order to show a loss and avoid a harder target, but I do not make a directional prediction. Although it would be reasonable to expect that managers prefer to look worse in order to avoid harder targets, I do not make a directional prediction because previous results show that managers use the target setting for impression management and due to the lack of evidence regarding internal reports for target revision. Mental accounting predicts disaggregation when the outcome is an overall loss comprised of a large loss and a small gain, because individuals prefer to show the "silver lining" in their performance (Bonner et al., 2014). Then, when reporting for performance evaluation, I expect that managers follow mental accounting predictions. When reporting for target revision, similarly to the gain scenario, I do not make directional prediction.

In order to test these expectations, I conducted an experiment. In this experiment, participants acted as profit center managers in a setting in which they know that their results will serve as information either for performance evaluation in the current period or for revision of targets to the next period[2]. Participants judge their preferences about whether aggregate or disaggregate their performance-target deviations to present it for their superiors. Using a 2 × 2 between-subjects experimental approach, I manipulate the sign of the performance-target deviation in

[2] There are also instances that firms might use the same internal report for both target revision and performance evaluation purposes. The present study considers the use of individual reports for each purpose in order to test managers' preferences when the purposes are different.

the first factor (negative or positive) and the purpose of the internal report in the second factor (performance evaluation or target ratcheting). The motivation is to observe subordinates' preferences for determined presentation format, aggregated or disaggregated, according to the sign of their performance-target deviations and to the purpose of reporting.

My study has several contributions. First, it contributes to mental accounting literature by showing how managers organize internal reports for different purposes. For example, my results suggest that when managers face a loss in their unit, they tend to follow mental accounting predictions and disaggregate their results when reporting for target revision and performance evaluation. There is evidence from financial accounting literature (Bonner et al., 2014) that the pressure to report transparently increases managers preferences for disaggregation in a higher extent than mental accounting predictions. Thereby, my study adds to prior research by showing that in the setting of internal reports, a different form of pressure such as ratcheting does not affect mental accounting predictions.

Secondly, my results contribute to the ratchet and performance evaluation literatures by showing how managers prefer to present their performance-target deviations report for target revision and evaluations. Most of the prior research on the target ratcheting literature focuses on the ratchet effect problem and uses analytical models, experiments, or archival data for doing so (Indjejikian, Matějka, & Schloetzer, 2014). Meanwhile, the performance evaluation literature that analyzes subordinates' participation in the evaluation process mainly compares the congruence between rates of superiors and subordinates. However, there is a gap about the understanding of how managers prepare their reports for these purposes, as well as whether they prefer to prepare it differently. Therefore, this study is an attempt to make organizations aware of some issues that may drive managers' preferences when producing internal reports.

As a contribution to practitioners, this study warns organizations about a strategic behavior in which managers can use when preparing information to report. That is, even considering that the strategic behavior is not related to changes of real data or dishonesty in reports, managers or other workers with reporting functions can manipulate or choose to report information in such a way to put them in a better position for future decisions (Bowlin, Hales, & Kachelmeier, 2009; Dutton, Ashford, O'Neill, Hayes, & Wierba, 1997; Majors, 2016). Although managers can use materiality to justify the information they choose to report, superiors should exert skepticism regarding the reported performance information.

Finally, there are some contributions regarding the context of Brazilian research. To my knowledge, this is the first study using the Amazon Mechanical Turk platform in Brazil. This is an instrument to collect data that have as great advantages the low cost and the fast time to gather this data, and because it enables to screen for participants with different backgrounds. Regarding this type of participants, previous research indicates them as a source of high-quality and low-cost work, even for demanding tasks (Farrell, Grenier, & Leiby, 2017). Participants working to this platform are from Anglo-Saxon countries. Furthermore, although using an international sample, this is the first Brazilian study that focuses on ratcheting. Studies about budgeting and performance evaluation in Brazil are usually broader than the target setting process and do not focus only on this method of target setting, namely, the target revision based on past performance (Almeida, Machado, Raifur, & Nogueira, 2009; Codesso, Lunkes, & Suave, 2013; Espejo & Pereira, 2012).

In section 2, I describe the ratchet principle for target revision and performance evaluation in managerial accounting, mental accounting theory, and I develop my hypotheses. In section 3, I show details about my experimental method. In section 4, I present my experimental results and, in section 5, I discuss them, and conclude.

2 THEORY AND HYPOTHESIS DEVELOPMENT

2.1 MANAGEMENT CONTROL SYSTEMS – IMPORTANCE AND FRAMEWORKS

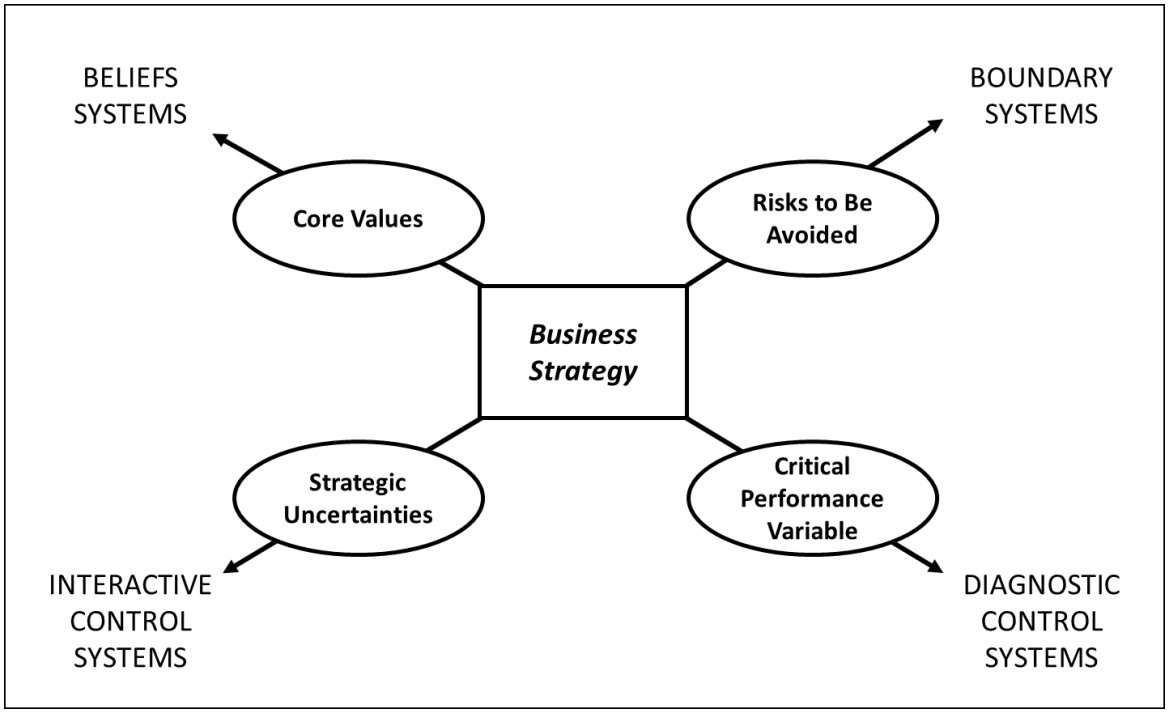
I first define management control because it encompasses target setting and performance evaluation. Management control attempts to the processes of organizing resources and directing activities for the purpose of achieving organizational objectives, in which has primarily an internal focus on how to influence employees' behaviors (Merchant & Van Der Stede, 2012). For instance, rewards motivate individuals to increase their performance in order to accomplish these rewards (Malmi & Brown, 2008), and serve as ex ante control, a source for arousing motivation toward organizational goals, and ex post, reinforcing or modifying behaviors (Flamholtz, Das, & Tsui, 1985). Both target setting and performance evaluation are related to management control because firms use them to motivate employees, communicate goals and objectives. Typically, those who teach and study management through textbooks or academic studies break down three broad areas in smaller elements that facilitate and enable a deeper analysis: functions, resources, and processes (Merchant & Van Der Stede, 2012). Management functions involves product or service development, operations regarding the execution of product or service, marketing and sales, and finance. Resources at hand of managers include people, money, machines, and information. Finally, processes include objective setting, strategy formulation, and management control.

In the academic setting, researchers developed several management control frameworks as an effort to understand and explain how different frameworks work in practice. The various new conceptualizations of frameworks which the field of management control systems (MCS) has experienced have been motivated by two main reasons (Strauß & Zecher, 2013). First, as the environment constantly changes across time, the development of updated management control frameworks requires more MCS research. In addition, the development of new frameworks consists on building cumulative knowledge in order to cover the gap related to the lack of a consistent conceptualization of MCS.

As one attempt to develop a framework to understand how management control works in practice, the levers of control (Figure 1) is a framework composed of four levers that interact

with opposing forces to the effective strategy implementation: beliefs systems, boundary systems, diagnostic control systems, and interactive control systems (Simons, 1995). Beliefs systems are used to inspire new opportunities, while boundary systems are useful to limit this behavior. Interactive systems focus on debates related to the strategy implementation, while the diagnostic control systems motivate, monitor and reward employees to align their behaviors with organizational objectives (Widener, 2007). Research on this framework often focus on innovation and strategic decisions (Bisbe & Otley, 2004; Cruz, Frezatti, & Bido, 2015; Marginson, 2002; Oyadomari, Frezatti, Cardoso, & Aguiar, 2009).

Figure 1 – Levers of control framework



Source: Simons (1995, p. 7).

In another framework, Malmi and Brown (2008) point some reasons to study management control systems as package (Figure 2). First, they argue that much of MCS research considers single themes or practices and does not recognize links between various MCS. Second and related, accounting researchers study innovations in practice, but studying these systems individually may influence conclusions about the functioning of the existing broader MCS as a package. Finally, while existing research focuses on formal systems, there is still limited

understanding about other types of control, such as administrative or cultural. Research using this framework focus on the verification of how management controls act as a package in organizations (Magro, Gorla, & Lavarda, 2015; O'Grady & Akroyd, 2016), and it acknowledges that the trend of analyzing MCS as a package is because there are criticisms in studying management control practices separately (Grabner & Moers, 2013).

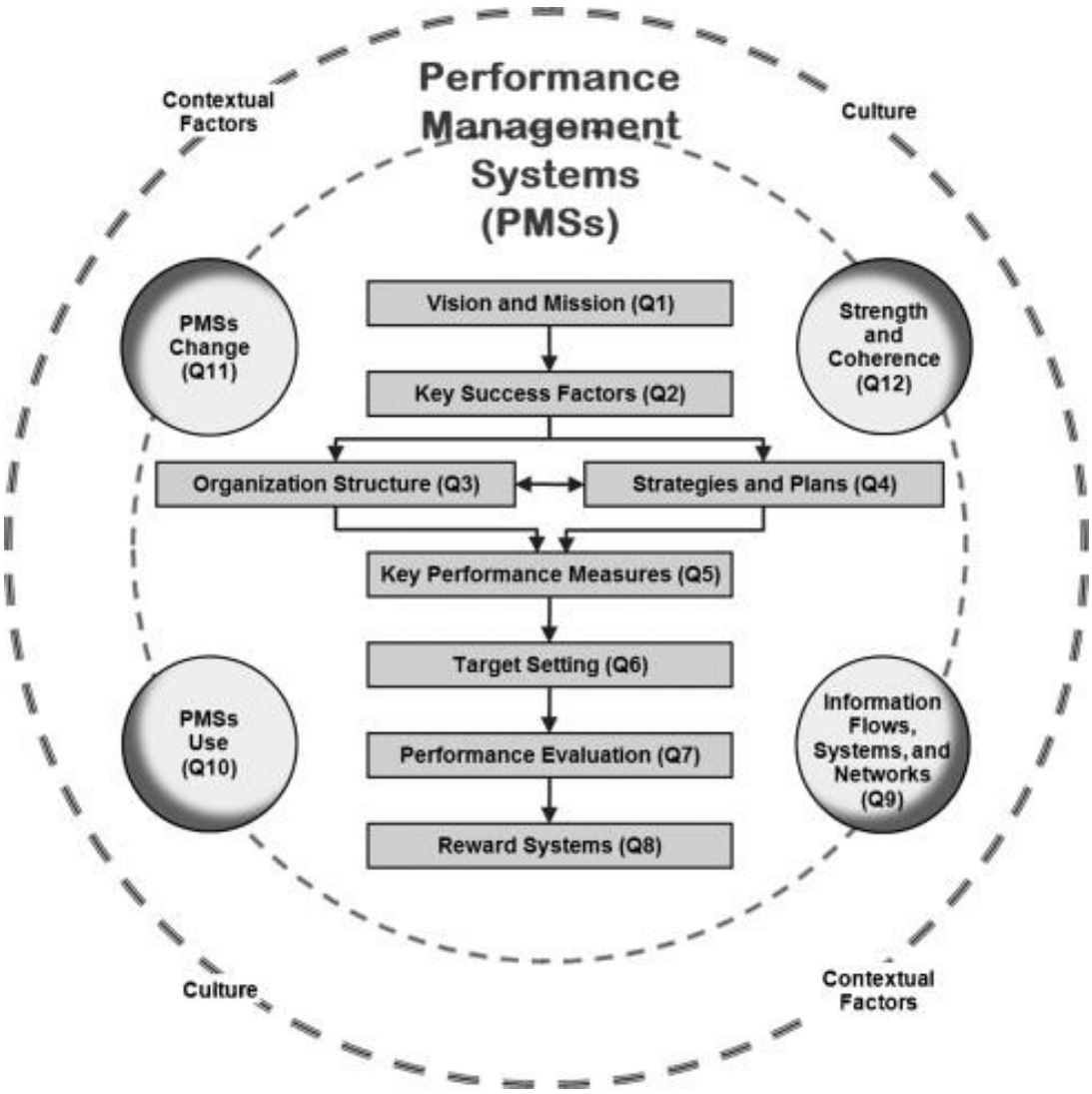
Figure 2 – Management control systems package

<table>
<tr><td colspan="8">Cultural Controls</td></tr>
<tr><td colspan="2">Clans</td><td colspan="3">Values</td><td colspan="3">Symbols</td></tr>
<tr><td colspan="2">Planning</td><td colspan="4">Cybernetic Controls</td><td rowspan="2">Reward and Compensation</td></tr>
<tr><td>Long range planning</td><td>Action planning</td><td>Budgets</td><td>Financial Measurement Systems</td><td>Non Financial Measurement Systems</td><td>Hybrid Measurement Systems</td></tr>
<tr><td colspan="8">Administrative Controls</td></tr>
<tr><td colspan="2">Governance Structure</td><td colspan="3">Organisation Structure</td><td colspan="3">Policies and Procedures</td></tr>
</table>

Source: Malmi and Brown (2008, p. 291).

The performance management systems framework proposed by Ferreira and Otley (2009) integrates the levers of control of Simons (1995) and the 5 questions of another framework by Otley (1999) in a 12 questions framework (Figure 3). Ferreira and Otley (2009) do not include cultural and other contextual factors in their framework because they consider these factors as contingent variables that might explain why certain patterns of control are more or less effective. They developed this framework from literature and practice to allow researchers for describing the structure and operation of performance management systems in a more holistic manner. Studies following this framework often investigate the adoption of performance management systems in practice (Frezatti, Junqueira, Bido, Nascimento, & Relvas, 2012; Gadenne, Mia, Sands, Winata, & Hooi, 2012) and discuss the evolution of management accounting in response to organizations' needs (Adler, 2011; Chenhall & Moers, 2015).

Figure 3 – The performance management systems (PMSs) framework

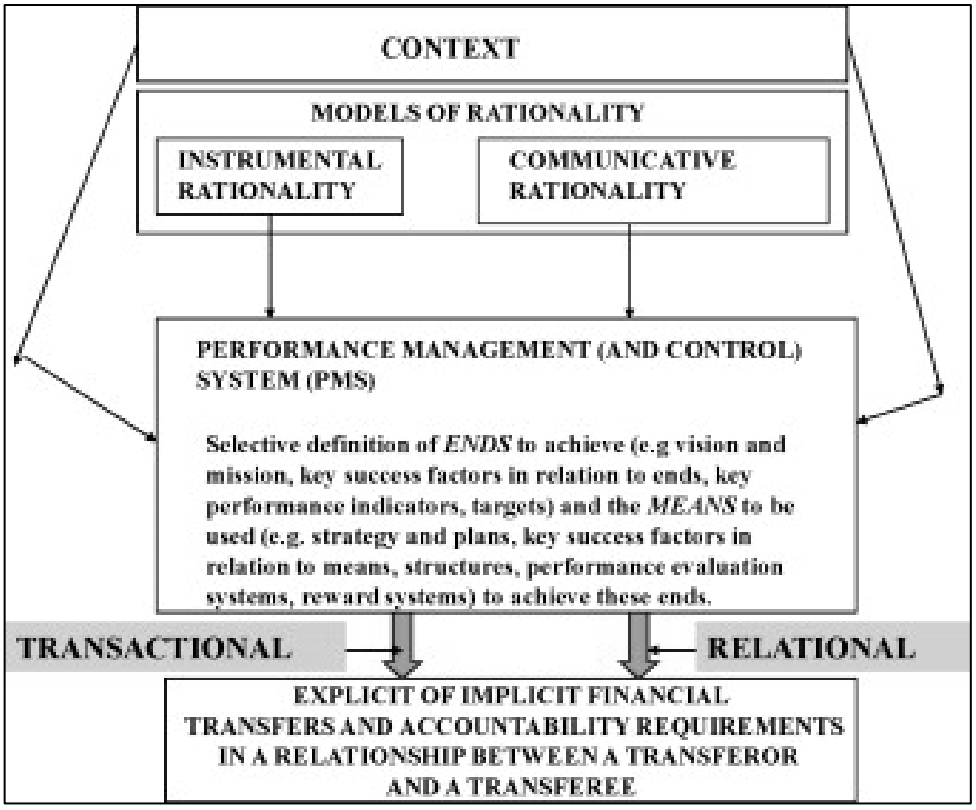


Source: Ferreira and Otley (2009, p. 268).

