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# Target costing and innovation-exploratory configurations: A comparison of fsQCA, multivariate regression, and variable cluster analysis<sup>☆</sup>

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## ABSTRACT

In this paper, we use the contingency theory to analyze the relation between innovation and environmental and organizational determinants in adopting target costing (TC). We collect data from a survey of the 500 largest Portuguese firms in 2015. The results show multiple configurations of TC adopters. The analysis extends the research by showing that previously tested determinants (competitiveness, environment, uncertainty, and innovation) are neither sufficient nor necessary factors. The multiple configurations also show the effect of economic group affiliation (and its pressures) and a focus on production cost control rather than product development costs. Methodologically, this paper contributes to the complexity theory by addressing results from a multivariate regression and a fuzzy-set qualitative comparative analysis (fsQCA). The results are robust to non-Boolean variable clustering.

## 1. Introduction

Firms face increasing global economic competition, and reducing costs is not enough to sustain competitive advantages. Along with increasing pressure to hold costs down, customers require products that meet their needs in terms of quality, functionality, and price; whereas shareholders require profitability that reflects their risk. In this setting, strategic cost management tools play a paramount role in aligning cost management with strategy (Baker, 1995; Cooper & Slagmulder, 1999).

In this paper, we investigate two related strands of literature that to the best of our knowledge have never been analyzed together: the determinants and perceived consequences of adopting different strategic cost management tools and their role in innovation. We focus primarily on the tools that managers perceive are associated with product and service innovation—target costing (TC).

The literature shows that management accounting tools are associated with the increased flexibility necessary to respond to changes (e.g., Nixon & Burns, 2012). But, Chenhall and Moers (2015) argue that accounting systems move from simple planning and control tools to more complex innovation-oriented systems. However, the empirical evidence shows that many organizations still do not use strategic cost management (Nixon & Burns, 2012). Several papers identify a gap between the academic consensus on the definition and suitability of these tools and their business-cycle applications by managers (Juras, 2014;

Nixon & Burns, 2012). Consequently, our research question focuses on the determinants of the adoption of TC and, in particular, any configurational differences that justify the aforementioned mixed results.

We collect our data by surveying the 500 largest Portuguese firms in 2015. Our measurement scale is adapted from previous studies (Afonso, Nunes, Paisana, & Braga, 2008; Garg, Ghosh, Hudick, & Nowacki, 2003; Juras, 2014). The data reflects roughly a 20% answer rate.

We use a multivariate regression analysis to analyze the determinants of adoption and then run a fuzzy-set qualitative comparative analysis (fsQCA) to analyze the perceived and intended consequences. Based on new products launched in the past three years, we find evidence for the importance of innovation (measured by new products launched in the past three year (Bisbe & Otley, 2004)), along with the economic group affiliation as fundamental reasons to pursue strategic cost management. The results also show that cost control and cost information are relevant perceived consequences, whereas a strategy's definition seems to be perceived as less of a consequence even when taking into consideration innovation.

The fsQCA shows both the asymmetric configuration of adopters and non-adopters and the strategic association between cost management tools and innovation-oriented framing (development costs focus vs production cost focus). Firms that adopt innovation-oriented TC do so by considering the implications beyond the academic scope of TC. Conversely, the proclaimed adopters of TC claim a focus on production

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costs that indicates their misperception of the tool and its intended effects. The results are robust to variable clustering.

This study contributes to the literature by addressing organizational capabilities and competitive pressure as determinants of TC adoption to facilitate innovation. We extend this research by robustly providing evidence that these are sufficient conditions but not necessary ones. In fact, we find configurational evidence of other contingent factors, such as group affiliation and production costs that lead to TC adoption. We also contribute to the literature by analyzing the intensity of the use of TC features.

The remainder of the paper is organized as follows: [Section 2](#) provides the conceptual framework and the propositions. In [Section 3](#), we explain the research method and the procedure for the data collection. [Section 4](#) presents the results. [Section 5](#) highlights the main findings, the contribution of the study, and some implications from the findings.

## 2. Conceptual framework and propositions

According to the contingency theory, managers should enhance organizational flexibility to face different contingencies in order to obtain acceptable performance. Contingency studies attempt to determine the most appropriate technique for a specific organization with their specific contingencies ([Chenhall, 2006](#); [Otley, 2016](#)). Firms face increasing global competition and reducing costs is no longer enough to sustain competitive advantage. To face this type of continuous pressure, firms perceive innovation as a way to respond to market changes and demands to gain a competitive advantage ([Damanpour & Gopalakrishnan, 2001](#); [Walker, 2006](#)). Consequently, the main objective of product or service innovation is to help the firm achieve short- and long-term viability ([Roberts & Amit, 2003](#)). According to the [OECD \(2005\)](#), product innovation consists of the introduction of a new product to the market or the introduction of a new version of a previous product with major exchanges.

