

Skwara, Florian

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REVIEW

Effects of mental accounting on purchase decision processes: A systematic review and research agenda

Florian Skwara 

Chair of Marketing Management and Sustainability, HHL Leipzig Graduate School of Management, Leipzig, Germany

Correspondence

Florian Skwara, Jahnallee 59, 04109 Leipzig, Germany.

Email: florian.skwara@hhl.de

Abstract

This paper aims to systematically analyze and synthesize the existing research published on mental accounting and purchase decision processes by conducting a systematic literature review. Specifically, the paper aims to answer the question: “What are the effects of mental accounting on purchase decision processes?” Therefore, it identified 110 papers which contribute to achieving the research objective and which were selected using the same data collection, data analysis, and quality standards. After reviewing the identified publications, the paper finds that the existing literature can be structured along four main themes impacting purchase decision-making processes: (1) source of funds, (2) intended use of funds, (3) pricing, and (4) payments. The paper shows that for each of the four themes there are multiple mental accounting effects with an impact on for example willingness to pay, the experienced pain of paying or the ultimate purchase decision. Further, the paper identifies potential directions for future research in mental accounting, including the influence of product categories on mental accounting, flexibility in budget setting and its impact on mental accounting behavior, long-term effects of mental budgeting on financial wealth, integration–segregation behavior in the context of pricing, the role of consumer characteristics on mental accounting behavior, and the impact of increased financial transparency through technology on mental accounting.

1 | INTRODUCTION

Every day, consumers are confronted with purchase decision processes (PDP) that have far-reaching consequences for their financial wealth. They decide whether to spend, borrow, save, or invest money. Research shows that consumers are not always acting rationally in these decisions (Thaler, 1990, 1999) and consumers are, for example when they spent more money when using their credit card, violating a core principle of economic theory: the principle that money is fungible (Abeler & Marklein, 2017). Researchers summarize explanations for these phenomena under the term “mental accounting” (MA) (Thaler, 1990, 1999). MA is “the set of cognitive operations used

by individuals and households to organize, evaluate, and keep track of financial activities” (Thaler, 1999, p. 183). MA explains that consumers apply complex mental reasoning processes on a daily basis and in different fields of application: for example, they group expenses into categories and set budgets for them to limit their spending behavior (Heath & Soll, 1996).

Research into MA theory often describes situation- or product-specific behavior that has been observed in experiments, however so far there is no systematic overview that conceptualizes individual research outcomes and places their results in a broader context. This paper will provide a systematic review of the cognitive processes in MA. While a significant part of research into MA focuses on logical

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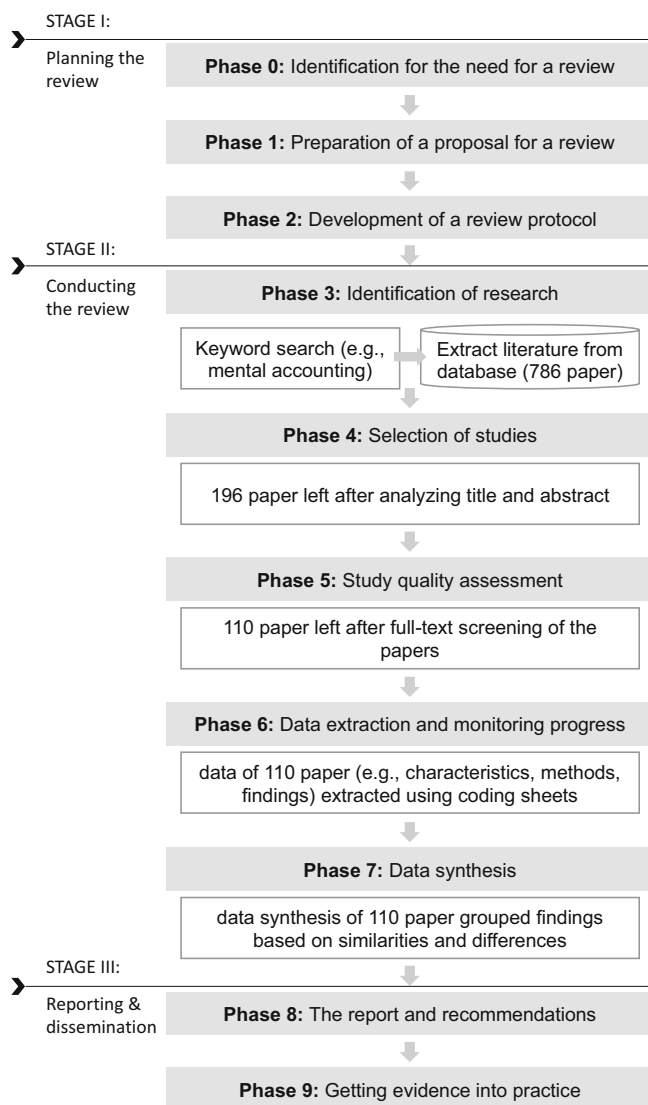