Lastly, Broadbent and Laughlin (2009) also propose a framework of performance management systems (Figure 4). They claim that management control and management accounting literature has paid much more attention to ex post performance measurement than to ex ante performance management. In their framework, Broadbent and Laughlin consider cultural and contextual factors, arguing that these issues were not properly discussed by Ferreira and Otley (2009). They argue that the rationality models that mould the nature of the eight more functional questions and answers of Ferreira and Otley's framework are different from rational models for the four remaining questions which comprehend cultural and contextual factors. They discuss the two dominant rationalities and its outcomes as a 'transactional' or 'relational' performance

management system. Because the framework of Broadbent and Laughlin is an extension of Ferreira and Otley's framework, studies typically apply them together (Agyemang & Broadbent, 2015; Conrad & Uslu, 2012).

Figure 4 – PMS: a conceptual model taking into account models of rationality and context



Source: Broadbent and Laughlin (2009, p. 290).

These frameworks can be seen as a primary focus of understanding management control systems in practice. Although they include different perspectives and different focus, they also have similarities, such as having both budgeting and target setting, and performance evaluation processes embedded in their frameworks. In the levers of control framework, for example, budgeting act as an interactive system and performance evaluation as a diagnostic system (Widener, 2007). When considered in the MCS package (Malmi & Brown, 2008), both budgeting and performance evaluation are characterized as cybernetic controls. These controls are related to measurement, targets, feedback, variance analysis, and the ability to modify the system's behavior or underlying activities. Finally, Ferreira and Otley (2009) framework considers budgeting in the question related to target setting as the level of performance that

firms need to achieve in each of their key performance measures. Meanwhile, after target setting, the performance evaluation process evaluates individual, group, and organizational performance; might be objective, subjective, or mixed; and defines the importance of informal and formal information and controls. The next section addresses performance evaluation and reports some instances of results about this practice for business unit managers.

2.2 PERFORMANCE EVALUATION

The performance evaluation is a ubiquitous process in the organizational setting. In most of the situations, agent's performance tend to be controlled by tying compensation to objective measures, such as output or sales (Prendergast & Topel, 1993). Generally, incentive contracts also have subjective components to mitigate incentive distortions caused by imperfect objective measures (Baker, Gibbons, & Murphy, 1994). For example, Govindarajan (1984) found that units facing higher environmental uncertainty tend to be evaluated with greater subjectivity. Although the performance evaluation literature usually focus on the accuracy of performance measures, a great concern of executives is also about how best to use the performance evaluation process to motivate and reward subordinates (Longenecker, Sims, & Gioia, 1987).

Bouwens and Van Lent (2007) use a sample of 140 managers to investigate the use of performance measures to evaluate business unit managers. They analyze four different types of measures. The aggregated measures include accounting return measures such as return on investments; the profit measures are a middle term for aggregated and disaggregated performance measures; disaggregated measures include accounts such as revenues and expenses; and nonfinancial measures to reduce the noise of aggregated measures. They propose that accounting return measures are more informative about the decisions of business unit managers, and expect that these measures gain more importance when managers have more decision-making authority. Results confirm this expectation and suggest that the use of accounting return measures is more pronounced when managers have more influence on investment decisions.

Cichello, Fee, Hadlock and Sonti (2009) study divisional managers' evaluation by examining their job changes. They consider as penalty outcomes when managers depart from their

employers, and as reward outcomes when they are promoted from within the firm. They consider that if performance measures provide useful information regarding effort and ability, there must be a relation between these metrics and job changes. They find a negative relation between managers' turnover and divisional return on assets (ROA). Their results indicate that firms use relative performance evaluation for filtering out industry performance to dismiss managers. Regarding promotion decisions, they report that managers of divisions with higher levels of ROA have significantly more chances of being promoted than their peers. Moreover, stimulating competition, the sign of performance differences among divisions is a more important predictor of promotions than the amount of these differences. Taken together, their results suggest that managers have higher incentives to increase divisional accounting performance.

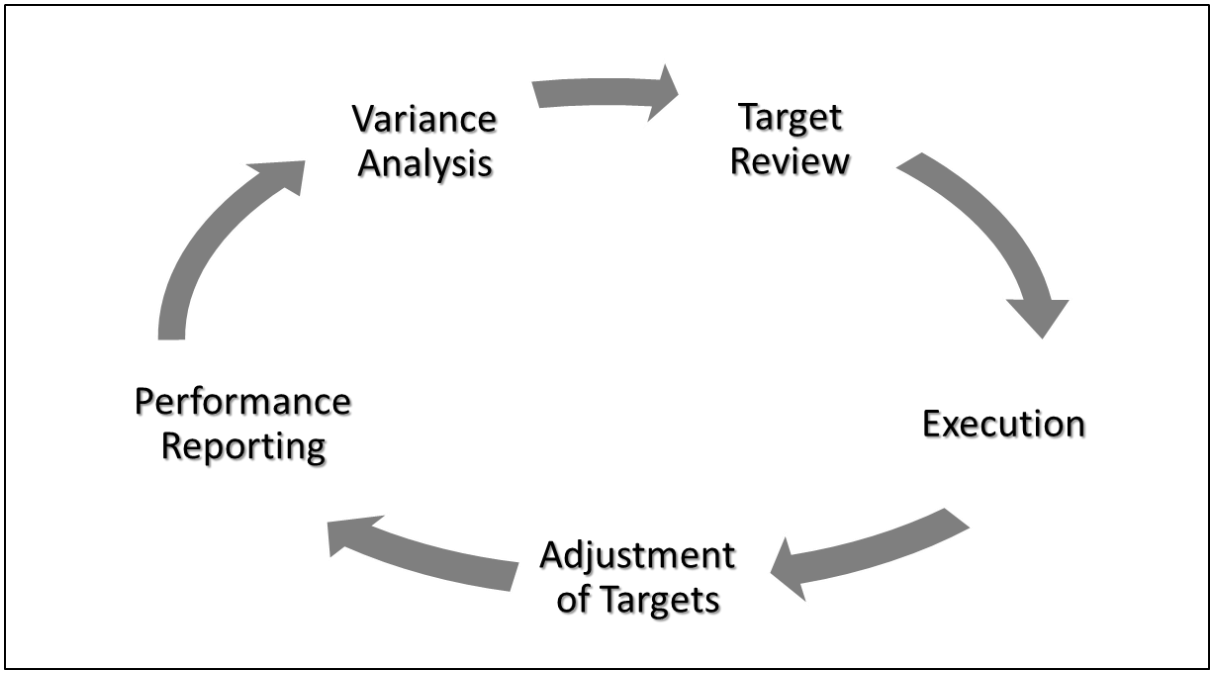
Because of the type of information that firms use to evaluate performance, internal reports have an important role of providing information to this process. Although some objective measures are used, firms also commonly use subjectivity to evaluate their managers. Therefore, this study considers internal reporting with performance evaluation purposes because the presentation formats that managers choose to report their performance might have impact on their evaluation. As an important mechanism of coordination, organizations use budgets to communicate their expected performance and to further evaluate it. I present in the next section some concepts related to budgeting, as well as some research evidence.

2.3 BUDGETING PROCESS

According to Chenhall (2006), management accounting (MA) refers to a set of practices, such as budgeting; management accounting systems (MAS) refers to a systematic use of MA practices to achieve some goal; and MCS is a broader term that encompasses MAS and other controls. Seen as a well-established way to operationalize organizations' goals, budgeting process plays a key role in MCS. Although criticism has been directed to budgeting, research indicates that organizations that use budgets continue to use them for control purposes and prefer to adapt budgets to overcome its problems, rather than abandoning them (Libby & Lindsay, 2010).

Typically, as an example of budgeting process (Figure 5), the beginning is the definition of sale targets by the marketing department. This initial step allows other departments to set their own targets, since it is known how much the company expects to sell, how much of goods has to be purchased, and so on. Companies might set budget targets in a bottom-up configuration, which is a more participative manner, or top-down, when top managers set the standards to the lower levels. During the year, when firms adopt flexible budgeting they may adjust their targets according to the environmental changes. Before starting another year, managers elaborate and present internal reports of firm performance to their superiors, and then top management will review the targets to the next year. Thereby, current performance information may assist the target review process.

Figure 5 – Budgeting process



Chenhall (2006) reviews contingency-based research of MCS and reports several aspects that have been studied about MCS. The characteristics of these studies related to budgeting includes dimensions such as participation, importance of meeting budgets, formality of communications and systems sophistication, links to reward systems, budgeting slack, and performance measures. Clearly, more than merely being a control mechanism, the budgeting process helps with the planning, execution, and control steps. For instance, according to Merchant and Van

Der Stede (2012), planning and budgeting serve four main purposes, namely, planning, which means decision making in advance; coordination, information sharing across the organization; top management oversight, preaction review; and, affect managers motivation because targets are linked to evaluation, and in turn to rewards.

The accounting literature indicates some concerns associated with budgeting (Hansen, Otley, & Van der Stede, 2003; Hartmann, 2000). These criticisms assert that budgets focus on cost reduction rather than value creation, impose a vertical structure, centralize decision making, emphasize mechanical practices (e.g., last-year-plus budget setting and across-the-board cuts), need a high degree of operational stability for a valid plan in a reasonable period of time, set assumptions that might become outdated, and serve as a platform where games regarding timing of revenues, expenditures, and investments are played.

However, recent budgeting research indicates how companies deal with some of these criticisms. For instance, regarding the unpredictability environment, firms appear to adjust their budget targets and adopt resources outside of the budget process when necessary (Libby & Lindsay, 2010). Also, budgets should not be treated as static, but rather as useful and relevant for planning and dialog functions, and as a tool that interacts with other components of firms' management system (Mucci, Frezatti, & Dieng, 2016). Furthermore, prior research indicates that budgets are used for communication of goals and strategy formation purposes (Hansen & Van der Stede, 2004). Specifically, firms with high internal interdependence use budgets for coordination, due their great communication needs; firms also use budgets for strategy formation when they are divisionalized, operate in competitive environments, and pursue a differentiation strategy (Hansen & Van der Stede, 2004). Finally, the problem related to the propensity to create budget slack is seen for managers as a way to protect firm against uncertainty (Frezatti, Beck, & Silva, 2013). Altogether, these results suggest that firms supposed to be more susceptible to the budgeting problems tend to use them as a way to overcome these problems.

Budget targets have a central role in the budgeting process because firms use these targets to quantify the performance levels they intend to achieve. Typically, superiors assign performance levels in terms of firm performance, unit performance, or individuals' performance. Once superiors assign these performance levels, they will be able to execute the assessment of the achieved performance on each level of the organization. Thus, the achieved performance serves as information to reward and to adjust next performance targets.

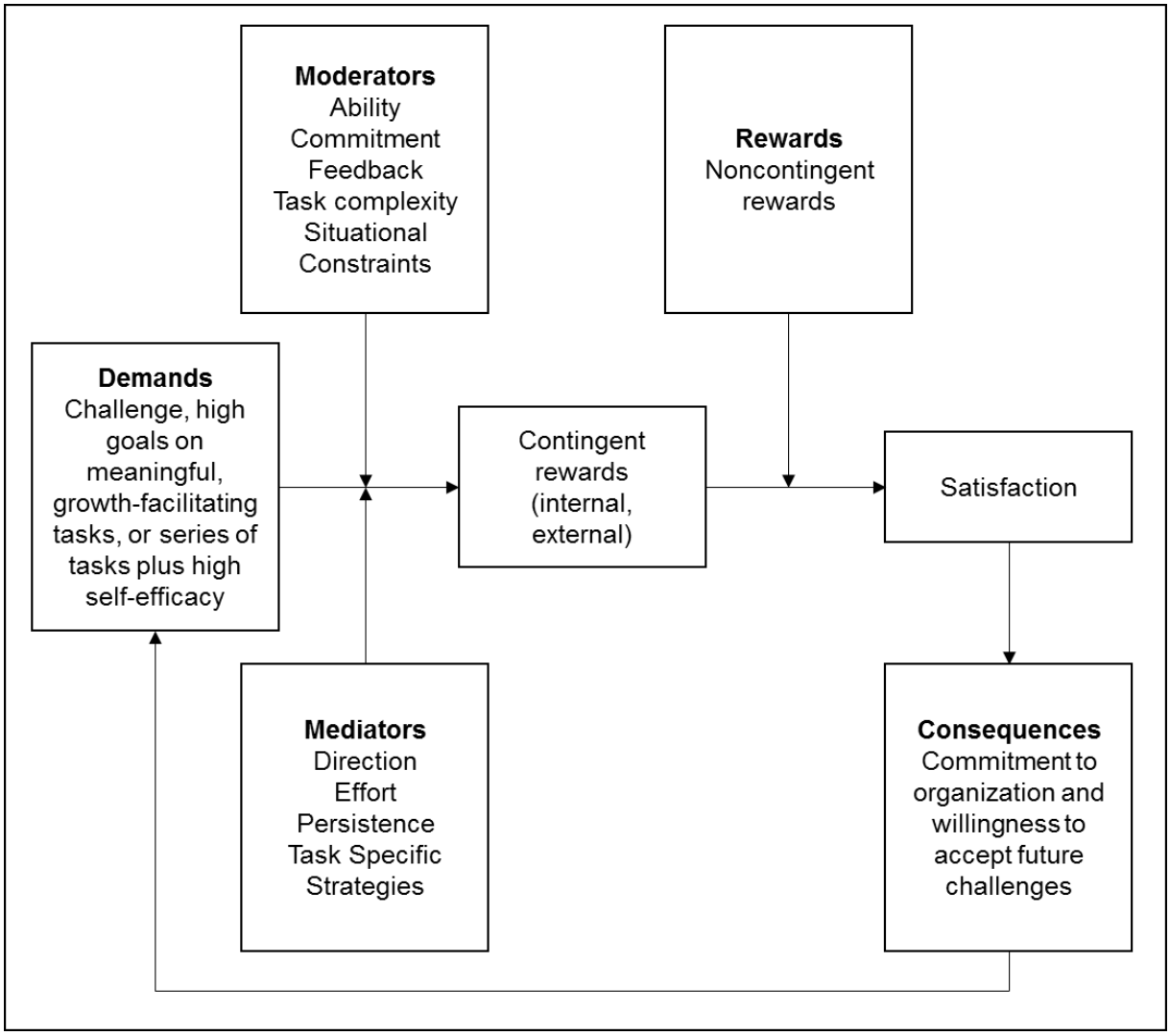
2.4 TARGET SETTING

Regarding budget targets, previous accounting studies analyze compensation tied to target achievement, budgetary slack, noise in budget targets, difficulty and timing of targets, targets for performance evaluation, target commitment, and individuals alignment with organizational goals (Covaleski, Evans, Luft, & Shields, 2006). Targets take part in the budgeting as written plans. According to Merchant and Van Der Stede (2012), targets arise during the budgeting process, being typically financial in nature, and match a responsibility center structure. For instance, targets for a profit center are set in terms of controllable revenues and expenses in combination for a specific manager.

According to the goal setting theory high-performance cycle, targets affect performance through four mechanisms (see the mediators on Figure 6) (Latham, 2012; Locke & Latham, 2002; Locke, Shaw, Saari, & Latham, 1981). First, they have a directive function to relevant activities; second, they have an energizing function, as higher goals lead to greater efforts; third, targets affect persistence; and, finally, targets affect action leading to arousal, discovery and task strategies. When individuals reach their highest ability and commitment levels, goal setting theory indicates that difficult and specific targets (rather than asking people to do their best and setting unclear targets) lead to higher performance (Latham, 2003).