Nowadays, customers have a wide range of high-quality products available at reduced prices that has led to increasingly focused market production and profound changes in firms' operational strategies. Target costing recognizes the market value of the product and allows product development that takes into consideration demand and functionality constraints while seeking to eliminate waste ([Monden & Hamada, 1991](#); [Zengin & Ada, 2010](#)). This strategic cost management tool, developed in Japan, has a key rule—a product only moves to production if the estimated costs are lower than or equal to its calculated target cost ([Kee, 2010](#)). In short, TC is a method of reverse costing ([Dekker & Smidt, 2003](#)) that identifies improved production efficiency as well as the activities that do not add value and, therefore, must be removed ([Baker, 1995](#)).

In fact, TC is a proactive and interactive system of planning a firm's profitability and cost management that ensures the success of new products and services in terms of market acceptance and financial return ([Ansari, Swenson, & Bell, 2006](#); [Gopalakrishnan, Libby, Samuels, & Swenson, 2015](#)). Thus, the adoption of TC as well as the intensity of the use of its features should be related to innovation. Thus, [Proposition 1](#) is:

**Proposition 1.** TC adoption and the intensity of its use is directly associated with product and service innovation.

Although the essential propositions of TC are quite straightforward, in reality it is a very complex and multifaceted process ([Ansari et al., 2006](#)). In this process, the selling price depends on the market price after considering the customers and competing products. The applicable profit margin depends, in turn, on the firm's strategy, shareholders' expectations, and stakeholders' demands ([Zengin & Ada, 2010](#)). Indeed, according to [Kee and Matherly \(2006\)](#), most firms still use cost-based product development and pricing. Firms calculate the costs associated with the development and production of products and then add a profit margin to it. Consequently, they face the risk that the resulting price is

higher than the value to the market, which leads to low demand and lower profits than those initially estimated.

[Ax, Greve, and Nilsson \(2008\)](#) argue that there is little evidence regarding the factors that influence the adoption of TC. However, several studies exist that list the characteristics associated with firms adopting TC ([Afonso et al., 2008](#), [Burrows & Chenhall, 2012](#); [Dekker & Smidt, 2003](#); [Gopalakrishnan et al., 2015](#), [Mijovc, Pektanov Starvcevic, & Mijovc, 2014](#); [Zengin & Ada, 2010](#)). Most authors agree that TC is mainly used by large firms with an extensive value chain that operate in environments with high perceived uncertainty; where competition is fierce and products have a relatively short life cycle, but yet have great added value; and products are purchased by sophisticated customers that can identify the quality difference of each product. Conversely, [Ax et al. \(2008\)](#) argue that the perceived environmental uncertainty negatively moderates TC adoption in increasingly competitive environments. The authors believe that TC requires reliable market data that can only be attainable in moderate to low uncertainty settings. These results lead to the following propositions:

**Proposition 2.** An increasingly competitive environment is directly associated with TC adoption and the intensity of its use.

**Proposition 3.** The increasingly perceived uncertainty of the environment is associated with TC adoption and the intensity of its use. The direction of the association is unknown.

[Hamood \(2016\)](#) further adds two determinants: top management values, since a more conservative management tends to choose more traditional techniques; and firms' organizational strategies where the firms that face competition or cost leadership strategies are more likely to adopt TC. In organizational terms, [Hamood \(2016\)](#) also highlights the firms' size, since a greater availability of resources leads to successful implementation. Summarizing the research, we formulate the following proposition:

**Proposition 4.** Organizational capabilities (such as management commitment and production/development focus) are directly associated with TC adoption and the intensity of its use.

One of the major limitations of TC according to [Kee \(2010\)](#) is that production-related decisions do not account for the cost of capital. Therefore, TC frequently underestimates investment costs and overestimates costs related to production resources, which can lead to an acceptance of products with negative net present values (NPVs) and the rejection of products with positive NPVs. The following proposition emerges:

**Proposition 5.** TC adopters incorrectly cost capital in their target costing analysis.

[Duck \(1971\)](#) concludes that certain firms claim to use costing techniques but, in fact, are applying a system adapted to the organization. Furthermore, [Dekker and Smidt \(2003\)](#) identify several German manufacturing firms that use cost techniques very similar to TC without knowing the concept behind the technique. This finding indicates that firms have poor knowledge of the real concept of the technique in question. The academic community knows these gaps and studies such as [Adler, Everett, and Waldron \(2000\)](#), [Nixon and Burns \(2012\)](#), and [Juras \(2014\)](#) address them.

On the other hand, [Afonso et al. \(2008\)](#) have a different view of TC—the focus on the product as well as its components—and find evidence of asymmetric effects from TC on new product development. This evidence relates to [Ellram \(2006\)](#) who finds different TC foci in American and Japanese firms. The US firms focus on supply chain management for cost control and new product development whereas the Japanese center their attention on market inputs. We argue that firms act as subsidiaries for multinational groups and undertake TC as part of the supply chain but miss other features such as market orientation. Hence, [Proposition 6](#) is:

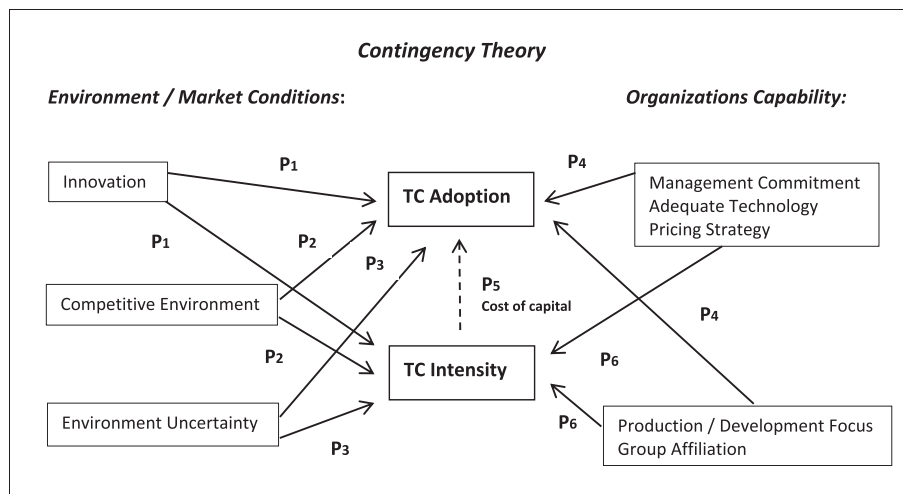


Fig. 1. Conceptual model (for constructs details see Appendix).

**Proposition 6.** Organizational configuration is inversely associated with the type of TC and the intensity of its use.

Fig. 1 summarizes the conceptual model and presents the propositions under study.

### 3. Method

#### 3.1. Sample and data

Since the majority of small firms do not officially use any type of management accounting (Duck, 1971; Van der Stede, Young, & Chen, 2005), we target the 500 largest firms in Portugal for the year 2015, as published by the magazine “Exame.” This grouping makes size an endogenous factor. Choosing Portugal extends the research where country-level asymmetric organizational configurations affect the adoption of TC and innovation processes (Afonso et al., 2008; Omar, Sulaiman, Hui, Rahman, & Hamood, 2015).

Data collection comes from an online survey targeted at the firms' financial controllers and officers (Cobanoglu, Warde, & Moreo, 2001). This survey was adapted from Afonso et al. (2008) and had already been used in the Portuguese market as part of a worldwide questionnaire by Ernest & Young called “Roles and practices in management accounting today” (Garg et al., 2003). Additional questions stem from Cadez and Guilding (2008) and Juras (2014).

For clarity's sake and for unequivocal identification of different management accounting techniques without the use of a specific vocabulary, we consider the main actions for each of the accounting management techniques applied (refer to Appendix). By using specific actions rather than jargon, we can identify the firms that knowledgeably adopt TC and those that use similar techniques without being aware or familiar with the concept (Dekker & Smidt, 2003).

A total of 106 firms (22%) accessed and partially answered the survey, but only 61 fully completed it to be eligible for analysis (13%). The results remained consistent after treatment for alternative missing values. Additionally, we ruled out a nonresponse bias. Indeed, following Armstrong and Overton (1977), we compared the profiles of respondents and nonrespondents and found no statistical differences. Of the respondents, about 90.3% belonged to an economic group. In terms of the main activities, 45.2% belonged to manufacturing, 40.3% to services, and 14.5% to retail. In total, 72.6% had launched a new product in the last three years.

The internal consistency of the binary questions in the survey is measured with a Likert scale and lead to a Cronbach's alpha of 0.805. Additionally, internal validity was achieved by the research from which we adapted our research instrument (Afonso et al., 2008; Cadez &

Guilding, 2008; Garg et al., 2003 and Juras, 2014).

#### 3.2. Multiple regression analysis

To analyze the relation between TC adoption and innovation, we use two different regression models: a logit regression model to test the impact of innovation on TC adoption, and a probit regression to test the impact of innovation on TC intensity:

$$TCA = a + b_1 \text{Innovation} + b_2 \text{UncertE} + b_3 \text{UncertC} + b_4 \text{UncertG} + b_5 \text{Competition} + e \quad (1)$$

$$TCI = a + b_1 \text{Innovation} + b_2 \text{UncertE} + b_3 \text{UncertC} + b_4 \text{UncertG} + b_5 \text{Competition} + e \quad (2)$$

TCA is the probability of TC adoption and is a binary variable that equals one if the firm adopts TC and zero otherwise. This variable is adapted from a question that surveys the use of a technique that describes generally the aim of TC and is identified by the jargon as such—capturing knowledgeable adopters as well as de facto users. TCI measures the intensity level in the use of five main TC features, which are described in the appendix. Innovation is a binary variable that equals one if the firm had launched a new product in the past three years and zero otherwise (Bisbe & Otley, 2004).

Both models control for the effect of the environment's uncertainty and competition on TC adoption and intensity (e.g., Ax et al., 2008). Following the research, we focus on the managers' perception of uncertainty and competition rather than on objective measures, because perceptions about the external environment are what really affect decisions in organizations (Duh, Xiao, & Chow, 2009). We measure the perceived uncertainty with three instruments: UncertE, which is related to the economic and technological environment; UncertC, which is related to customers' requirements; and UncertG, which is related to group pressure. Competition is defined as the time-to-market of new products as compared to competitors. Both models use dummy variables to control for industry characteristics and whether the firm is or is not a subsidiary of an economic group (see the Appendix for more detailed information).