FIGURE 1 Research design—systematic literature review process according to Tranfield et al. (2003).

fallacies and biases in other decision-making processes, such as investing decisions (Barberis & Huang, 2001), this review contains only studies which deal with the effects on PDP, also referred to as household spending (Thaler, 1999). This focus should keep the number of relevant papers manageable and maximize the relevance for marketing researchers. The article therefore aims to answer the research question: “What are the effects of mental accounting on purchase decision processes?”

The article contributes to the existing literature as follows: (1) for the first time in the MA research area, it establishes a systematic review by identifying, evaluating, and integrating the findings of all relevant, peer-reviewed publications on the effects of MA on PDP; (2) it suggests an overarching conceptualization, formulates observations on relationships, inconsistencies, and contradictions in the literature, and provides implications for research and practice; and (3) it describes directions for future research by identifying research gaps against the background of the latest trends in the research field.

2 | METHODOLOGY

This systematic literature review applies the suggested by Tranfield et al. (2003). It follows a systematic, explicit, and reproducible approach to identifying, evaluating, and interpreting as much evidence-based literature as possible to achieve the research objective (Fink, 2019; Paul & Criado, 2020; Snyder, 2019). The methodology has the advantage of being systematic and is therefore both transparent and structured in the literature selection process, and this is ensured by being reproducible (Denyer & Tranfield, 2009). The methodology developed by Tranfield et al. (2003) follows a three-stage approach, as presented in Figure 1.

The following review protocol describes the parameters applied to ensure that the depth and scope of the literature extract strategy are in line with the research aim and objective and meet consistent criteria: the extracted literature consists only of published and peer-reviewed journal articles to enhance quality control, as suggested by David and Han (2004). A small number of unpublished papers were selected via the ancestry approach due to their relevance in the literature (Cooper, 1998). The keywords “mental accounting,” or a variation are present in all extracted papers—in either the title, abstract or the main text of the paper, which ensures applicability and relevance. This systematic literature review uses criterion sampling (Patton, 2005) in order to identify and extract relevant papers from the databases using keywords. The databases used for extracting the literature (i.e., EBSCO host, ResearchGate, and ScienceDirect) contain more than 100 million publications from international publishers and include key bibliographic databases. The keywords used, connected using an or-operator, are mental accounting, mental budgeting, household finance, household spending, pain of paying, pain of payment, financial budgets, mental budgets, expense tracking, spending behavior, budgeting and consumer behavior, budgeting and purchase decision making. After running multiple pre-test databank searches and investigating the results, the selected keywords showed the best balance between enabling a holistic view of the research field while extracting only papers relevant to the research questions. It is important to note once more that the selection only consists of papers dealing with MA and its impact on PDP. Papers dealing with the effects of MA on, for example, assets versus debts decisions or implications of investing, are beyond the scope of this research. Further, also papers that deal with, for example, the different practices of MA itself, such as cultural differences (Banerjee et al., 2019), are not part of this review. Reviewing the full text of each article finally ensured the focus on the effects of MA on purchase decision processes and that only relevant empirical data is used (Denyer & Tranfield, 2009). The full-text review furthermore ensures the alignment of each selected article with the aims and objectives of the systematic literature review (Tranfield et al., 2003).

The final databank extract resulted in 786 publications. After removing duplicates, analyzing the titles and abstracts and applying the standards of the review protocol to the papers, 196 publications were selected. Reading the main body of the articles and reviewing them against their relevance to the research question then resulted in

TABLE 1 Number of publications for each journal between 1970 and 2022.