Furthermore, literature on goal setting provides several examples for firms about how to set targets. For instance, goals should be few in number because they “may increase a person’s stress, especially if they are challenging and there are 37 goals rather than a reasonable number, such as 3 to 7” (Latham & Locke, 2006). In case of difficult tasks, learning targets allow the development of strategies and skills necessary for goal attainment. In other words, while the simple focus on reaching a performance outcome of a new and difficult task can lead people to a tunnel vision, a focus on learning goals will enable individuals to acquire the knowledge to execute the task (Locke & Latham, 2006). In addition, in the case of environmental uncertainty, subgoals or proximal goals can be set in addition to the distal goals. While distal goals are considered the ideal level of performance, proximal goals can be seen as intermediate steps to a distal target (Donovan & Williams, 2003).

Figure 6 – The high-performance cycle



Source: Latham (2012).

Along with targets and the four mechanisms, goal-setting theory also proposes that some variables, such as commitment, feedback, self-efficacy, and situational constraints, will moderate the relationship between targets and performance. Empirical studies have provided evidence regarding these moderators (Becker, 1978; Brobst & Ward, 2002; Deci & Ryan, 2000; Elliot & Harackiewicz, 1994; Erez, 1977; Erez & Arad, 1986; Erez & Kanfer, 1983; Ivancevich, 1982; Latham & Saari, 1979; Li & Butler, 2004; Sholihin, Pike, Mangena, & Li, 2011; Stansfield & Longenecker, 2006).

Finally, it is necessary to consider the structure of the organization to align targets to compensation, and Locke (2004) indicates four different methods, as well as its advantages and

disadvantages. In the first one, stretch targets with bonuses for success, individuals receive a substantial bonus if they reach their targets. This method promotes high motivation, but also short-term thinking, in which employees could fake its results or decrease the quality of their outputs to reach their bonus. The second method is called as multiple target levels with multiple bonus levels. It reduces employees' temptation of short-term thinking, but can be less motivating. The third method is a linear system. In this method, there is no loss for getting close and no upper limit, but there is less pressure for the employees to stretch. Finally, the fourth method proposes motivation by goals but payment for performance. In this case, employees receive specific and challenging targets and managers make the decision about the compensation after knowing the context in which the target was pursued. Managers take into account factors such as how much was achieved regardless of what the targets were, how difficult targets really were, and market conditions, among others. This method has the advantage of being flexible, but it is subjective and requires the managers to be knowledgeable about the full context.

Some studies have focused on target setting in the context of organizations. For example, there is evidence reporting that organizations frequently set easy targets due to reasons like improved corporate reporting, resource planning, control, and motivation (Merchant & Manzoni, 1989). In particular, this result has motivated studies on target difficulty because the target setting literature indicates that budget targets should be achievable less than half of the time. Murphy (2001) argues that performance standards generate incentives to participants to influence the standard setting process and investigates the use of external versus internal standards. His results show that internally determined standards suffer management influence, while external standards do not; furthermore, firms prefer to choose external standards when prior performance is a noisy estimate for future performance.

Ittner and Larcker (2001) claimed that more research should pay attention to the association of performance consequences with different target setting practices. As an example of studies partially following their advice, Webb et al. (2010) found a positive association between target difficulty and performance. Additionally, they found that employees with worse prior performance were more likely to engage in management impression when they reached their targets and were more likely to select less challenging targets.

Presslee, Vance, and Webb (2013) also found a positive relationship between target difficulty and performance. Their results show that employees eligible for cash rewards selected more

challenging targets and that employees eligible for tangible rewards reported higher initial target commitment. In turn, Arnold and Artz (2015) found weak evidence of relationship between target difficulty and performance, but only when target flexibility is not taken into account. They show evidence that more difficult targets in the beginning of the period are positively associated with higher target flexibility and likelihood of adjustments over the period. Thereby, even if some studies do not confirm and other confirm the relationship between targets and performance, doubtless firms use targets as a motivational tool.

Other studies on target setting analyze issues regarding business units and how firms set targets. Anderson, Dekker, and Sedatole (2010), for instance, examine the effects of the introduction of a bonus plan that rewards managers for meeting participative set goals on performance and goals. They argue that slack is common in settings of participative target setting in which there are interactions between superiors and their subordinates who will be evaluated against these targets. In a setting in which supervisors have discretion in the target setting process, Bol, Keune, Matsumura, and Shin (2010) show evidence that supervisors set easier targets to stores facing higher levels of risk and to stores whose managers have relatively higher hierarchical status. Their results suggest that supervisors use their discretion to manage compensation risk and fairness concerns. Finally, regarding information sources for target setting, Dekker, Groot, and Schoute (2012) investigated conditions under which firms set more specific targets and rely on different information sources. They found that these situations are related when considering environmental dynamism, task uncertainty, and incentive intensity. Furthermore, they report that firms use past performance and future planning information more intensively than benchmarking information, and that different information sources are typically used in combination rather than as substitutes for each other.

Different sources of information can be used for target review (Suave, Lunkes, Petri, & Rosa, 2016). Because past information is easy and low-cost to obtain, managers can first look at past targets and past performance information. Local and national indicators are another example of easy and low-cost information that managers can study to review next targets. Finally, managers can also work with industry indicators and statistics. In the next section, I discuss about a specific method for target review in which the main source is past performance, this method is known as ratchet principle. Also related to the target setting process, I present some studies about budget slack.

2.5 BUDGET SLACK AND TARGET RATCHETING

In a standard reward system, two problems may emerge (Weitzman, 1980). The first one is the static problem, in which subordinates try to negotiate easier targets with their superiors; lower in terms of revenues and higher in terms of costs or expenses. In turn, the second problem is the dynamic one, in which firms tend to use present performance to determine future targets. This tendency is also called as ratchet principle, when “current performance acts like a notched gear wheel in fixing the point of departure for next period's target” (Weitzman, 1980, p. 303). This study focuses on both problems, in the first problem because internal reports for target setting or target revision are a step for target negotiation, and the second problem is due the use of past performance information in these internal reports.

The use of internal reports to negotiate better targets might be considered part of the static problem. In the budgeting process, there is a great deal of negotiation and exchange of information until managers and their superiors reach similar targets (Lukka, 1988). Accordingly, managers can use internal reports as source of information to build some slack. For instance, profit center managers have greater familiarity with local activities and more information about the operating environment than the top management. This asymmetry of information permits that profit center managers build budget slack by misrepresenting or withholding some of their private information to their superiors (Yuen, 2004). Although some results give little support for the view that high participation and high budget emphasis lead to a greater slack (Dunk, 1993), the slack can be attributable to individuals’ risk preferences and be mitigated by social pressure (Young, 1985).

A previous study shows that business unit (BU) controllers will more likely create budget slack when engaging in management activities (instead of reporting to the headquarters) and when they feel more pressure from their BU managers (Hartmann & Maas, 2010). If managers have discretion for choosing how to report their performance, when they decide to show some results that make their performance looks more favorable they can be building slack. Although some studies indicate slack as a dysfunctional behavior (Junqueira, Oyadomari, & Moraes, 2010), others suggest situations in which it could be desirable. For instance, companies that have a differentiation strategy and emphasize innovation undergo less rigid budget controls, which are associated with more slack and flexibility to respond to changes in the environment (Van Der

Stede, 2000). This indicates that budget slack may not be a problem and some companies accept it. For example, Davila and Wouters (2005) show that slack can induce appropriate behavior for managers that are responsible for pursuing multiple goals beyond achieving cost budgets. In addition, Merchant and Manzoni (1989) report that firms negotiate highly achievable budget targets to increase expected bonuses and operating flexibility (profit center managers level); and increase predictability of corporate earnings and reduce the need for control analyses/intervention (top management level).

Regarding the dynamic problem, managers can also create slack when the future targets are based on present performance. A principal and an agent establish a contract when they begin a relationship, and this contract establishment may indicate the future existence of target ratcheting. For example, a business owner hires a manager and they agree with terms such as the expected conduct for both sides, performance evaluation, compensation, among others. At this stage, the principal has no information about the agent's potential performance and offers a first period incentive scheme. The opportunity for target ratcheting occurs when the principal does not commit by not observing the agent's current performance to review next target. If the principal does observe agent's performance in the first period, he/she may ratchet next period targets using the information produced for target setting on internal reports.

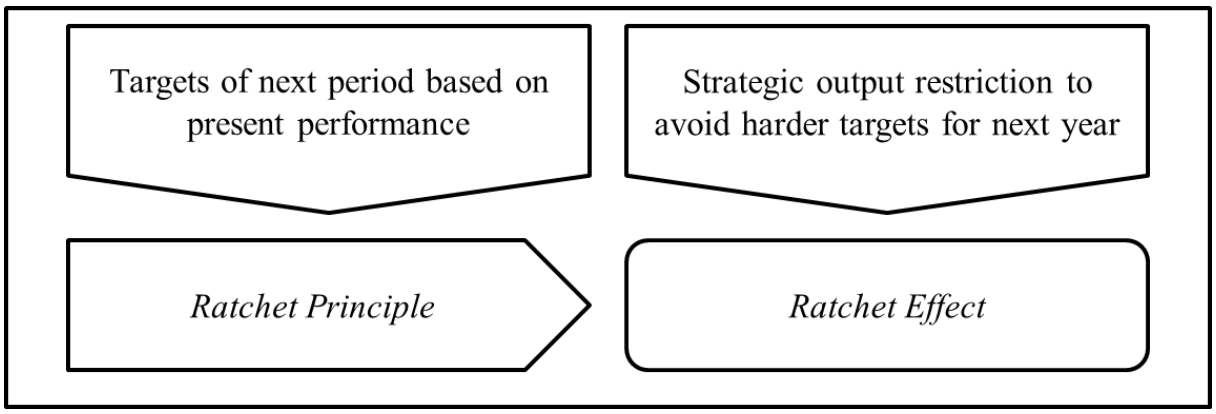
When companies use the ratchet principle, part or the entire target over fulfillment in current period will assist as source of information to increase targets of the next period. Supposing that a manager achieves a higher or lower performance than the performance defined as his/her target, the target for the next period will take into account this difference. Notwithstanding, evidence shows asymmetric updates, in which managers who do not reach their targets will not have their future targets decreased at the same extent as managers who reached will have their future targets increased (Aranda, Arellano, & Davila, 2014).

As pointed out by Latham and Locke (2006), target setting is first and foremost a discrepancy-creating process. Evidence from research on target review in sports (Donovan & Williams, 2003; Ilies & Judge, 2005; Phillips, Hollenbeck, & Ilgen, 1996; Tolli & Schmidt, 2008; Williams, Donovan, & Dodge, 2000), either self- or externally-set targets, indicates that goal to performance discrepancies are motivational forces that lead individuals to make adjustments on their targets or their efforts to reduce the difference between target and actual performance. Furthermore, there is evidence suggesting that organizations use past performance as a way to update their targets (Indjejikian, Matějka, Merchant, & Van der Stede, 2014), and conditions

such as low task uncertainty, following from the superior possessing task knowledge are associated with the use of past performance to update targets (Dekker et al., 2012). As past performance information is collected for purposes other than target setting, such as performance measurement of employees or units, another advantage regarding the use of past performance is the cost to measure this information (Murphy, 2001).

A problem frequently related to the ratchet principle is the opportunity that individuals whose targets are ratcheted have to restrict their output in order to avoid harder targets for the future. This issue, known as ratchet effect (Figure 7), has motivated studies concerning internal and external contracts organizations may hold. The external context of contracts encompasses firms that negotiate with government, for instance, in which the government has to use short term contracts and will decide to commit or not to take into account information about firms' performance of present contracts in future contracts (Faure-Grimaud & Reiche, 2006; Laffont & Tirole, 1993; Rey & Salanié, 1996). In this context, with lack of commitment, one example of ratchet effect emerges when a firm produces at a low cost and infer that an even lower cost will be harder to achieve in a next contract. Thereby, noncommitment is a crucial characteristic for ratchet effect (Freixas, Guesnerie, & Tirole, 1985) and regards to revision of targets. When the principal commits to not revision targets, there will be no reason for agents underperform in order to hide their actual potential. In this way, when there is noncommitment by a principal, assuming that agents have no information if the principal will increase next targets, agents might underperform in order to avoid harder schedules for future.

Figure 7 – Ratchet effect scheme



The existence of ratchet effect in internal contracts is related to a superior that uses subordinate's current performance information to revision its future target in piece rate schemes. This scenario of superiors ratcheting subordinates' targets is the focus of my study. When firms have no information about its workers' performance ex ante, they might use information early in the relationship to use it as performance standards for the future, however, workers might anticipate this behavior and reduce their output in early periods to avoid harder targets in future periods (Kanemoto & MacLeod, 1992). Even with this problem, there are contexts in which information acquired from ratcheting is valuable to offset its costs (Brown, Miller, & Thornton, 1994). Instances that ratcheting is valuable may include the definition of targets to a recently hired employee or the presence of information asymmetry.

However, most empirical results have shown ratchet effect as detrimental for firm performance. For example, instead of sharing his ideas with firms to increase productivity, workers restrict their outputs and keep good ideas to themselves when firms ratchet their targets (Carmichael & MacLeod, 2000). Findings from Leone and Rock (2002) indicate that firms ratchet their budgets asymmetrically and, consistent with ratchet effect, managers take income-decreasing discretionary accruals to offset positive transitory earnings if they perceive budgets will be ratcheted. There is also evidence showing that managers with good performance in the first three quarters reduce their efforts in the fourth quarter, and that those managers who reduce their activities in the last quarter increase their likelihood of reaching their next-year target (Bouwens & Kroos, 2011).

Assuming that ratchet effect is unfavorable for firm performance and that the literature describes ratcheting as a punishment for employees with good performance (Murphy, 2001), research efforts that attempts to mitigate this incentive problem is needed. One possible way to reduce ratchet effect is reducing the use of the ratchet principle. According to Indjejikian, Matějka, and Schloetzer (2014), firms use past performance in a limited extent for well performing managers in order to enable them to exceed their targets. A manager who reach his/her targets will less likely incur in output restriction. Besides finding that bonus targets ratchet asymmetrically, Kim and Shin (2017) report a positive serial correlation of performance relative to annual bonus targets. This indicates that a performance of a specific year is not dependent on the performance of its previous years, which means that some forms of contractual commitments might be used to mitigate the ratchet effect.

Results from Bol and Lill (2015) indicate that organizations have implicit agreements (no formalization) in which principals do not fully incorporate employees' past performance information for target review. They report that when there is trust between agent and principal, and information to determine whether present performance-target deviation is resulted from superior effort or transitory gains, the principal agrees not to review targets upward. In turn, agents accept these targets by not restricting output from permanent gains that are result of structural changes. They also found evidence of output restriction only for managers with no implicit contracts, that is, ratchet effect may occur when agents and principal do not use the referred implicit agreement.

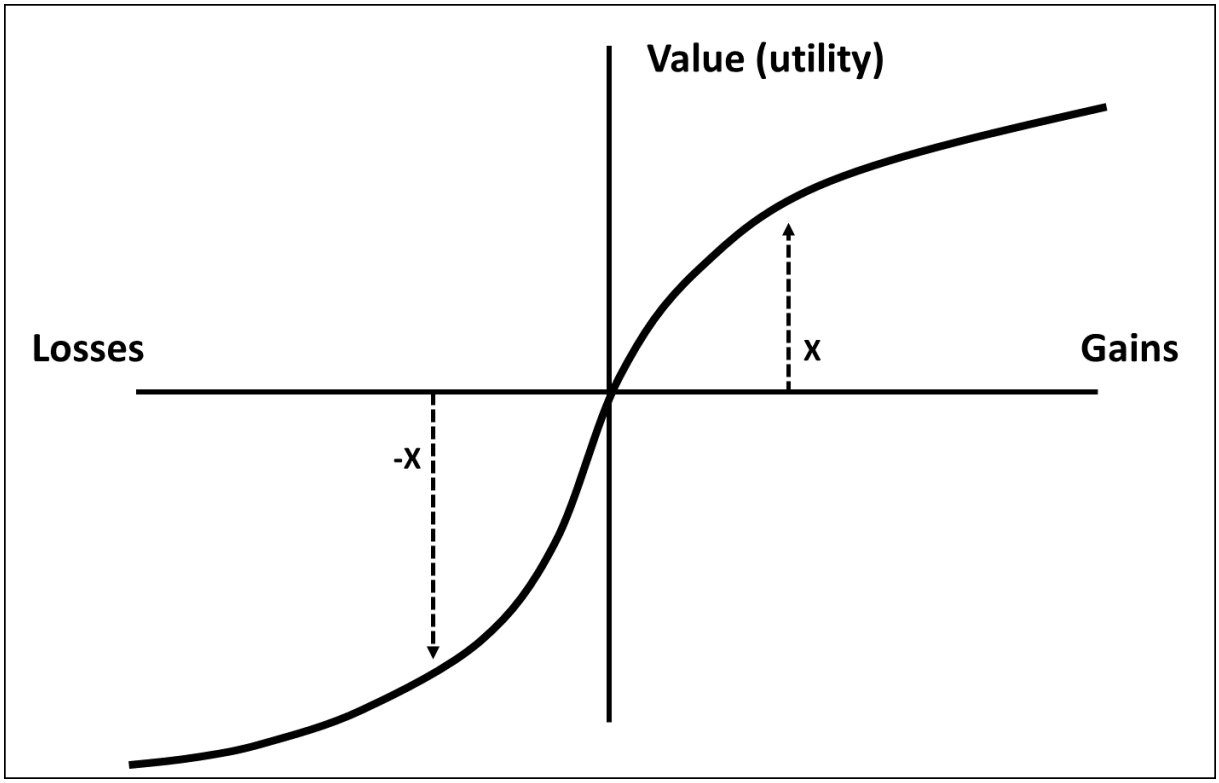
These results suggest that ratchet is attenuated in situations of trust and availability of information about permanent or transitory gains, and that these situations attenuate the ratchet effect. I propose that the presentation format chosen by subordinates during the target review process is another mechanism that could decrease the ratchet extent. Considering that target review process of budgeting and the target ratcheting encompass the presentation of performance information, I next present a theory on how people organize information about gains and losses. In this study, I refer performance-target deviations as gains and losses. When a positive deviation in variance analysis is observed, I label it as a gain and or as a loss otherwise.