#### 3.3. fsQCA analysis

We extend the research on TC adoption and its determinants by incorporating additional layers of analysis: similar to Felício, Duarte, and Rodrigues (2016), we add a configurational analysis of those factors associated with TC adoption. Further, we extend Afonso et al. (2008) by incorporating TC features in the process of understanding the

intensity of its use. And, in the same vein as Cheng, Cai, and Jin (2016), we use a multivariate regression and a Boolean-based analysis of fsQCA to test both the internal validity of the research instrument and the external validity of the conclusions.

The QCA, contrary to correlation techniques, identifies the magnitude and direction of the effect of a variable and its combination with others in a model that lead to a certain outcome (Ragin, 2008). In addition, the QCA method allows for the possibility of different combinations to generate the same result that thus lead to different configurations (Ganter & Hecker, 2014; Marx, 2006). It also allows differentiation between necessary causal conditions and sufficient conditions (Pappas, Kourouthanassis, Giannakos, & Chrissikopoulos, 2016; Ragin, 2008).

The fsQCA analysis uses four variables. The first variable (TCI) derives from the functionality of the QCA (fuzzyand) that results from the combination of five statements related to the main features of TC (see Appendix). Consistently, a firm should only be considered as using this technique if its activities and fundamental premises are put into practice. The second variable (Concord\_custaba) tests the golden rule of TC (Kee, 2010)—a product only moves to production when the estimated costs are below the production cost. The third variable (Concord\_custfin) measures whether firms account for the financing costs. Fourth, the research tests the focus of TC (Develop\_focus).

Since cases are hardly ever consistent with the rule, it is necessary to establish an acceptable consistency measure that accounts for the data and the context. We use the raw consistency with a cut-off value of 0.80 (Fiss, 2011). Consequently, cases where the raw consistency is > 0.80 are defined as TC adopters.

### 3.4. Variable cluster analysis

Variable clustering is a less restrictive analysis of the similarity in the measurement constructs. It combines the multiple dimensionality of the environmental determinants as well as organizational configurations and capabilities in order to understand the patterns of correlation between the answers to those different variables. Methodologically, it addresses concerns about using a factor analysis in binary data (e.g., Woods, 2002). Further, it provides additional robustness to our results from the regression and fsQCA.

The goal of variable clustering is to find a subset of variables that correlate and, hence, provide similar kinds of information. It has more robust results than a factor analysis since it overcomes the need for orthogonal factors. Clustering variables also offers complementary information to the clustering of observations and provides information about the underlying structures of the data. Sanche and Lonergan (2006) argue that clustering variables “is an unsupervised learning technique as it describes how the data is organized without using an outcome” (p.92), as opposed to a regression analysis where the outcome sets the model.

The research provides evidence on the clustering of all binary data on both the firms' characteristics and organizational capabilities as well as the environment's uncertainty and competitiveness.

## 4. Research results

### 4.1. Results from multiple regression analysis

Table 1 shows that the relation between innovation and TC is significantly positive in both models. The results indicate that the probability of TC adoption increases in response to innovation and decreases in response to the uncertainty that is related to the economic and technological environment (UncertE). This result is consistent with the previous findings reported in the literature (Afonso et al., 2008; Ax et al., 2008). The results also show that the TC's intensity increases with innovation and decreases with the environment's economic and technological uncertainty as in the previous model, but also with the

**Table 1**  
Logit and probit regressions results.

	TC Adoption		TC Intensity	
	b	z-Value	b	z-Value
Innovation	1.625**	2.23	1.735**	1.96
UncertE	-1.621*	-1.76	-2.288**	-2.30
UncertC	-0.779	-0.76	-1.909*	-1.69
UncertG	-0.351	-0.55	-1.553	-1.54
Competition	0.184	0.64	0.281	0.57
N	61		61	
Pseudo R square	0.1540		0.2327	

\*\* p-Value < 0.05.

\* p-Value < 0.10.

customers' uncertainty (UncertC). There is no evidence of a direct relation between the intensity of competition (Competition), as well as the uncertainty that is related to the pressure from the group affiliation (UncertG), and TC adoption and intensity.

### 4.2. Results from fsQCA

Table 2 shows the solutions from fsQCA according to the different causal core combinations. The table compares intermediate and parsimonious solutions in order to categorize the variables (Rihoux & Ragin, 2009). A causal core condition is present in both solutions as it has a very strong causal relation. A peripheral condition, due to its weaker causal relation, is only found in the intermediate solution (Fiss, 2011; Ragin, 2008).

The analysis of the unique coverage (how much a causal combination exclusively justifies a given result) shows that all of the causal combinations must be considered empirically relevant. The overall result shows a joint importance of 0.6997 that indicates the majority of the results fall within the four combinations (Ragin, 2008; Rihoux & Ragin, 2009).