2.6 MENTAL ACCOUNTING

Mental accounting proposes that individuals make mental coding of combinations of gains and losses (Thaler, 1985, 1999). Mental accounting is in essence an alternative to the deterministic economic theory of consumer choice, since it considers issues such as consumers' attention to sunk costs. One of the key features of this behaviorally based theory of consumer choice is that it replaces the utility function with the value function from prospect theory (Figure 8). The shape of the function has three characteristics. First, the value function is defined over perceived gains and losses to some reference point and reflects that people respond more to relative than absolute changes. Second, being S-shaped, the value function is assumed to be concave for gains and convex for losses. Third, the function is steeper for losses than for gains, reflecting loss aversion. For instance, an outcome of $100 will have a utility in the gain domain but a

greater disutility whether in loss domain. While for prospect theory individuals consider the evaluation of single outcomes, mental accounting is concerned on how individuals combine or separate gains and losses into different mental accounts (Bonner et al., 2014), and it is in line with my setting of internal reporting of performance-target deviations. The decision of combining or separating outcomes matters since the superior's utility of the subordinate performance will differ based on whether performance-target deviations are first separated and then evaluated by the superior or combined and then evaluated by the superior.

Figure 8 – Value function from Prospect Theory



Source: Kahneman and Tversky (1979, p. 279).

According to mental accounting (Thaler, 1985, 1999), there are two possibilities to code joint outcomes: These outcomes will be either aggregated when jointly valued or disaggregated if separately valued. There are four combinations for coding unmixed outcomes, such as only gains, and mixed outcomes, with gains and losses. First, for multiple gains, mental accounting proposes that disaggregation will be preferred because individuals perceive a greater utility in showing them separately. This is due to the concavity of the value function in the gain domain.

Second, in case of multiple losses, aggregation is preferred. As the value function is convex and steeper in the loss domain, the disutility of presenting losses separately is greater than presenting all of them combined.

Turning to the mixed outcomes, when there are gains and losses, if the net result is a gain it is called mixed gain, and if the net result is a loss it is called mixed loss. This study focuses on mixed outcomes because these scenarios are present in organization results and they might provide some tension between managers' preferences for aggregation and disaggregation. The third assumption of mental accounting is that individuals prefer aggregate mixed gains. This is referred to as cancellation. As the value function is steeper in the loss domain and the net outcome is a gain, it is possible that presenting outcomes separately could result in disutility, while presenting them jointly will result in greater utility. Fourth, in case of a mixed loss, mental accounting suggests that disaggregation will likely be more preferred when there is a great loss and a small gain; this is referred to as the silver lining principle (although small, the gain is called silver lining and should be disclosed). In turn, individuals will prefer aggregate when loss and gain become similar in size. This is because a disaggregated gain will be less valued than when is aggregated to reduce a loss, that is, when is presented in the loss domain of the function.

Studies have analyzed managers' preferences for aggregation and disaggregation. For example, Riedl and Srinivasan (2010) examine whether managers aggregate or disaggregate special items for informational or opportunistic behaviors. Mcvay (2006) also look at special items disclosure, specifically, how managers use it as an earnings management tool. Schrand and Walther (2000) show that managers are more likely to announce separately a prior-period gain than a loss to use it as a benchmark. Allee and Deangelis (2015) look at performance components aggregation or disaggregation on managers narratives.

Mental accounting has been used in prior research in accounting to determine whether integration or segregation produces greater utility. Bonner et al. (2014) argue that managers have flexibility regarding aggregation levels in income statements due to the lack of guidelines. Their results indicate that when the performance of the financial instruments results in a small or large net gain, managers prefer aggregate to report as a net gain. When the result is a net loss, managers' preferences depend on the magnitude of the loss. For a net loss comprised of large loss and a small gain, managers prefer disaggregation. For a net loss comprised of a large loss and a large gain, managers equally prefer aggregation and disaggregation. Although these

results indicate that managers follow mental accounting predictions, results of their third experiment show that managers under pressure to disclose transparently prefer to disaggregate. In this transparency pressure condition, they expect a greater preference for disaggregation because investors view disaggregated information as more transparent. Different from Bonner et al., I test the effects of internal performance reporting for target revision and performance evaluation on the predictions of mental accounting.

2.7 INTERNAL REPORTING

Managers with local information use managerial reports to communicate decisions related to production, marketing, and capital budgeting to their superiors (Evans, Hannan, Krishnan, & Moser, 2001). In turn, performance reports are used to evaluate managers or firm performance and they essentially highlight differences between expected and actual outcomes for revenues, costs, expenses, profits, among others. Performance reports literature studies some issues such as the role of these reports (Wardell & Weisenfeld, 1991), information that decision makers expect being presented in these reports (Shields, 1984), and how much of this information they expect (Shields, 1980). Guilding, Lamminmaki, and Drury (1998) recognize the need of presenting and distinguishing controllable and non-controllable costs in performance reports. Their comparative study results indicate that some companies adopt the practice of simply presenting reports without distinguishing controllable and non-controllable costs.

Guidelines of practitioner literature that indicates good practices for internal performance reporting (Starovic, 2003) provide examples of how these practices remain unclear. On one hand, it indicates as good practices that managers should show what is relevant and highlight the company overall position in their reports. On the other hand, it recognizes that many managers may feel tempted to increase the amount of information they provide to their superiors for fear of omitting relevant information, or even worse, they might hide real results to their superiors when feeling pressure to reach their targets. Different from financial reporting, the internal reporting literature indicates that internal reports are much more flexible and managers have more discretion over how much and what information they report.

The issue of aggregate or disaggregate information in internal reporting has already been studied by Gomez-Ruiz (2015), but in a setting of cooperative behavior. She found that more detailed information among groups enable a negative comparison process within teams. Aggregation and disaggregation as formats for organizing information are also studied in other contexts. Regarding the literature on performance measures, studies indicate that aggregation of performance measures is more prevalent and best for organizations with greater decentralization (Bushman, Indjejikian, & Smith, 1995; Feltham, Hofmann, & Indjejikian, 2016). Research on aggregation of budgeting proposals suggests that superiors accept more aggregated proposals than disaggregated, but less likely accept high proposals; anticipating this behavior, subordinates submit lower aggregated proposals (Young, Schwartz, Spires, & Wallin, 2012). Finally, Chen, Rennekamp, and Zhou (2015) reports that disaggregated forecasts are more accurate in absence of performance-based incentives, however, disaggregated forecasts tend to be more optimistic in the presence of performance-based incentives. Considering aggregated and disaggregated formats, even when presented in different sequences (Lau, 2014), I argue that the choice of one method for presenting performance-target deviations have impact on superiors subsequent decisions in the context of target ratcheting and performance evaluation.

One of the possible consequences of more discretion for choosing aggregated or disaggregated formats when producing internal reports is that managers might use information that make their performance seems better than actually is. Specifically, a manager with an actual poor performance can impress their superior with exaggerated records about their employees' accomplishments (Cunha, 2013). Evidence from target setting literature indicates that some employees proceed with management impression, and sometimes they do it to signal competence to their managers (Frink & Ferris, 1998). There are also results indicating that lower performing employees have stronger management impression intentions when reaching their targets, and that employees with stronger management impression intentions choose less challenging targets (Webb et al., 2010). While the results of management impression in target setting literature indicate a willingness to show good performance, evidence of ratchet effect literature shows when individuals act to achieve a performance below their actual potential. I investigate if managers intend to show their performance-target deviation in a less favorable format by choosing aggregate or disaggregate.

I consider two opposing arguments for my expectations regarding internal reporting for target ratcheting, in doing so I present these expectations as research questions. The first argument

follows some research evidence showing that managers might not follow mental accounting predictions, that is, they prefer to present their performance in such a format that makes this performance looks less favorable to avoid harder targets for future. For instance, Bonner et al. (2014) report that the effects of mental accounting may vary in some settings. They suggest that disaggregation could increase transparency because it reveals details of transactions. Their results indicate that managers feeling high pressure to disclose transparently have higher preference for disaggregation than mental accounting predictions. As other examples of arguments indicating that managers might prefer to present their performance in a less favorable format, I also consider the evidence that target ratcheting is referred to as a punishment of good performance (Murphy, 2001), and that managers use biased internal reports (Jollineau, Vance, & Webb, 2012). Moreover, managers could present their performance in a less favorable format as a way to create some slack because they argue that they could not reach some target. Slack literature reports that different types of pressure may induce managers to create slack (Davis, DeZoort, & Kopp, 2006) and that slack is higher in environments characterized by greater information asymmetry (Indjejikian & Matějka, 2006).

The second argument for target ratcheting follows evidence showing that managers would follow mental accounting predictions, that is, they prefer to present their performance in such a format that makes this performance looks more favorable. The first evidence is from Bonner et al. (2014). Although they show that managers feeling high pressure disaggregate more than mental accounting suggests, their results are not significant when they considered the overall mean of transparency conditions. Furthermore, I also take into account the findings that target setting can serve an impression-management purpose for managers (Frink & Ferris, 1998; Webb et al., 2010). These results may indicate that managers can try to impress their superiors by showing a good performance when they present their reports for target revision purposes. In addition, if they expect easier targets by showing a good performance, this is in line with findings that high-profitability firms commonly decrease targets if managers fail to attain them but rarely increase targets if they reach them (Indjejikian, Matějka, Merchant, et al., 2014).

I acknowledge that the opposing presented reasons may drive managers to follow mental accounting predictions or not. Relaying on the levels of reasoning framework (Zimbelman & Waller, 1999), if managers follow mental accounting they might report to manage impressions, otherwise, to avoid harder targets for future. Because of that, I present my expectations as research questions. Thereby, when managers have to present performance-target deviation

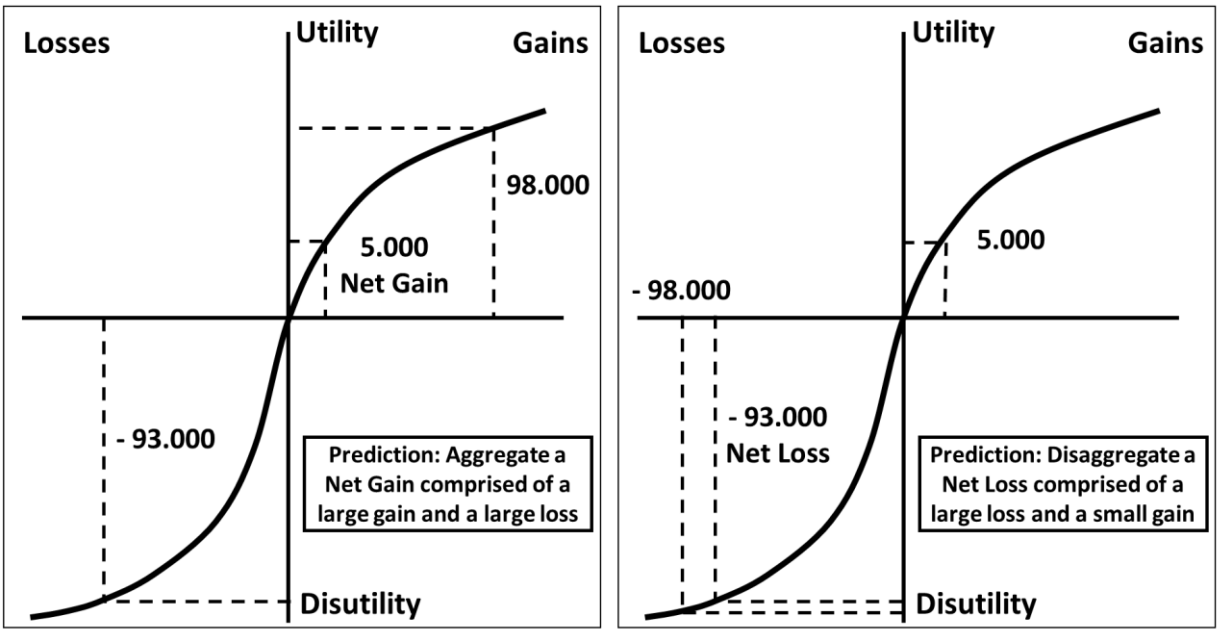
reports with scenarios of mixed gains and mixed losses for target ratcheting, my research questions (RQ) are as follows:

> ***RQ1a:*** *Will managers prefer aggregate or disaggregate a net loss when presenting their performance-target deviation for target revision purposes?*
>
> ***RQ1b:*** *Will managers prefer aggregate or disaggregate a net gain when presenting their performance-target deviation for target revision purposes?*

When reporting for performance evaluation (Figure 9), following mental accounting predictions, I predict that in the case of mixed outcomes managers will prefer to present their performance in a way to increase the utility of their performance-target deviations. Specifically, when a performance-target deviation comprised of a small gain and a large loss results in a net loss, managers will prefer to disaggregate. A disaggregated net loss will increase the perceived utility of this result because it shows the "silver lining". In turn, when a performance-target deviation comprised of a large gain and a large loss results in a net gain, managers will prefer to aggregate. Aggregating a net gain comprised of gains and losses will increase the utility of this outcome. Also considering the levels of reasoning, managers anticipate that their superiors will use their reports to evaluate their performance. Then, managers prefer to present their performance in a format that make it looks more favorable. Therefore, I state my predictions:

> ***H1a:*** *Managers will prefer disaggregate a net loss when presenting their performance-target deviation for evaluation purposes.*
>
> ***H1b:*** *Managers will prefer aggregate a net gain when presenting their performance-target deviation for evaluation purposes.*

Figure 9 – Predictions of managers' preferences for report formats under performance evaluation conditions



3 METHOD

One of the major challenges in managerial accounting research is to obtain data that allow researchers solving relevant problems. Among the main reasons related to this problem is the degree of confidentiality inherent in this type of information, which companies are not always willing to provide. In addition, the shortage of time may also lead companies to prohibit employees to fill in questionnaires or to organize confidential information, such as goals, strategic planning or budgets and make it available to researchers. Therefore, an alternative is the use of experiments. This method is consolidated in the medical and psychological fields, for example, to check the efficiency of drugs or appropriate treatment methods.

Financial accounting research employs experiments for assessing and testing issues related to accounting policies (Kachelmeier & King, 2002). Because archival research is limited to data that already exist, the use of experiments contributes for evaluating accounting policies before the enforcement of these policies and to certify the optimal alternatives in terms of information to be disclosed for decision makers. According to Kachelmeier and King (2002), the main research perspectives on financial accounting are behavioral judgment research and decision making (experiments using questionnaires to capture participants' judgments), and economic experiments (regarding decisions of transactions with significant monetary consequences). Elliott, Jackson, Peecher, and White (2014) is an example of financial accounting research capturing participants' judgements. The authors found that investors who are exposed to corporate social responsibility (CSR) performance information, but do not explicitly evaluate such performance, tend to attribute higher value to the company under analysis if it presents CSR with positive performance and vice versa.

Regarding management accounting research, Sprinkle and Williamson (2006) suggest that the information produced by management accounting systems basically serves two important organizational goals, which are to provide information for planning and decision making and to motivate individuals. They also point out that despite the importance of research in managerial accounting to contribute to these two main roles, traditional research methods, such as the use of archival data or field research, are difficult to use and have limitations. As limitations, they indicate the difficulty of obtaining data, contamination of the independent variables, and inaccuracy in the measurement of independent and dependent variables.

Together, these problems threaten the internal validity, the construct, and the statistical conclusions. Moreover, Ittner and Larcker (2001) mention the challenge of management accounting research in dealing with endogeneity and the difficulty of finding instrumental variables, which would be the solution to this econometric problem.

Sprinkle and Williamson (2006) argue that the use of experiments can help to overcome some of the problems related to traditional methods, because researchers can create a research scenario and generate data with the manipulation and measurement of variables. The manipulation of independent variables and randomization of participants allow to isolate effects of variables that would be contaminated in their natural environment. I chose to use the experimental method to isolate the effects of internal reporting for ratcheting and performance evaluation on mental accounting from possible hidden organizational variables in a real scenario. Research results from a model that neglect important variables might become invalid.

Finally, Smith (2003) summarizes some issues regarding internal and external validity of the construct. The construct validity refers to the extent to which abstract constructs are successfully operationalized. Using theory to support, researchers must look for observable and construct-related variables, determine the extent to which such variables are reliable measures, and determine the extent to which such measures will provide predictable results. Regarding internal validity, all materials need to be identical, with the exception of intentional difference between treatments; randomization of participants; avoid contact between participants to prevent damaging for the independence of responses; and, demotivation, for example, providing feedback to only a few participants. Lastly, the external validity is sometimes considered as Achilles heel of the experiments (Sprinkle & Williamson, 2006). Smith (2003) asserts that results should be generalizable to other populations or companies, environments or situations, and over time. However, generalizability may be weakened due to data limitations or sample problems.

Some cautions taken by this study help to increase internal validity. The first one, and the more important for experiments, is that participants were randomly assigned to each condition (Aguiar, 2017). The randomization seeks homogeneity of participants among the experimental conditions and gives effectiveness to the manipulations, in which the results of the main analysis are not changed due participants' demographical characteristics or backgrounds. The randomization also helps with unmeasured confound effects, such as target difficulty in the ratcheting condition, or the effects of reward type in evaluation condition. As well,

manipulation check questions identify participants that did not understand the manipulation. The use of participants that understood the manipulation warrants that the results are explained by the manipulations. Regarding the external validity, this study is an extension of Bonner et al. (2014) because tries to generalize its results to the context of internal reporting. Lastly, the use of participants with work experience also helps with the external validity.

3.1 EXPERIMENTAL TASK AND PARTICIPANTS

Participants judged two different presentation formats (aggregated and disaggregated) to report their performance-target deviations with the purpose of target revision or performance evaluation. Participants assumed a role as profit center managers that had to report their results for their superiors. The performance reports contain targets, actual results, and variances, which I call as performance-target deviations (See the images in the Appendix manipulation section). The disaggregated format reports detailed information regarding sales, expenses bound to these sales, and net profit. The aggregated format only reports the net profit. All participants could see both formats to evaluate them. Both aggregated and disaggregated reports demonstrate targets, actual performance, and the performance-target deviations. Participants were informed that the company have no guidelines regarding internal reporting and they would have discretion to choose the presentation format they want.

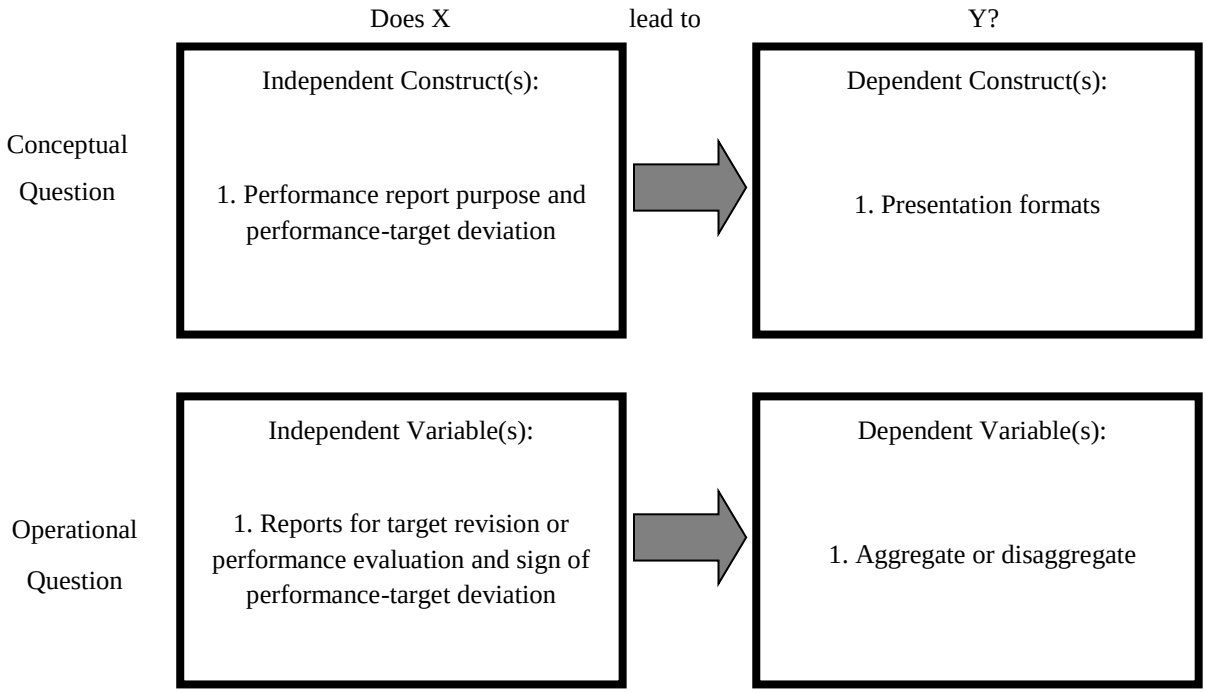
I recruited 123 participants from Amazon's Mechanical Turk (AMT). As AMT allows for custom participants screening, I restricted to participants by employee status as currently employed and with an approval rate greater than 75%. AMT provides requesters (researches) with online tasks for workers (participants). These tasks are referred to as Human Intelligence Tasks (HIT) and might include sophisticated tasks, such as those employed in behavioral research (Brandon, Long, Loraas, Mueller-Phillips, & Vansant, 2014). I used AMT because, as pointed by Brandon et al. (2014), the cost of obtaining data through this instrument is generally low, it gives discretion over the compensation, and the appropriateness and data quality is similar to samples obtained from more traditional sources (i.e., convenience and student samples).

The mean age of participants is 35 years old, 14 years of working experience, 6 years in the current job, and 35 percent are female. Before applying the questionnaire, I pre-tested it with colleagues, experienced practitioners, and the target sample (Van der Stede, Young, & Chen, 2005). The pre-test allowed improvements in instructions and manipulation checks. In accordance with previous studies using AMT participants (Rennekamp, 2012), I excluded 13 observations with repeated IP's that took the survey twice or participated in the pre-test. This is a necessary procedure because these repeated participants may had noticed the manipulation. I do not use sophisticated participants because this task tests a human behavior (Thaler, 1985) on coding outcomes, which makes AMT participants appropriate. Thereby, I follow the advice of recruiting sophisticated participants only when the research question requests (Libby, Bloomfield, & Nelson, 2002).

3.2 DESIGN AND INDEPENDENT VARIABLES

I employ a 2 × 2 between-subjects experimental design, adapted from Bonner et al. (2014), that manipulates the sign of performance-target deviations (losses or gains) and the reporting purpose (target revision or performance evaluation). I randomly assigned participants to each condition through the Qualtrics software, which I used to apply the questionnaire. In the first factor, I manipulate the outcomes in terms of gains and losses. When the performance-target variance is a net gain, sales and profits have favorable variances and the expenses an unfavorable variance; otherwise, when the performance-target variance is a net loss, sales and profits have unfavorable variances and the expenses a favorable variance. Mental accounting has predictions for four scenarios of mixed outcomes. This study uses a large gain and a large loss in the mixed gain condition, and a large loss and a small gain in the mixed loss condition. The values presented at the reports follow Bonner, Clor-Proell and Koonce (2014). In the second factor I manipulate the purpose of performance reporting, target revision or performance evaluation. I present Libby Boxes of my research in Figure 10.

Figure 10 – Libby Boxes



My setting is different from Bonner et al. (2014) in several ways. First, their study focuses on information from compound financial instruments performance designated to external reporting, while my research deals with unit's performance internal reporting. In addition, while they added transparency pressure to test whether it affected mental accounting, I test the effects of ratcheting in target reviews and performance evaluation on mental accounting, under positive or negative performance-target deviations. Lastly, because Bonner et al. designed their experiment with puttable and callable bonds, they run two experiments testing effects of amount and sign of performance in one factor, and presentation formats in another factor; transparency pressure was added in another experiment as a third factor. In my study, I designed internal reports options with aggregated and disaggregated results of a profit center, this enabled to run only one experiment, in which for the first factor I vary the sign of performance, and for the second factor, I vary the purpose of performance reporting.

3.3 MANIPULATION CHECK AND DEPENDENT MEASURES

Manipulation check included a question about the unit's performance. In a first set of questions, after reading the specific instructions, I asked participants about their understanding of the instructions. In the first question, I asked about their role in the study. The correct answer was "Make judgments about the performance report options", and as wrong answers, "Setting your superior's targets for the next period" and "Decide about your performance evaluation" alternatives. The second question was whether they had discretion in choosing the presentation formats, in which "Yes" was the correct answer. In the third question, depending on the condition, I asked whether the purpose was "To update my targets for the next year" or "To evaluate my performance of the current year". In this first set of questions, the questionnaire warned participants in case of wrong answers and indicated the correct ones to make sure that participants understood the task. After the task, as a manipulation check question, participants were asked whether their unit result was a profit or a loss.

As dependent measures, with a 101-point scale, I asked participants how desirable and how advantageous each presentation format option (aggregated or disaggregated) would be in terms of representing their performance to their superiors (0 - not desirable all / not advantageous at all; 100 - very desirable / very advantageous). I told participants that if they think that one format is better than the other, they should move the marker of the preferred format to a higher number than the other format. However, if they consider both formats equally preferable, they should put the markers for both formats near the same number. I positioned the slider markers in parallel, with one just below the other to facilitate the comparisons. I created a composite measure with the average response of these two questions to capture participants' preference about each format option for presenting their performance-target deviation[3]. For example, if a participant indicates that the aggregated format is 90 in the desirable scale and 80 in the advantageous scale, the aggregated dependent variable mean is 85. The same procedure was adopted to the disaggregated format.

[3] Pearson correlations of the questions about the desirability and advantageousness for aggregation preference = 0.84 and disaggregation = 0.78, $p < 0.01$.

3.4 EXPERIMENTAL PROCEDURES

Available on the internet, participants obtained access to the task through Amazon Mechanical Turk platform. Before entering in the task, participants could learn their compensation, which was $ 1.30. Besides participants reward, AMT charges requesters 40% of participants' reward for more than 10 assignments, plus other fees for restricting participants, which the total was $ 0.94 per participant. Thereby, I paid $ 2.24 per participant ($ 1.30 + $ 0.94). Participants were randomly assigned (through the software) to the net gain or net loss conditions, and to the target revision or performance evaluation reporting purposes[4]. After entering in the task, participants first read general instructions, which warned them that anonymity is guaranteed, and that the study is about decision-making in organizations.

Next, participants read the specific instructions, with information regarding their role as sales managers at the company, their performance-reporting task, their main role in the task, and internal reporting purposes. After reading instructions, participants were prompted to answer comprehension questions, that is, questions regarding their understanding of the instructions. When successfully completed these questions, participants could proceed to the reporting task. During the task, I recalled participants about the reason for what their superiors would use the reports, that both options for reporting their performance were acceptable, and mentioned about their performance (positive or negative). All participants could see both presentation formats. When the performance target deviation was positive, the numbers were presented in bold, and in red when negative. After seeing the presentation formats, participants judged how desirable and how advantageous they considered each option through a 101-point scale. Then, participants completed a post experimental question that checked their unit's performance; this was the manipulation check question. In addition, they answered some demographic questions. Finally, they received a random number to paste at AMT, as a way to prove they finish the survey. Then they were debriefed.

[4] Because this study uses a between-subjects approach, the software was programed to evenly distribute participants among conditions. Roughly 25% of participants are designated for each of four conditions.

4 RESULTS

4.1 MANIPULATION CHECK AND DESCRIPTIVE STATISTICS

After reading the specific instructions, I asked three comprehension questions to check participants' understanding of the instructions. The questions were about participants' goal in the study, their discretion to choose the performance report options, and the purpose of the performance report. When participants wrongly answered some of the above questions, they were warned that the selected option was a wrong answer and which option was the correct one. The inclusion of these questions is an attempt to make sure that participants can better understand the setting before proceeding to the task.

Regarding the manipulation check question, in the block right after the task, I asked participants whether their unit had a loss or a profit. Among 110 observations after the exclusion of repeated IP's, 18 (16%) participants failed the manipulation check. I removed participants who failed the manipulation check, resulting 92 usable responses. Even if I include these observations, the patterns of means and statistical inferences are the same. Participants that did not remember their unit's result might had paid attention only to the structure of the presentation formats, instead of paying attention to both the structure and the performance results. Coding outcomes according to the signal of performance is an important aspect of mental accounting theory, and because of that, I exclude participants that failed this manipulation check.

Table 1 – Participants' Education Level

Education Level	**Frequency**	**%**	**Cumulative %**
Less than high school degree	1	1.09	1.09
High-school degree	19	20.65	21.74
Bachelor's degree	58	63.04	84.78
Master's degree	14	15.22	100.00
Total	92	100.00	

In Table 1, I present the data regarding participants' education level. The majority of them have a bachelor's degree (63.04%). Moreover, 20.65% of participants completed the high school

degree and 15.22% have a master's degree. Only one participant has less than high school degree as the education level.

Table 2 describes participants' occupations. To capture participants' occupations, I used 20 different categories. Management occupations is the category that more participants (21.74%) are included. Other more representative occupations in the sample are those related to sales (16.3%), business and financial operations (13.04%), computer and mathematical (11.96%), and office and administrative support (6.52%). Considering participants with management, business, and administrative occupations, almost half of the participants have their jobs in areas that internal reporting is a common activity. I further add sales and related occupations in this group and compare the judgement of these participants with the others.

Table 2 – Participants' Current Job Occupations

Current Job Occupations	**Frequency**	**%**	**Cumulative %**
Arts, Design, Entertainment, Sports, and Media	3	3.26	3.26
Building and Grounds Cleaning and Maintenance	2	2.17	5.43
Business and Financial Operations	12	13.04	18.48
Community and Social Services	1	1.09	19.57
Computer and Mathematical	11	11.96	31.52
Education, Training, and Library	2	2.17	33.70
Food Preparation and Serving	2	2.17	35.87
Healthcare Practitioners and Technical	2	2.17	38.04
Healthcare Support	3	3.26	41.30
Installation, Maintenance, and Repair	1	1.09	42.39
Life, Physical, and Social Science	1	1.09	43.48
Management	20	21.74	65.22
Military Specific	1	1.09	66.30
Office and Administrative Support	6	6.52	72.83
Other	2	2.17	75.00
Personal Care and Service	3	3.26	78.26
Production	3	3.26	81.52
Protective Service	1	1.09	82.61
Sales and Related	15	16.30	98.91
Transportation and Material Moving	1	1.09	100.00
Total	92	100.00	

As dependent measures, I asked participants how advantageous and how desirable each of the aggregated and disaggregated formats were in terms of presenting their performance to their superiors. The composite measure for the dependent variable is the average of the two questions. One of the independent variables is the outcome (unit's performance). When the result is a net gain, the performance-target deviations are positive in sales and profit, and negative in expenses (the opposite for a net loss). The first descriptive statistic regarding the dependent variable by the outcome variable is presented in Table 3. Overall, results show that participants' preferences follow mental accounting predictions. Although not significant, for participants that their unit's result was a gain, their preference was to aggregate (mean of 61.15) rather than to disaggregate (59.09). On the other hand, when the result was a loss, clearly the participants' preference was disaggregation, with the mean of 60.05 almost twice the aggregation mean of 29.68.

Table 3 – Descriptive Statistics: Managers' Preference by Outcome – Mean (Standard Deviation)

	Outcome	
Source	**Gain**	**Loss**
Aggregation Preference	61.15 (28.41) n = 53	29.68 (20.56) n = 39
Disaggregation Preference	59.08 (27.43) n = 53	60.05 (25.47) n = 39

The other independent variable is the purpose of the performance report that could be for ratcheting (targets revision) or performance evaluation. Crossing each level of both independent variables, I have four conditions. Namely, ratcheting gain and ratcheting loss, and evaluation gain and evaluation loss. Table 4 presents managers' preferences for aggregated and disaggregated formats for each of the four conditions. While in ratcheting gain condition the higher mean is 63.12 for aggregation, in evaluation gain condition the disaggregated format has a higher preference (63.37). This is the reason for the small difference, in Table 3, between aggregation and disaggregation when the result is a gain. However, in the loss condition, when

reporting for both ratcheting and evaluation purposes, the higher preference is for disaggregation with means of 70.15 and 49.42, respectively.