An analysis of the table shows that the variables that reflect the TC's intensity (TCI) are all considered core variables. This result is complemented by the fact that there is awareness of the method that overcomes one of the limitations of TC. Portuguese firms that claim to adopt TC already incorporate the cost of financing on the product cost. In this way, firms get a more realistic value, which reduces the risk of obtaining lower than expected results.

However, an analysis of solution 4 shows a contradiction regarding TC fundamentals. It results from the absence of management accounting tools focused on the development phase, the disregard of funding costs in the product and service costs, and the rejection of the rule of transition to the production stage where the costs are below the threshold target cost.

**Table 2**  
fsQCA results: configuration for TC adoption.

	Solutions			
	1	2	3	4
TCI			●	
Concord_custaba	●	●		○
Concord_custfin		●	●	○
Develop_focus	●			○
Consistency	0.790526	0.841000	0.827333	0.800400
Raw coverage	0.359864	0.483588	0.475730	0.095884
Unique coverage	0.076094	0.020030	0.080119	0.047966
Solution coverage	0.699746			
Solution consistency	0.758597			

Note: ● = core causal condition present; ● = peripheral causal condition present; ○ = core causal condition absent.

**Table 3**  
Variable clustering results: cluster membership.

Variables	Cluster membership		
	4	3	2
1 Innovation	1	1	1
2 Price_Market	2	1	1
3 Mgmt_Commitment	3	2	1
4 Technology_Aval	1	1	1
5 UncertE	1	1	1
6 UncertC	4	3	2
7 UncertG	3	2	1
8 Develop_focus	1	1	1
9 Production_focus	3	2	1
10 Services	4	3	2
11 Manufacturing	3	2	1
12 Group_affiliation	3	2	1

#### 4.3. Results from variable cluster analysis

Table 3 shows the membership from variable clustering. We test the solutions from two to four clusters. Since all the variables in the analysis are binary, cluster membership (and distance) is defined using a four-point correlation and agglomeration that is based on the average linkage.

To determine the number of clusters, we use three criteria: the theoretical and empirical reasoning underlying the data; an analysis of the dendrogram presented in Fig. 2, where the number of clusters in the final solution should be within the largest increase in heterogeneity; and consistent with the former, we use the “elbow” criterion where the final number of clusters is right before the decreasing absolute marginal distance. The result is a three-cluster solution (Sanche & Lonergan, 2006).

Cluster 1 aggregates innovation, pricing based on the market, the availability of technology and the perceived uncertainty as reasons to adopt cost management tools, and a focus on product development. This cluster shows evidence of similarity in determinants and the firms' characteristics that is mostly connected with a focus on new product development. Cluster 2 combines management commitment and

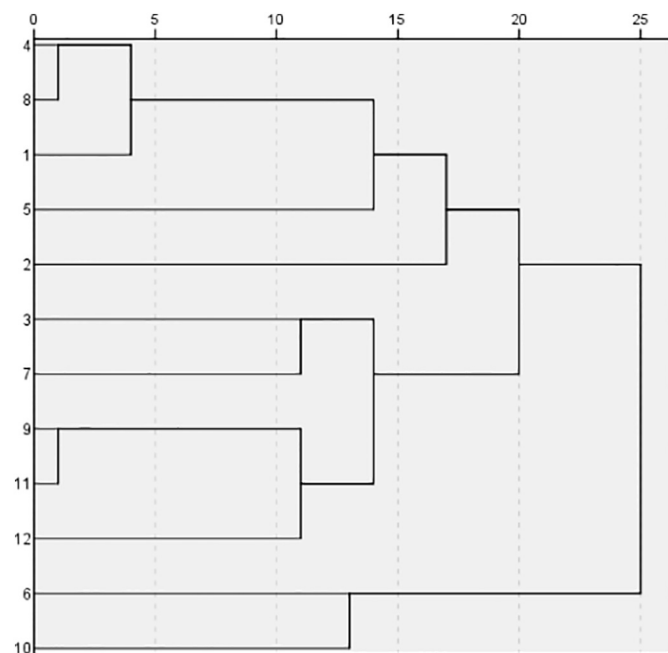


Fig. 2. Dendrogram - average linkage.

Note: x axis – rescaled cluster distance; y axis – variables.

pressure from group affiliation (UncertG) as being the most associated with cost management practices; the focus of these tools are on production costs and business conducted mostly in an industry. The later cluster represents firms mostly concerned with cost control after production rather than strategic cost management at the development stage as in the former cluster. The third cluster finds similar data from variables that pertain to service and pressure from customers to commit to cost management.

## 5. Conclusion

### 5.1. Discussion of empirical results

Overall, the results support Proposition 1. In fact, innovation positively impacts TC adoption and its intensity. Similar to the literature (e.g., Afonso et al., 2008), and in line with economic reasoning, the regression coefficient for innovation is positive and statistically significant both for adoption and intensity. By contrast, Proposition 2 is not supported: competitiveness shows no significant association with TC adoption and intensity. Although the regression coefficient's sign is positive, its lack of statistical significance warrants the need for additional analysis. Finally, the perceived uncertainty presents a significantly negative impact on TC use (Proposition 3). The results for the later are in line with Ax et al. (2008). Additional uncertainty that stems from both customers and group affiliation bear no statistical impact on the outcomes at study. Proposition 4 posits that organizational capabilities have a significant impact on TCA and TCI. We also find evidence from a configurational analysis with variable clustering that points to the TCA. Furthermore, TC adopters understand the importance of considering the cost of capital as argued in Proposition 5.