Table 4 – Descriptive Statistics: Managers' Preference Judgments – Mean (Standard Deviation)

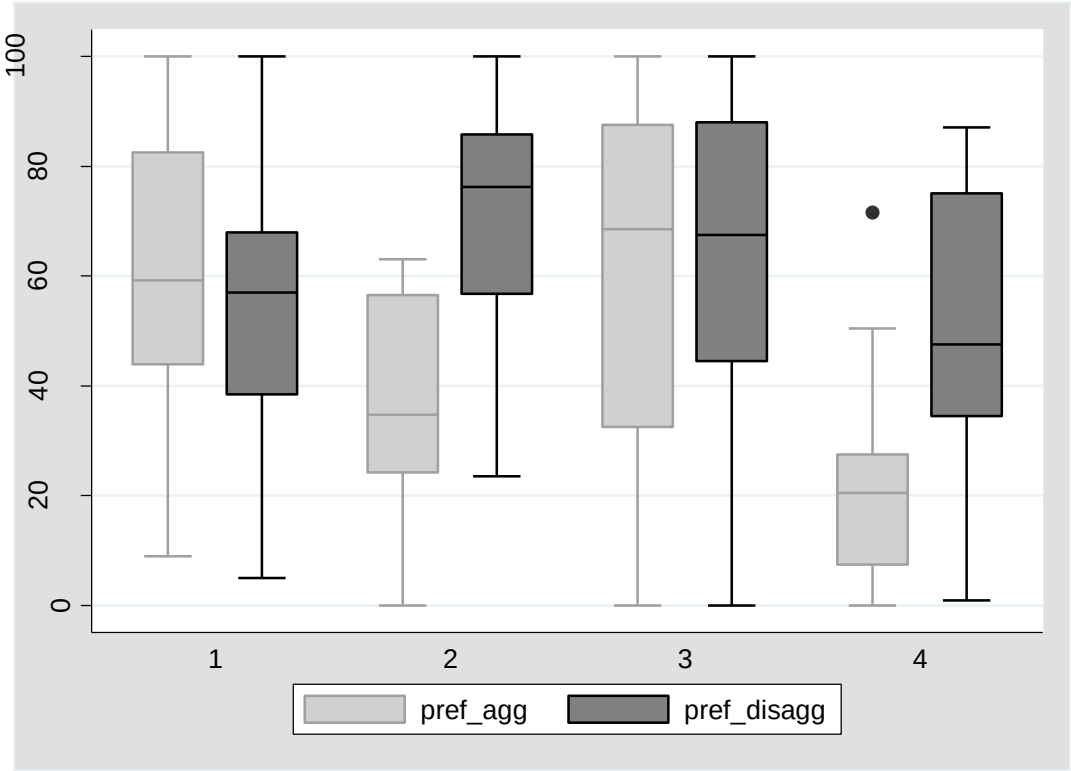
Reporting Purpose: Ratcheting			**Reporting Purpose: Evaluation**		
	Presentation			**Presentation**	
Outcome	**Aggregated**	**Disaggregated**	**Outcome**	**Aggregated**	**Disaggregated**
Net Gain	63.12 (24.17) n = 26	54.62 (24.85) n = 26	Net Gain	59.26 (32.32) n = 27	63.37 (29.52) n = 27
Net Loss	36.6 (20.01) n = 20	70.15 (20.88) n = 20	Net Loss	22.39 (18.99) n = 19	49.42 (26.01) n = 19
Column Means	51.59 (25.89) n = 46	61.37 (24.24) n = 46		44.03 (32.94) n = 46	57.61 (28.68) n = 46

While in Table 3 I show the differences between managers preferences for aggregation and disaggregation by outcome, in the last row of Table 4 I present the differences by reporting purpose. Regardless of the outcome, when managers have to report for target revisions, the higher mean of 61.37 represents their preference for disaggregation. When the report purpose is performance evaluation, the difference of means is higher, in which the higher one is 57.61 for disaggregation. The variation in the number of participants per cell is due to the system randomization. I included a question in the beginning of the questionnaire asking if participants already took a similar survey some days ago (my pre-test), and this might have affected the distribution across conditions.

Figure 11 presents graphic results of managers' preferences of presentation formats for each condition through a box plot. The preferences for disaggregation when the result is a loss is more evident than the preferences for aggregation or disaggregation in gain scenarios. Roughly, it seems that these results indicate that managers follow mental accounting predictions when presenting their results both for target revision and performance evaluation. Because this study

has no directional predictions for ratcheting conditions, these preliminary results show that managers reporting for target revision purpose follow mental accounting predictions even in a higher extent than those reporting for performance evaluation purpose.

Figure 11 – Box plot of managers' preferences



4.2 TESTS FOR RESEARCH QUESTIONS AND HYPOTHESIS

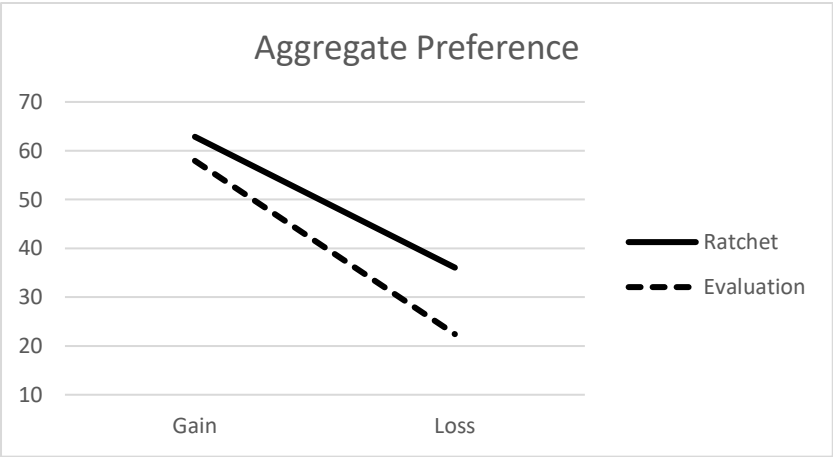
I test my research questions and hypothesis using ANOVA and t-tests. While ANOVA allows me to test the main effects of my treatments and examine possible interactions among my experimental conditions, t-tests show if the differences among cells are significant and test the hypothesis and research question. Table 5 presents the results of ANOVA tests of participants' preferences for aggregation and disaggregation with two-tailed p-values.

Table 5 – Analysis of Variance Results

	Aggregation Preference		Disaggregation Preference	
Source	**Statistic**	**Two-Tailed p-value**	**Statistic**	**Two-Tailed p-value**
Model	F = 12.87	< 0.01	F = 2.62	0.056
Outcome	F = 35.52	< 0.01	F = 0.02	0.885
Reporting Purpose	F = 2.88	0.093	F = 1.21	0.275
Outcome x Reporting Purpose	F = 0.95	0.333	F = 7.33	< 0.01

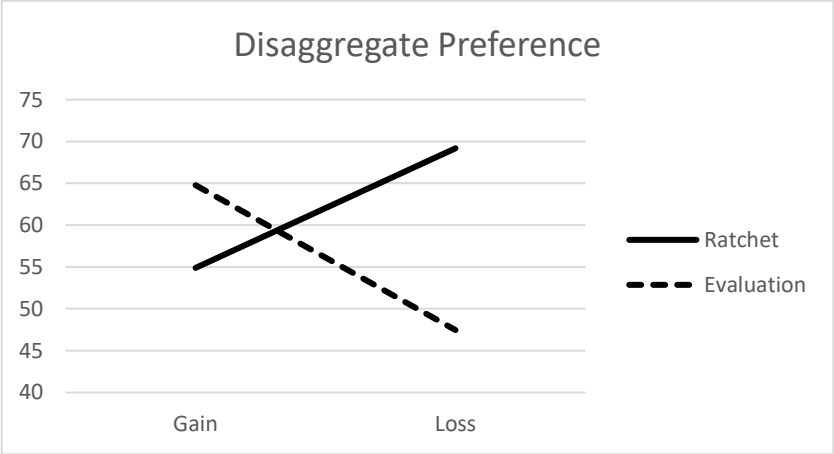
First, I present the main effect results, that is, the differences of one independent variable regardless the other. In both cases the models are significant ($F = 12.87$, $p < 0.01$; $F = 2.62$, $p = 0.056$). The outcome independent variable is significant in the aggregation model ($F = 35.52$, $p < 0.01$). This result indicates a main effect of the outcome, in which the preference for aggregation significantly changes according to the outcome. In this case, when managers have to report a gain from their unit, they significantly prefer to report their performance in an aggregated format than when their result is a loss (See Figure 12). The reporting purpose independent variable is also significant ($F = 2.88$, $p = 0.093$). Figure 12, although presenting a parallel pattern between ratchet and evaluation lines, shows a higher preference for aggregation when the reporting purpose is ratcheting.

Figure 12 – Preference for aggregation in each four conditions



In the disaggregation preference model, neither the outcome independent variable ($F = 0.02$, $p = 0.885$) or reporting purpose independent variable ($F = 1.21$, $p = 0.275$) are significant. That is, because the means for disaggregation, considering both report purposes, are near the same (around 60), there is no main effect. These results indicate that the preference for disaggregation does not change significantly when the outcomes are a gain or loss nor when managers have to report their performance for target revision purposes or for performance evaluation purposes. However, the model indicates a significant disordinal interaction ($F = 7.33$, $p < 0.01$) (See Figure 13). This interaction shows that the preference for disaggregation is higher in a gain than in a loss scenario when the reporting purpose is evaluation, and that the preference for disaggregation is smaller in a gain than in a loss scenario when the reporting purpose is ratcheting.

Figure 13 – Preference for disaggregation in each four conditions



I further report results of t-tests (Table 6) in order to analyze the simple effects of the disordinal interaction presented in Figure 13. Now, the simple effect examination enables me to analyze my research question and hypothesis. Research Question 1a asks whether managers will prefer aggregate a net loss when presenting their performance-target deviation for target revision purposes. The mean preference for aggregation in the loss ratchet condition is 33.55 lower than the preference for disaggregation, which is a significant difference ($t = -5.08$, $p < 0.01$). Thereby, this result indicates that managers in a ratchet loss condition follow mental accounting predictions. RQ1b inquires whether managers will prefer disaggregate a net gain when presenting their performance-target deviation for target revision purposes. In addition,

supporting mental accounting predictions, the preference for aggregation in the gain ratchet condition is 8.5 higher than the preference for disaggregation, but the difference is not significant (t = 0.94, p = 0.354).

Table 6 – Managers' preference for aggregation over disaggregation

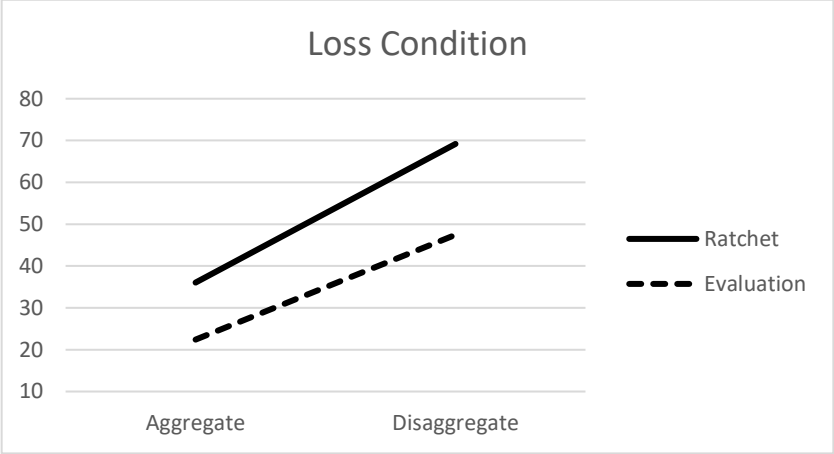
	Reporting for ratcheting			**Reporting for evaluation**		
Source	**Difference**	**Statistic**	**Two-Tailed p-value**	**Difference**	**Statistic**	**Two-Tailed p-value**
Simple effect: Net gain	8.5	t = 0.94	0.354	–4.111	t = –0.37	0.712
Simple effect: Net loss	-33.55	t = –5.08	< 0.01	–27.03	t = –3.47	< 0.01

Hypothesis 1a states that managers will prefer disaggregate a net loss when presenting their performance-target deviation for evaluation purposes. Table 6 shows that the mean preference aggregation in the loss evaluation condition is 27.03 lower than the preference for disaggregation, in which is a significant difference (t = –3.47, p < 0.01). Because the disaggregation preference is in accordance with the hypothesis, there is evidence to confirm H1a. Finally, hypothesis 1b states that managers will prefer aggregate a net gain when presenting their performance-target deviation for evaluation purposes. The mean preference for aggregation in the evaluation gain condition is 4.11 lower than the preference for disaggregation, however not significant (t = –0.37, p = 0.712). Therefore, there is no evidence to confirm H1b.

Figure 14 illustrates the results of RQ1a and H1a, which are the managers' format options preferences when reporting for ratcheting and performance evaluation in a loss scenario. Together with the t-tests results, this graphic shows that in loss scenarios, regardless of the reporting purpose, managers' preferences are for the disaggregated formats. The difference is always significant. In doing so, when preparing reports for target revisions and performance evaluations, the preference to disaggregate a mixed loss comprised of a small gain and a large loss follows mental accounting predictions. Even in a scenario of a large loss, managers prefer to disaggregate in order to show the small gain, the silver lining. Then, considering reports for

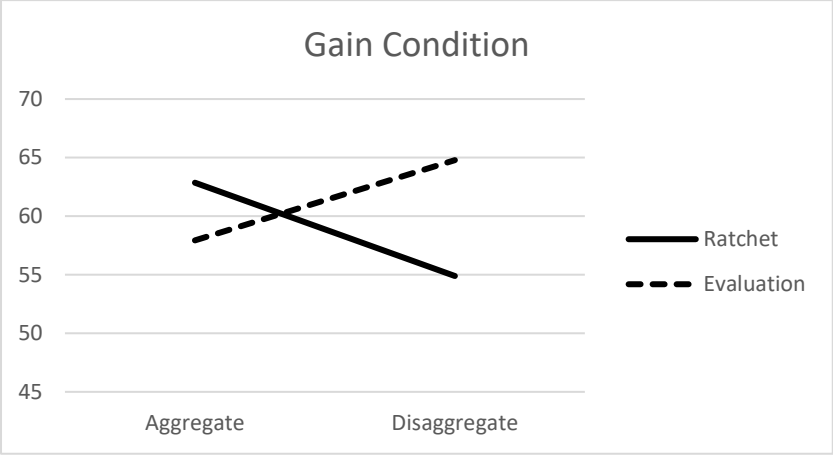
target revision, this result is especially important because it sheds light on the question whether managers' reporting preferences follow mental accounting.

Figure 14 – Managers' preference in loss scenarios



Lastly, Figure 15 illustrates the results of RQ1b and H1b, which are the managers' format options preferences when reporting for ratcheting and performance evaluation in a gain scenario. Although I predicted that mangers would prefer a presentation format that makes their performance looks more favorable, managers' preference for aggregation in evaluation gain condition was smaller than those managers in the ratchet condition. In fact, although not significant, managers in evaluation gain condition preferred disaggregate their performance, contrary to mental accounting predictions. On the other hand, participants in the ratchet gain condition preferred to aggregate their performance in a higher extent than those in evaluation gain condition. This means that participants in the ratchet gain condition could follow mental accounting, but the result is not significant. Both results of gain conditions are not significant.

Figure 15 – Managers' preference in gain scenarios



Taken together, these results show support for H1a and indicate a reporting preference for RQ1a. This means that, when facing losses in their units (large net loss comprised of a small gain and a large loss), managers reporting for both target revision and evaluation purposes prefer to disaggregate. In doing so, they opt to show the silver lining in their performance and increase the utility of their performance. However, results for H1b and RQ1b are not significant. Then, although not significant, when managers have to report a gain (small net gain comprised of a large gain and a large loss), in the ratchet purpose condition they prefer to aggregate (increase the utility of their performance), and in the evaluation purpose condition they prefer to disaggregate (decrease the utility of their performance). Because managers under ratchet conditions could prefer to present their performance in a less favorable format due reasons like harder targets for future, the main takeaway from this analysis is that managers reporting for target revision purposes follow mental accounting predictions even more than those under evaluation conditions do.

4.3 ADDITIONAL ANALYSES FOR DEMOGRAPHIC VARIABLES

In addition to the main analyses, I test if participants' age and experience (years working) have impact over their preferences for aggregation and disaggregation across conditions. Thereby, I show ANCOVA results crossing age with a variable called condition, that encompasses the four conditions related to reporting purposes and outcomes (Panel A of Table 7). Only the

aggregation model has a significant result (F = 5.38, p < 0.01). Both in the aggregation and disaggregation models, the variables condition, age, and the interaction between them are not significant. Because of the no significant effect, this indicates that the randomization was effective and the results are explained by the manipulations. That is, the randomization is an attempt to provide participants with homogeneous characteristics in each condition, and then the observed differences in means of conditions are due the manipulations.

Table 7 – Analysis of Covariance Results for Age and Experience (Years)

Panel A: Results for Age

	Aggregation Preference		**Disaggregation Preference**	
Source	**Statistic**	**Two-Tailed p-value**	**Statistic**	**Two-Tailed p-value**
Model	F = 5.38	< 0.01	F = 1.37	0.230
Condition	F = 1.23	0.302	F = 0.60	0.617
Age	F = 0.06	0.804	F = 0.03	0.862
Condition x Age	F = 0.17	0.914	F = 0.63	0.595

Panel B: Results for Experience

	Aggregation Preference		**Disaggregation Preference**	
Source	**Statistic**	**Two-Tailed p-value**	**Statistic**	**Two-Tailed p-value**
Model	F = 5.48	< 0.01	F = 1.94	0.074
Condition	F = 4.55	< 0.01	F = 1.82	0.151
Experience	F = 0.00	0.998	F = 0.05	0.824
Condition x Experience	F = 0.38	0.769	F = 1.80	0.154

Panel B of Table 7 shows the results according to participants' experience as years of working. The model is significant for both aggregation (F = 5.48, p < 0.01) and disaggregation (F = 1.94, p = 0.074) preferences. Although the condition variable has a significant result in the aggregation model, the experience variable is not significant in both aggregation (F = 0.00, p = 0.998) and disaggregation (F = 0.03, p = 0.862) models. Because neither the results of the experience variable are significant nor its interaction with the condition variables, these results

also help to explain the effectiveness of the manipulations affecting the differences among means across conditions.

Table 8 presents some results for participants that said they have experience with reporting, both as they reporting to superiors and subordinates reporting to them. The means in Panel A and B represent only the preferences of the 54 participants with reporting experience. Comparing results from Panel A with the means of Table 4 (overall sample), although with slight differences, the patterns are the same. In other words, preferences for aggregation and disaggregation across conditions are the same. For instance, the higher mean represents the preferences for aggregation in the ratchet gain condition, for both cases, and the preference for disaggregation in the evaluation loss condition, for both cases as well. The last row (Column means), that shows the preferences according to the purposes of reporting regardless of outcomes, also has the pattern found in the main analysis. Finally, comparing means from Table 3 to results of Panel B of Table 8, the preferences according to the outcomes, regardless of reporting purposes, have the same patterns in the aggregation preference. Although the patterns change for disaggregation preferences, in which the higher preference in Table 3 was to disaggregate a loss, this difference is not significant.

Following previous ANCOVA analysis, all participants are included for ANOVA results in Panel C of Table 8. At this time, I cross the experience-reporting variable with the condition variable, which includes the four conditions. Only the aggregation preference model is significant ($F = 5.78$, $p < 0.00$), as well as the condition variable in this model ($F = 10.56$, $p < 0.00$). The reporting experience variable is not significant for both aggregation ($F = 2.33$, $p = 0.131$) and disaggregation ($F = 0.59$, $p = 0.44$) models, neither when interacts with the condition variable. This also provides evidence for the effectiveness of the manipulation.

Table 8 – Results for participants with reporting experience

Panel A: Descriptive Statistics: Managers' Preference Judgments – Mean (Standard Deviation)

Reporting Purpose: Ratcheting			Reporting Purpose: Evaluation		
	Presentation Format			Presentation Format	
Outcome	**Aggregated**	**Disaggregated**	**Outcome**	**Aggregated**	**Disaggregated**
Net Gain	57.78 (22.42) n = 13	53.23 (23.67) n = 13	Net Gain	56.53 (29.48) n = 15	63.23 (29.19) n = 15
Net Loss	34.58 (19.91) n = 13	67.58 (24.00) n = 13	Net Loss	18.81 (20.03) n = 13	47.12 (29.31) n = 13
Column Means	46.17 (23.90) n = 26	60.40 (24.47) n = 26		39.02 (31.56) n = 28	55.75 (29.84) n = 28

Panel B: Descriptive Statistics: Managers' Preference Judgments by Outcome – Mean (Standard Deviation)

	Aggregation Preference		Disaggregation Preference	
	Gain	Loss	Gain	Loss
Outcome Means	57.11 (25.97) n = 28	26.69 (21.15) n = 26	58.59 (26.77) n = 28	57.35 (28.24) n = 26

Panel C: Analysis of Variance Results

	Aggregation Preference		Disaggregation Preference	
Source	**Statistic**	**Two-Tailed p-value**	**Statistic**	**Two-Tailed p-value**
Model	F = 5.78	< 0.01	F = 1.19	0.320
Condition	F = 10.56	< 0.01	F = 2.30	0.083
Reporting Experience	F = 2.33	0.131	F = 0.59	0.444
Condition x Reporting Experience	F = 0.07	0.976	F = 0.09	0.963

Besides the experience with reporting, I perform an additional analysis to examine if participants working in management, business and financial, sales, or administrative

occupations (n = 53) have different presentation format preferences, due their familiarity with reporting. Comparing results from Panel A of Table 9 with the means of Table 4, the patterns previously observed have now changed. For example, participants with the specified occupations, in gain scenarios, have a higher preference for aggregation when reporting for both target revisions and performance evaluation, instead of disaggregation. However, these differences continue to be not significant. For loss scenarios and for preferences according to the reporting purposes regardless of outcomes, the patterns continue the same as Table 4. Finally, for loss and gain scenarios regardless of purposes of reporting, the patterns from Table 3 compared to Panel B of Table 9 are also the same.

Then, I performed ANOVA tests crossing the occupations variable with the condition variable that encompasses the four experimental conditions. Results from Panel C are significant only in aggregation preference model ($F = 5.92$, $p < 0.01$). The variable condition is significant for both aggregation preference ($F = 12.59$, $p < 0.01$) and disaggregation preference ($F = 2.25$, $p = 0.089$) models. However, the occupation variable is not significant in any of the aggregation and disaggregation models, nor when interacts with the conditions variable. These results indicate the effectiveness of the manipulations, in which the results of the main analysis are not changed due participants in occupations possibly related to reporting.

Finally, besides additional tests for age, time of experience, reporting experience, and specific occupations, untabulated results also indicate the same patterns as when segregating for education level (1 for high education level [Bachelor’s degree and Master’s degree], 0 otherwise), and gender (1 for female, 0 for male).

Table 9 – Results for participants with management, business, sales, or administrative occupations

Panel A: Descriptive Statistics: Managers' Preference Judgments – Mean (Standard Deviation)

Reporting Purpose: Ratcheting			Reporting Purpose: Evaluation		
	Presentation Format			Presentation Format	
Outcome	**Aggregated**	**Disaggregated**	**Outcome**	**Aggregated**	**Disaggregated**
Net Gain	57.04 (22.86) n = 14	56.96 (28.02) n = 14	Net Gain	63.88 (22.40) n = 16	61.22 (25.01) n = 16
Net Loss	38.69 (22.49) n = 13	73.00 (21.04) n = 13	Net Loss	22.10 (22.94) n = 10	46.55 (28.97) n = 10
Column Means	48.20 (24.12) n = 27	64.69 (25.76) n = 27		47.81 (32.21) n = 26	55.58 (27.03) n = 26

Panel B: Descriptive Statistics: Managers' Preference Judgments by Outcome – Mean (Standard Deviation)

	Aggregation Preference		Disaggregation Preference	
	Gain	Loss	Gain	Loss
Outcome Means	60.68 (24.63) n = 30	31.48 (23.70) n = 23	59.23 (26.08) n = 30	61.50 (27.65) n = 23

Panel C: Analysis of Variance Results

	Aggregation Preference		Disaggregation Preference	
Source	**Statistic**	**Two-Tailed p-value**	**Statistic**	**Two-Tailed p-value**
Model	F = 5.92	< 0.01	F = 1.26	0.282
Condition	F = 12.59	< 0.01	F = 2.25	0.089
Occupations	F = 0.03	0.872	F = 0.01	0.933
Condition x Occupations	F = 1.10	0.353	F = 0.40	0.754

4.4 ADDITIONAL ANALYSIS FOR MACHIAVELLIANISM

Since the publication of *The Prince* in 1532, Machiavelli has been used to designate the use of guile, deceit, and opportunism in interpersonal relationships, in which a Machiavellianism is someone who views and manipulates others for his own purposes (Christie & Geis, 1970). Some accounting studies have analyzed this personal trait in organizational settings. For instance, controllers scoring high on Machiavellianism are more likely to give in to pressure by BU management to create budgetary slack (Hartmann & Maas, 2010). Other studies analyze Machiavellianism in the dark triad that also includes Narcissism and Psychopathy. Evidence from D'Souza and Lima (2015) show that individuals with high traits of the Dark Triad are significantly associated with the engagement of opportunistic behavior in decision-making, which includes behaviors related to Machiavellian individuals.

In this study, I test whether managers' preferences for different reporting formats vary according to managers' results, in which these formats can increase the utility of the performance. Since these performance reports have different purposes, I also test whether Machiavellian individuals have different preferences. Because of manipulative and controlling behaviors associated with these individuals, they could choose reporting formats in such a way that increase their utility more than individuals considered low in Machiavellianism. In the organizational environment, Machiavellian individuals have a natural talent for influencing people and, instead of following procedures, they are more concerned with maximizing opportunities to craft their own personal power (Goldberg, 1999; Judge, Piccolo, & Kosalka, 2009). Evidence shows that individuals with these traits are more likely to underreport taxes (Ghosh & Crain, 1996), able to negotiate more profitable transfer prices in settings with conflict of interest between divisions (Ghosh, 2000), and misreport (Murphy, 2012).

In order to test Machiavellianism traits in participants, I used the MACH IV scale (See the Appendix) developed by Christie and Geis (1970). It is a 20-item Likert format scale, ranging from strong disagreement to strong agreement. When the sentences were phrased so that agreement presumably meant acceptance of a Machiavellianism viewpoint, the scoring was one for strong disagreement and five for strong agreement, and for those statements that the agreement presumably meant acceptance of a non-Machiavellianism viewpoint, the scoring was reversed. The validity and reliability of the scale has also been tested for psychology

(McHoskey, Worzel, & Szyarto, 1998; Paulhus & Williams, 2002) and accounting (Wakefield, 2008) studies.

This analysis considers participants with high Machiavellianism traits those who reached more than 60 points in the MACH IV scale. Thereby, 26 participants are considered high MACH. Panel A of Table 11 presents the means of high MACH participants' reporting preferences. Comparing the means of high MACH participants with the overall participants from Table 4, the main differences are because the overall preferences were for aggregation in ratchet gain and for disaggregation in evaluation gain conditions, while high MACH participants have opposite preferences when the outcome is a gain. However, the differences between high MACH participants' preferences for aggregation and disaggregation in gain conditions are only significant when the reporting purpose is performance evaluation ($t = 1.81$, $p = 0.09$ two-tailed untabulated). When the outcome is a loss, high MACH participants' preferences for aggregation and disaggregation follow the overall sample patterns.

Preferences for aggregation and disaggregation according to the purpose of reports, regardless of outcomes, in the Column Means of participants of high MACH (Table 10) and the overall means (Table 4) have the same pattern when target revision is the reporting purpose. However, different from the overall mean, high MACH participants prefer to aggregate when the reporting purpose is performance evaluation. Finally, comparing the preferences of high MACH participants (Panel B of Table 10) and the overall mean (Table 3) according to the outcomes, regardless of reporting purposes, there is a difference only for disaggregation preferences, in which high MACH participants prefer disaggregate gain outcomes.

ANOVA results from Panel C of Table 11 consider the condition variable, Machiavellianism, and the interaction between both. Both aggregation preference ($F = 6.35$, $p < 0.01$) and disaggregation preference ($F = 3.50$, $p < 0.01$) models are significant. In the disaggregation model, both the Machiavellianism variable ($F = 9.15$, $p < 0.01$) and its interaction with the condition variable ($F = 2.16$, $p = 0.099$) are significant. Further, Table 11 presents t-tests results in order to explore the differences between high MACH participants and the overall sample across conditions.

Table 10 – Results for participants with high Machiavellianism in MACH IV scale

Panel A: Descriptive Statistics: Managers' Preference Judgments – Mean (Standard Deviation)

Reporting Purpose: Ratcheting			Reporting Purpose: Evaluation		
	Presentation Format			Presentation Format	
Outcome	**Aggregated**	**Disaggregated**	**Outcome**	**Aggregated**	**Disaggregated**
Net Gain	56.00 (16.41) n = 6	59.67 (24.89) n = 6	Net Gain	72.89 (32.19) n = 9	45.72 (31.67) n = 9
Net Loss	32.50 (20.62) n = 4	44.75 (22.97) n = 4	Net Loss	16.50 (15.23) n = 7	37.57 (28.91) n = 7
Column Means	46.60 (20.94) n = 10	53.70 (24.07) n = 10		48.22 (38.47) n = 16	42.16 (29.78) n = 16

Panel B: Descriptive Statistics: Managers' Preference Judgments by Outcome – Mean (Standard Deviation)

	Aggregation Preference		Disaggregation Preference	
	Gain	Loss	Gain	Loss
Outcome Mean	66.16 (27.60) n = 15	22.32 (18.22) n = 11	51.30 (29.06) n = 15	40.18 (25.94) n = 11

Panel C: Analysis of Variance Results

	Aggregation Preference		Disaggregation Preference	
Source	**Statistic**	**Two-Tailed p-value**	**Statistic**	**Two-Tailed p-value**
Model	F = 6.35	< 0.01	F = 3.50	< 0.01
Condition	F = 12.23	< 0.01	F = 1.09	0.357
Machiavellianism	F = 0.02	0.892	F = 9.15	< 0.01
Condition x Machiavellianism	F = 1.78	0.157	F = 2.16	0.099

Considering the assumption that high MACH participants could have their means even in a higher extent to maximize their utility when compared to the overall means for each condition, t-tests presented in Table 11 provide some results. When the preference is aggregation, although

not significant (t = 1.595, p = 0.123), high MACH participants in the evaluation gain condition have a higher preference towards aggregation, which means a higher tendency in following mental accounting if compared to the overall mean. When the preference is disaggregation, high MACH participants in both ratchet loss (t = –3.390, p < 0.01) and evaluation gain (t = –2.386, p = 0.025) conditions have a smaller preference regarding disaggregation. This means that the result regarding the evaluation gain condition is even closer to the prediction of H1a than the overall means. Overall, these results indicate that high MACH participants could have a higher tendency for increasing their utility because they have a smaller preference for aggregation in the evaluation gain condition.

Table 11 – Simple effects of mean differences from participants high in MACH IV to the overall sample

	Aggregation Preference			**Disaggregation Preference**		
Source	**Difference**	**Statistic**	**Two-Tailed p-value**	**Difference**	**Statistic**	**Two-Tailed p-value**
Ratchet gain	–9.25	t = –0.817	0.422	6.57	t = 0.560	0.581
Ratchet loss	–5.13	t = –0.448	0.659	–31.75	t = –3.390	< 0.01
Evaluation gain	20.44	t = 1.595	0.123	–26.47	t = –2.386	0.025
Evaluation loss	–9.33	t = –1.035	0.315	–18.76	t = –1.578	0.133

5 DISCUSSION AND CONCLUSION

The main goal of this study is to examine two determinants—sign of performance-target deviations and internal reporting purpose—of employees' preferences for different presentation formats, aggregated or disaggregated. It is an attempt to direct efforts towards the practitioner literature claims on how much detail internal reports should include (Starovic, 2003), as well as recognizing the importance of these reports for firms (IOMA, 2005). As an example of study trying to comprehend issues affecting internal reports, Maas and Matějka (2009) show that controllers may misreport when facing role ambiguity and conflict regarding their duty as decision-making assistance in business units or as a corporate control aid on reporting to the headquarters. This study investigates if managers' performance and the purpose of the internal reports could also be a factor that managers consider when molding their reports. Bonner et al. (2014) analyzed managers preferences of reporting formats in the context of financial accounting, but this study recognizes the need for studying management reports due to the integration between financial and management accounting systems (Weißenberger & Angelkort, 2011).

Drawing on levels of reasoning literature, I state research questions asking whether managers would follow predictions of mental accounting when reporting for target ratcheting in gain or loss scenarios. When managers have to present a gain for target revision, results indicate that managers prefer either to aggregate or to disaggregate a mixed gain in this situation. There is no significant difference between preferences for these formats. Because mental accounting suggests that individuals prefer to present their results in a format that make their performance looks more favorable, aggregating a gain is in line with mental accounting theory because it increases the utility of the results. Considering that managers have preferences for both formats, they might use the levels of reasoning to anticipate a decision that ratchets their targets and choose to disaggregate because it decreases their results utility. In doing so, they would expect a smaller ratchet extent, that is, easier targets for the next period. However, if they choose aggregation, managers might think that they will receive an easier target for future if they present a good performance, and then they choose to aggregate because it increases their results utility.