Proposition 6 addresses the impact of organizations' strategic focus and configuration (based on group affiliation and management commitment). For the fsQCA analysis on the typology and importance of each variable on TC adoption, the results are consistent with the literature that finds that the organizational focus on the development of new products and management commitment leads to the analyzed outcome – TC adoption. However, we also find some puzzling results when compared to the literature—firms with a cost focus on production and less management autonomy due to group affiliation also adopt TC, which is contrary to our prediction. Duck (1971) concludes that certain firms think they are using some cost techniques but are in fact applying a system adapted to the organization. On the other hand, Dekker and Smidt (2003) identify several German manufacturing companies that use cost techniques very similar to TC without recognizing its lexical content. According to Sani and Allahverdzadeh (2012), the focus of firms in the different phases of a product's life largely depends on its longevity. Firms with products with short or medium-term useful lives tend to focus on management accounting techniques like TC. They give greater importance to the development stage. Conversely, firms that operate in mature markets with products with long life cycles tend to put a greater focus on the production phase. Alternatively, Afonso et al. (2008) find significant differences in cost management tools for firms involved in new product development and component development. This distinction can relate to, for instance, group affiliation with little to no innovation autonomy. The same is arguable for the customer pressure tested in this study. Consequently, different asymmetric configurations emerge from fsQCA, yet remain hidden from the regression analysis.

Variable clustering allows robustness testing of these predictions. Consistent with the fsQCA results, we find data patterns that classify the differing cost management techniques and organizational characteristics. In line with the presented arguments and the scarce previous evidence, we are able to distinguish the firms with a focus on new product development where technological availability and full market (pricing) attention requires complete and full use of TC. But, a second group of firms (mostly related to manufacturing and subject to

economic group pressures) adopts cost management that focuses on production costs rather than new product development.

5.2. Research contribution and implications

This study's contribution is that it extends the literature by analyzing both TC adoption and product innovation that integrates a multivariate regression, fsQCA, and variable clustering.

The theoretical contributions also stem from providing additional configurational layers of TC adopters. Contrary to the previous empirical evidence and normative expectations, but in line with the contingency theory, we argue that a group of TC adopters that do not fully perceive the strategic value of TC and yet adopt it—either intentionally or not—do so because of pressure from their economic group. These conclusions extend the determinants of TC tested in the literature and provide additional perceived consequences to its adoption: “cost control under a group setting.”

The results are economically relevant since cost management tools require investment to implement and thus have to have benefits outweighing those implementation costs. We find configurational evidence contrary to that. Additionally, the intended objective of those tools is to sustain strategic competitive advantage. Yet, we find evidence of a lack

of association between those tools and a strategic focus. Rather, we find a more reactive management application to those tools in the context of group pressure. Practical implications matter for management since under a decision based on an economic group to adopt TC and its features, managers should undertake full disclosure of the TC's intended features and results. Consequently, a group's subsidiaries will better understand their role in TC adoption regarding market inputs under innovation and clearly perceive why it matters that those firms keep production costs under control.

However, we use perceived information. This fact raises concerns about validity, both internal and external. Triangulation with hard data is relevant for future research to overcome that limitation. Additionally, this study contributes by using multiple analytical tools to address the research topic at hand. Yet, the sample size is relatively small that contributes to the potential lack of predictive validity in the results. Future venues for research could also aim at larger samples so as to run a split sample analysis.

Declarations of interest

None.