According to Mouritsen and Kreiner (2016), a decision stops the process of decision-making, but these decisions are also promises of new beginnings, in which a decision produces a prediction and a promise produces a hope. When managers expect a ratcheting decision, it could mean they are making a prediction as a result from a previous decision. Because firms decide to ratchet targets, managers can perform the ratchet effect as an anticipation of a ratcheting decision after reaching their targets. On one hand, if the ratchet effect is the dynamic incentive problem, on the other hand, using reports of performance might be the static problem, that is, part of the negotiation process for target revision. During the referred negotiation process, managers can create some slack arguing that they will not be able to reach the targets in terms of sales and costs, as well as monetary values and quantities. Thereby, when firms update future targets according to past performance, reports that make the performance looks less favorable could also represent an argumentation for easier targets. In turn, a smaller ratchet extent, and less ratchet effect (Indjejikian, Matějka, & Schloetzer, 2014).

When managers have to present a loss for target review process, results are significant and indicate that managers prefer disaggregate a loss. Disaggregating a mixed loss is in line with metal accounting predictions. This result suggests that when reporting a loss for target revision individuals prefer to present their performance in a format that makes their result looks better, even if a good performance results in a harder target for future. Although a presentation format that makes a performance looks better can result in harder targets, there is evidence that some managers use the target setting process for management impression (Ferris et al., 2009). For example, individuals set higher goals under conditions of higher accountability (Frink & Ferris, 1998), and low performing employees have stronger intentions to manage impressions if they attained their targets, and they select less challenging targets to the next period (Webb et al., 2010). Moreover, while choosing a presentation format that makes performance looks worse could be a slack creation, in some circumstances managers prefer not to do so. For instance, Webb (2002) shows that when firms put high emphasis in budgets, the existence of mechanisms such as reputation concerns and variance investigation policies are likely to reduce the slack creation. Because the reports used in the experiment emphasized the performance-target deviations, participants might have considered such concerns and did not opt to the possibility of slack creation.

Results of participants' format preferences under performance evaluation conditions are similar to those of ratcheting conditions, that is, no significant differences in gain conditions and greater preference for disaggregation in loss conditions. Firstly, when managers have to report a gain

for evaluation purposes, my prediction was that managers would follow mental theory and prefer the aggregated format. Although not significant, the result indicates the opposite of the predicted, that is, participants slightly preferred to disaggregate a mixed gain when reporting for performance evaluation. Secondly, when managers have to report a loss for evaluation purposes, my prediction was that managers would follow mental accounting theory and prefer the disaggregated format. Significant t-test results indicate support for my hypothesis, in which participants prefer to disaggregate a mixed loss when the reporting purpose is performance evaluation.

Mental accounting theory assumes that individuals prefer to code their outcomes in order to increase the utility of these outcomes. Regarding the scenarios used in this study, the theory suggests that individuals prefer to aggregate a small net gain comprised of a large gain and a large loss. Because a specific large loss slightly smaller than a specific large gain has a greater disutility than this same specific gain, individuals prefer to aggregate to present only the small net gain. Even though the large loss being smaller than the gain, its associated disutility is greater due to the individuals' loss aversion. Regarding the large net loss comprised of a large loss and a small net gain, mental accounting states that individuals prefer to disaggregate to show the small gain. This is the so-called silver lining principle.

Although performance evaluation and pay practices vary substantially across firms and industries (Indjejikian, 1999), firms use accounting information for compensation decisions. Consequently, managers may feel concerned on how to organize internal reports because they can affect their own compensation components, such as bonus and promotions, in the short and long terms (Abernethy, Bouwens, & Van Lent, 2013). Thereby, managers will prefer to organize their performance reports in order to look better, due the expectations regarding evaluation. Notwithstanding, firms tend to use more subjective performance appraisal approaches in circumstances such as high environmental uncertainty, regulatory pressure to improve non-financial dimensions, adoption of an innovation-oriented strategy, and the adoption of strategic quality initiatives (Govindarajan, 1984; Ittner, Larcker, & Rajan, 1997). In this case, when firms use more subjective information, performance reports elaborated by managers may have less relevance for performance evaluation.

Finally, I also performed an analysis to measure the Machiavellianism level of participants. The considered assumption is that high MACH participants would have higher means to maximize their utility when compared to the overall means for each condition. When the preference is

aggregation, although not significant, high MACH participants in the evaluation gain condition have a higher tendency to follow mental accounting predictions. When the preference is disaggregation, high MACH participants in both ratchet loss and evaluation gain conditions have a smaller preference regarding disaggregation. This means that the result regarding the evaluation gain condition is even closer to the prediction of H1b than the overall means. Overall, these results indicate that high MACH participants could have a higher tendency for increasing their utility because they have a smaller preference for aggregation in the evaluation gain condition. Results for MACH participants in ratchet loss and evaluation gain conditions indicate that they have a higher tendency for increasing their utility if compared to overall means. This agrees with the argument that Machiavellian individuals view and manipulate others for his own purposes (Christie & Geis, 1970).

This conclusion has some practical implications. Managers often have to elaborate different kind of reports to their superiors, such as sales reports, production costs reports, labor costs reports, and so on. Usually, managers present these reports according to their accountability and have to report performance-target deviations. Sometimes, due to the complexity, they have some discretion to aggregate information based on materiality judgments. The most conclusive results show that when managers have to report a loss, for both ratchet and evaluation purposes, they will prefer to disaggregate accounts. For instance, even if there are some values not material to show, managers tend to disaggregate to show a small gain that would be hidden. Looking at target revision perspective, managers might do this to impress their superiors and receive a less challenging target. In turn, when presenting a report for performance evaluation, managers also tend to disaggregate in order to show that they had a good result, even considering that the value is not material. In the gain scenarios, results regarding presentation formats preferences do not show significant differences.

Some of the limitations of this study are also opportunities for future research. Because of some design choices, future research could qualitatively analyze ratcheting decisions and ratchet effect in a single organization, observing if managers observe the adverse effect on performance and if they make decisions to avoid it. Another opportunity is the investigation on how much participative the processes of target revision and performance evaluation through the acceptance of reports from lower level managers are, analyzing how much discretion lower level managers have on choosing information to these reports.

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APPENDIX: INSTRUMENT

1. Instructions

Note: ***The instructions are the same for all conditions.***

GENERAL INSTRUCTIONS

Thank you for your participation in this study.

This is a study about decision-making in organizations. It is an anonymous study and we will not identify you in our results. Please read the history carefully and answer the questions as if it is a real situation. There are no correct or incorrect answers.

The history you will read is about a company called GeneralX. You will assume a sales manager role of one unit of this company and have to present a report with the results you are responsible for to your superior.

Before proceeding to the task, let us know if last week you participated in a survey that you were asked to judge two different performance report formats:
_____ 1. Yes
_____ 2. No

Note

- In case of '*yes*' answer, participants saw the following message, then their participation was ended:

Unfortunately, we can't use you as a participant in this survey. As a consequence, we can't pay you.

2. Manipulations

***Note:* Ratchet condition.**

SPECIFIC INSTRUCTIONS

Important: Carefully read the text to understand the purpose of your report.

The following financial performance information you are about to see are from GeneralX, Inc. This company runs in the retail industry with department stores across the country. You are a sales manager from one of its stores and usually have to present performance reports to your superior. He will use your performance report to update your targets to the next year.

Your primary goal in this study is to make judgments about two options given to you for presenting your performance to your superiors. As GeneralX has no guidelines for internal reporting, admit you have discretion regarding internal reports and both options you have in this study are considered correct.

***Note:* Evaluation condition.**

SPECIFIC INSTRUCTIONS

Important: carefully read the text to understand the purpose of your report.

The following financial performance information you are about to see are from GeneralX, Inc. This company runs in the retail industry with department stores across the country. You are a sales manager from one of its stores and usually have to present performance reports to your superior. He will use your performance report to evaluate your performance of the current year.

Your primary goal in this study is to make judgments about two options given to you for presenting your performance to your superiors. As GeneralX has no guidelines for internal reporting, admit you have discretion regarding internal reports and both options you have in this study are considered correct.

3. Participants' understanding

Note: ***All conditions.***

Instructions

- In the following questions we check if you understood the instructions.

Q1: In this study, your main goal is (choose one option):

_____ 1. Make judgments about the performance report options. (Correct answer)
_____ 2. Setting your superior's targets for the next period.
_____ 3. Decide about your performance evaluation.
(Obs.: In case of wrong answer, the following message was showed:
Wrong answer. Your main goal is "make judgments about the performance report options". Choose the correct answer before proceeding).

Q2: Indicate if you have discretion in choosing a performance report format.
_____ 1. Yes (Correct answer)
_____ 2. No
(Obs.: In case of wrong answer, the following message was showed:
Wrong answer. You have discretion to choose one of the report formats. Choose the correct answer before proceeding.).

Q3: Indicate for what reason your superior will use your performance report.
_____ 1. To update my targets for the next year. (Ratchet condition only)
_____ 2. To evaluate my performance of the current year. (Performance evaluation condition only)
(Obs.: In case of wrong answer, the following message was showed:
Wrong answer. Your superior will use your report to update your targets (increase or decrease). Choose the correct answer before proceeding. [Ratchet condition];
Wrong answer. Your superior will use your report to evaluate your performance. Choose the correct answer before proceeding. [Performance evaluation condition]).

***Note:* Ratchet gain condition.**

Considering your positive performance regarding deviation from current targets, your superior will most likely increase your target to the next year.
Remember, you have discretion to choose one format to present your performance and your superior will use this information to update your target. Look at the options you have to present your performance:

***Note:* Ratchet loss condition.**

Considering your negative performance regarding deviation from current targets, there's a chance that your superior will decrease your target to the next year.
Remember, you have discretion to choose one format to present your performance and your superior will use this information to update your target. Look at the options you have to present your performance:

***Note:* Evaluation gain condition.**

Considering your positive performance regarding deviation from current targets, your superior will most likely give you a good evaluation.
Remember, you have discretion to choose one format to present your performance and your superior will use this information for your performance evaluation. Look at the options you have to present your performance:

***Note:* Evaluation loss condition.**

Considering your negative performance regarding deviation from current targets, your superior will most likely give you a not good evaluation.
Remember, you have discretion to choose one format to present your performance and your superior will use this information for your performance evaluation. Look at the options you have to present your performance:

Note: ***Net gain condition.***

Format option 1 to present your performance:

2016 Report	Performance Targets for 2016	Performance in 2016	Deviation from Targets
Profit	$ 428,000	$ 433,000	**$ 5,000**

Format option 2 to present your performance:

2016 Report	Performance Targets for 2016	Performance in 2016	Deviation from Targets
Sales	$ 1,230,000	$ 1,328,000	**$ 98,000**
Costs and Expenses	$ 802,000	$ 895,000	$ (93,000)
Profit	$ 428,000	$ 433,000	**$ 5,000**

Note: ***Net loss condition.***

Format option 1 to present your performance:

2016 Report	Performance Targets for 2016	Performance in 2016	Deviation from Targets
Profit	$ 428,000	$ 335,000	$ (93,000)

Format option 2 to present your performance:

2016 Report	Performance Targets for 2016	Performance in 2016	Deviation from Targets
Sales	$ 1,230,000	$ 1.132,000	$ (98,000)
Costs and Expenses	$ 802,000	$ 797,000	**$ 5,000**
Profit	$ 428,000	$ 335,000	$ (93,000)

4. Measurement of dependent variables

Note: ***All conditions.***

Instructions

- After reviewing GeneralX background information and the two options you were given, please answer the following questions in the way that best represents your judgment.
- If you think that one format is better than the other, move the marker of your preferred format to a higher number than the other format. However, if you consider both formats equally preferable, put the markers for both formats near the same number.
- You may refer back to review the options you have to report.

Q1a: For you, how desirable is the format option **(1)** in terms of representing your performance to your superiors?

0		100
Not desirable at all		Very desirable

Q1b: For you, how desirable is the format option **(2)** in terms of representing your performance to your superiors?

0		100
Not desirable at all		Very desirable

Q2a: For you, how advantageous is the format option **(1)** in terms of representing your performance to your superiors?

0		100
Not advantageous at all		Very advantageous

Q2b: For you, how advantageous is the format option **(2)** in terms of representing your performance to your superiors?

0		100
Not advantageous at all		Very advantageous

5. Post experimental question

Note: ***The following materials are the same for all conditions.***

Instructions

- The following question is related to your performance in GeneralX.
- Answer the question to the best of your recollection.

Q1: Which was your store's final result?

_____ 1. A profit.

_____ 2. A loss.

6. Participants' background.

Instructions
• Now, please answer the following questions in the way that best represents you and your experience.

Q1: Your age: ____ years

Q2: Gender: ( ) male ( ) female

Q3: Education level (choose your higher completed level):
( ) Less than high-school ( ) High-school ( ) Undergraduate ( ) Master's degree ( ) PhD

Q4: Years of work: _____ years of experience

Q5: How long have you worked for your current organization _____ (years)

Q6: Please select the choice that best describes the industry in which your organization competes.

Architecture and Engineering	Installation, Maintenance, and Repair
Arts, Design, Entertainment, Sports, and Media	Legal
Building and Grounds Cleaning and Maintenance	Life, Physical, and Social Science
Business and Financial Operations	Management
Community and Social Services	Military Specific
Computer and Mathematical	Office and Administrative Support
Construction and Extraction	Personal Care and Service
Education, Training, and Library	Production
Farming, Fishing, and Forestry	Protective Service
Food Preparation and Serving Related	Sales and Related

Healthcare Practitioners and Technical	Transportation and Material Moving
Healthcare Support	Other

Q7: Please select the choice that best describes your activities in your job.

Management Occupations	Food Preparation and Serving Related Occupations
Business and Financial Operations Occupations	Building and Grounds Cleaning and Maintenance Occupations
Computer and Mathematical Occupations	Personal Care and Service Occupations
Architecture and Engineering Occupations	Sales and Related Occupations
Life, Physical, and Social Science Occupations	Office and Administrative Support Occupations
Community and Social Services Occupations	Farming, Fishing, and Forestry Occupations
Legal Occupations	Construction and Extraction Occupations
Education, Training, and Library Occupations	Installation, Maintenance, and Repair Occupations
Arts, Design, Entertainment, Sports, and Media Occupations	Production Occupations
Healthcare Practitioners and Technical Occupations	Transportation and Material Moving Occupations
Healthcare Support Occupations	Military Specific Occupations
Protective Service Occupations	Other

Q8: Do you have any experience as a profit center manager?

_____ Years

Q9: How much experience do you have with internal reporting?

0	1	2	3	4	5	6	7	8	9	10
I have never internally reported my performance										I have internally reported my performance several times

Q10: How much experience do you have analyzing internal reports?

0	1	2	3	4	5	6	7	8	9	10
I have never analyzed internal reports										I have analyzed internal reports several times

Q11: Have you ever had superiors to whom you had to report your work performance?

_____ 1. Yes

_____ 2. No

Q12: Have you ever had subordinates who had to report their work performance for you?

_____ 1. Yes

_____ 2. No

Mach IV Scale Developed by Cristie and Gies (1970)

Please indicate your agreement with the following statements:

Q1. Never tell anyone the real reason you did something unless it is useful to do so.

1	2	3	4	5
Strongly disagree	Disagree	Indifferent	Agree	Strongly agree

Q2. The best way to handle to people is to tell them what they want to hear.

Q3.* One should take action only when sure it is morally right.

Q4.* Most people are basically good and kind.

Q5. It is safest to assume that all people have a vicious streak.

Q6.* Honesty is the best policy in all cases.

Q7.* There is no excuse for lying to someone else.

Q8. Generally speaking, men won't work hard unless they are forced to do so.

Q9.* All in all, it is better to be humble and honest than to be important and dishonest.

Q10.* When you ask someone to do something for you, it is best to give the real reasons for wanting it rather than reasons that carry more weight.

Q11.* Most people who get ahead in the world lead clean, moral lives.

Q12. Anyone who completely trusts anyone else is asking for trouble.

Q13. The biggest difference between most criminals and other people is that the criminals are stupid enough to get caught.

Q14.* Most men are brave.

Q15. It is wise to flatter important people.

Q16.* It is possible to be good in all respects.

Q17.* Barnum was wrong when he said that there's a sucker born every minute.

Q18. It is hard to get ahead without cutting corners here and there.

Q19. People suffering from incurable diseases should have the choice of being put painlessly to death.

Q20. Most men forget more easily the death of their father than the loss of their property.

_____

* Reverse-scored item.

Conclusion screen for payment

Conclusion

This concludes the survey. This is your 5-digit survey code: #####

Please copy your code and paste at Mechanical Turk to be sure we can deliver your payment.

Thank you very much for your valuable time!

Automatic survey conclusion

We thank you for your time spent taking this survey.

Your response has been recorded.