Appendix A. (Truncated) survey

Variable/Construct	Question	Average	Std dev
Target costing			
TCA	<b>Fuzzyand of the level of agreement with the following statement:</b> (five-point Likert scale with 1- totally disagree; 5- totally agree as endpoints)	0.79	0.410
	<ul style="list-style-type: none"> <li>For the development of new products, it is usual to compute the target cost as the potential market price minus the margin expected for this product</li> </ul>		
TCI	<b>Fuzzyand of the level of agreement with the following five statements:</b> (five-point Likert scale with 1- totally disagree; 5- totally agree as endpoints)		
	<ul style="list-style-type: none"> <li>For the development of new products, it is usual to compute the desirable production cost of the new product from the following formula: “<i>maximum allowable cost = potential market price – margin expected for this product</i>”</li> <li>During the New Product Development process, the product's attributes that are considered too costly when compared with the value attributed by the client are reduced/eliminated</li> <li>The company usually negotiates with suppliers and clients concerning the changes in product design and/or its functionalities to achieve a predetermined product cost</li> <li>During the New Product Development process, the company tries to add additional features or functionalities to the product if it is not possible to offer a lower price than competitors</li> <li>During the New Product Development process, the company aims to beat competitors by designing competitive products in price, functionality, and quality</li> </ul>	2.67	1.363
		3.05	1.419
		3.41	1.465
		3.46	1.598
		3.75	1.545
Concord_custaba	<b>Production only starts if cost is below target</b> (five-point Likert scale with 1- totally disagree; 5- totally agree as endpoints)	2.75	1.468
Concord_custfin	<b>Production cost includes cost of financing</b> (five-point Likert scale with 1- totally disagree; 5- totally agree as endpoints)	3.39	1.552
Environment/market conditions			
Innovation	<b>New products launched in the last three years</b> (1-“Yes” and 0- “No”)	0.72	0.452
Competition	<b>Comparing the design and development time of new products between competitors</b> (five-point Likert scale with 1-“Fastest” and 5-“Much slower” as endpoints)	3.48	1.246
	<b>Reasons to adopt cost management tools:</b> (multiple choices allowed; each factor is binary: 1-‘Yes’; 0-‘No’)		
UncertE	Significant competitive environment changes	0.18	0.388
UncertC	Costumers requirement	0.05	0.218
UncertG	Economic group pressure	0.46	0.502
Organizations capability			
	<b>Reasons to adopt cost management tools:</b> (multiple choices allowed; each factor is binary: 1-‘Yes’; 0-‘No’)		

Mgmt_Commitment	Management commitment	0.82	0.388
Technology_Aval	Adequate technology	0.38	0.489
	<b>Cost management focus on:</b> (multiple choices allowed; each factor is binary: 1-‘Yes’; 0-‘No’)		
Develop_focus	• Development phase	0.46	0.498
Production_focus	• Production phase	0.87	0.337
Price_Market	<b>Pricing strategy</b> (1-“Market based” and 0-“Cost based”)	0.39	0.493
Develop_focus	• Development phase	0.46	0.498
Production_focus	• Production phase	0.87	0.337
	<b>Main activity:</b> (multiple choices allowed; each factor is binary: 1-‘Yes’; 0-‘No’)		
Services	• Services	0.40	0.488
Manufacturing	• Manufacturing	0.45	0.498
Retail	• Retail	0.15	0.413
Group_affiliation	<b>Subsidiary of an economic group:</b> (1-‘Yes’ and 0- ‘No’)	0.90	0.298

## References

- Adler, R., Everett, A. M., & Waldron, M. (2000). Advanced management accounting techniques in manufacturing: Utilization, benefits, and barriers to implementation. *Accounting Forum*, 7(2), 131–150.
- Afonso, P., Nunes, M., Paisana, A., & Braga, A. (2008). The influence of time-to-market and target costing in the new product development success. *International Journal of Production Economics*, 115(2), 559–568.
- Ansari, S., Swenson, D., & Bell, J. (2006). A template for implementing target costing. *Journal of Cost Management*, 20(5), 20–27.
- Armstrong, J. S., & Overton, T. S. (1977). Estimating nonresponse bias in mail surveys. *Journal of Marketing Research*, 14(3), 396–402.
- Ax, C., Greve, J., & Nilsson, U. (2008). The impact of competition and uncertainty on the adoption of target costing. *International Journal of Production Economics*, 115(1), 92–103.
- Baker, W. M. (1995). The missing element in cost management: Competitive target costing. *Industrial Management*, 37(2), 29–32.
- Bisbe, J., & Otley, D. (2004). The effects of the interactive use of management control systems on product innovation. *Accounting, Organizations and Society*, 29(8), 709–737.
- Burrows, G., & Chenhall, R. H. (2012). Target costing: First and second comings. *Accounting History Review*, 22(2), 127–142.
- Cadez, S., & Guilding, C. (2008). An exploratory investigation of an integrated contingency model of strategic management accounting. *Accounting, Organizations and Society*, 33(7–8), 836–863.
- Cheng, L. Y. V., Cai, H. H., & Jin, Z. (2016). The effect of parental opportunism, IJV's autonomy and tacit knowledge on IJV instability: A comparison of multi-variate regression and fuzzy-set qualitative comparative analysis. *Journal of Business Research*, 69(11), 5203–5209.
- Chenhall, R. H. (2006). Theorizing contingencies in management control systems research. *Handbooks of Management Accounting Research*, 1, 163–205.
- Chenhall, R. H., & Moers, F. (2015). The role of innovation in the evolution of management accounting and its integration into management control. *Accounting, Organizations and Society*, 47, 1–13.
- Cobanoglu, C., Warde, B., & Moreo, P. J. (2001). A comparison of mail, fax and web-based survey methods. *International journal of market research*, 43(4), 441–452.
- Cooper, R., & Slagmulder, R. (1999). Develop profitable new products with target costing. *MIT Sloan Management Review*, 40(4), 23–34.
- Damanpour, F., & Gopalakrishnan, S. (2001). The dynamics of the adoption of product and process innovations in organizations. *Journal of Management Studies*, 38(1), 45–65.
- Dekker, H., & Smidt, P. (2003). A survey of the adoption and use of target costing in Dutch firms. *International Journal of Production Economics*, 84(3), 293–305.
- Duck, R. (1971). The use of management accounting techniques in industry. *Journal of Management Studies*, 8(3), 355–359.
- Duh, R.-R., Xiao, J. Z., & Chow, C. W. (2009). Chinese firms' use of management accounting and controls: Facilitators, impediments, and performance effects. *Journal of International Accounting Research*, 8(1), 1–30.
- Ellram, L. M. (2006). The implementation of target costing in the United States: Theory versus practice. *Journal of Supply Chain Management*, 42(1), 13–26.
- Felício, J. A., Duarte, M., & Rodrigues, R. (2016). Global mindset and SME internationalization: A fuzzy set QCA approach. *Journal of Business Research*, 69(4), 1372–1378.
- Fiss, P. C. (2011). Building better causal theories: A fuzzy set approach to typologies in organization research. *Academy of Management Journal*, 54(2), 393–420.
- Ganter, A., & Hecker, A. (2014). Configurational paths to organizational innovation: Qualitative comparative analyses of antecedents and contingencies. *Journal of Business Research*, 67(6), 1285–1292.
- Garg, A., Ghosh, D., Hudick, J., & Nowacki, C. (2003). Roles and practices in management accounting today. *Strategic Finance*, 85(1), 30–35.
- Gopalakrishnan, M., Libby, T., Samuels, J. A., & Swenson, D. (2015). The effect of cost goal specificity and new product development process on cost reduction performance. *Accounting, Organizations and Society*, 42(C), 1–11.
- Hamood, H. H. (2016). Target costing implementation in Malaysian automotive industry: An exploratory study. *Asia-Pacific Management Accounting Journal*, 8(1), 19–42.
- Juras, A. (2014). Strategic management accounting-what is the current state of the concept? *Economy Transdisciplinarity Cognition*, 17(2), 76–83.
- Kee, R. (2010). The sufficiency of target costing for evaluating production-related decisions. *International Journal of Production Economics*, 126(2), 204–211.
- Kee, R., & Matherly, M. (2006). Decision control of products developed using target costing. *Advances in Management Accounting*, 15, 267–292.
- Marx, A. (2006). *Towards more robust model specification in QCA results from a methodological experiment*. Philadelphia, PA: American Sociological Association.
- Mijovic, J., Pekanov Starvcevic, D., & Mijovic, I. (2014). Investigation of the relationship between contemporary cost management methods and improvement in financial performance. *Economic Research-Ekonomska Istraživanja*, 27(1), 393–413.
- Monden, Y., & Hamada, K. (1991). Target costing and Kaizen costing in Japanese automobile companies. *Journal of Management Accounting Research*, 3, 16–34.
- Nixon, B., & Burns, J. (2012). The paradox of strategic management accounting. *Management Accounting Research*, 23(4), 229–244.
- OECD (2005). *Oslo Manual*. (OECD/Eurostat).
- Omar, N., Sulaiman, S., Hui, W. S., Rahman, I. K. A., & Hamood, H. H. (2015). Target costing implementation and organizational capabilities: An empirical evidence of selected Asian countries. *Journal of Economics, Business and Management*, 3(2), 201–206.
- Otley, D. (2016). The contingency theory of management accounting and control: 1980–2014. *Management Accounting Research*, 31, 45–62.
- Pappas, I. O., Kourouthanassis, P. E., Giannakos, M. N., & Chrissikopoulos, V. (2016). Explaining online shopping behavior with fsQCA: The role of cognitive and affective perceptions. *Journal of Business Research*, 69(2), 794–803.
- Ragin, C. C. (2008). *Redesigning social inquiry: Fuzzy sets and beyond*. Wiley Online Library.
- Rihoux, B., & Ragin, C. C. (2009). *Configurational comparative methods: Qualitative comparative analysis (QCA) and related techniques*. Sage.
- Roberts, P. W., & Amit, R. (2003). The dynamics of innovative activity and competitive advantage: The case of Australian retail banking, 1981 to 1995. *Organization Science*, 14(2), 107–122.
- Sanche, R., & Lonergan, K. (2006). Variable reduction for predictive modeling with clustering. *Casualty Actuarial Society Forum* (pp. 89–100). (March).
- Sani, A. A., & Allahverdizadeh, M. (2012). Target and Kaizen costing. *World Academy of Science, Engineering and Technology*, 6(2), 40–46.
- Van der Stede, W. A., Young, S. M., & Chen, C. X. (2005). Assessing the quality of evidence in empirical management accounting research: The case of survey studies. *Accounting, Organizations and Society*, 30(7–8), 655–684.
- Walker, R. M. (2006). Innovation type and diffusion: An empirical analysis of local government. *Public Administration*, 84(2), 311–335.
- Woods, C. M. (2002). Factor analysis of scales composed of binary items: Illustration with the Maudsley obsessional compulsive inventory. *Journal of Psychopathology and Behavioral Assessment*, 24(4), 215–223.
- Zengin, Y., & Ada, E. (2010). Cost management through product design: Target costing approach. *International Journal of Production Research*, 48(19), 5593–5611.