Journal (ranking)	Years of publication					Total	In %	Cum.
	1970–1979	1980–1989	1990–1999	2000–2009	2010–2022			
JCR (A+)		1	3	4	10	18	16.36%	16.36%
JMR (A+)			1	4	2	7	6.36%	22.73%
JBDM (B)			1	3	1	5	4.55%	27.27%
MARKLETT (B)			2	3		5	4.55%	31.82%
JM (A+)				2	3	5	4.55%	36.36%
MKTSCI (A+)		1	2		1	4	3.64%	40.00%
IJRM (A)			1		2	3	2.73%	42.73%
MS (A+)	1		1	1		3	2.73%	45.45%
AER (A+)	1			1	1	3	2.73%	48.18%
P&M (B)					3	3	2.73%	50.91%
OBHDP (A)		1	2			3	2.73%	53.64%
EJM (C)					2	2	1.82%	55.45%
JCP (A)				2		2	1.82%	57.27%
JMTP (C)				1	1	2	1.82%	59.09%
JEPSY (B)				1	1	2	1.82%	60.91%
JEBO (A)			1	1		2	1.82%	62.73%
Other	1	5	9	8	17	41	37.27%	100%
Total	3	8	23	39	44	110	100%	

Note: Journal Rankings from VHB-JOURQUAL3 (VHB-JOURQUAL3, 2015).

Abbreviations: AER, American Economic Review; EJM, European Journal of Marketing; IJRM, International Journal of Research in Marketing; JBDM, Journal of Behavioral Decision Making; JCP, Journal of Consumer Psychology; JCR, Journal of Consumer Research; JEBO, Journal of Economic Behavior & Organization; JEPSY, Journal of Economic Psychology; JM, Journal of Marketing; JMR, Journal of Marketing Research; JMTP, Journal of Marketing Theory and Practice; MARKLETT, Marketing Letters; MKTSCI, Marketing Science; MS, Management Science; OBHDP, Organizational Behavior and Human Decision Processes; P&M, Psychology & Marketing.

85 articles. An additional 25 documents were identified by reading the full text of the papers and investigating the quoted literature within these papers (ancestry approach). These additional texts included 21 journal articles, three books, and one doctoral thesis. As described in the review protocol, the quality standard for this systematic literature review is to only include published and peer-reviewed journal articles, however, given their relevance in the research field, the additional four texts which were not peer reviewed were included to reflect the development of the research field in the best possible manner (Cooper, 1998). After conducting these steps in the filtering process, the final sample consisted of 110 texts addressing the research question about the effects of MA on PDP. For data extraction, a coding sheet was then developed to extract pertinent data from each study. The coding sheet was designed with fields for study characteristics, methods, and findings. The progress of the review was monitored using a tracking sheet. The tracking sheet recorded the number of studies included and excluded at each stage and the reasons for exclusion. The tracking sheet was regularly updated to ensure any issues that needed to be addressed were identified. For data synthesis, a narrative synthesis approach was employed to group the findings into themes or categories based on similarities and differences. The themes or categories were analyzed to identify patterns and relationships. A summary of the findings was written, which

detailed the main themes and patterns that emerged from the review (Tranfield et al., 2003). The four main themes and respective sub-themes that resulted from this clustering process are introduced in the following results section.

3 | RESULTS

3.1 | Characteristics of the extracted publications

The extracted literature contains publications starting from 1970, as presented in Table 1. Table 1 also shows the top 16 journals in terms of number of publications contributing two or more papers. The top two journals, the Journal of Consumer Research (18 out of 111, 16.36%) and the Journal of Marketing Research (7 out of 111, 6.36%), are both among the highest-ranked marketing journals globally and ranked A+ according to VHB-JOURQUAL3 (VHB-JOURQUAL3, 2015).

An analysis of the research type (see Table A1) and research method (see Table A2) shows that the majority of papers (80 out of 110, 72.73%) are applying a quantitative type of publication, and that the predominant research methods are experiments (67 out of 110, 60.91%), followed by surveys (10 out of 110, 9.09%) and secondary data analysis (9 out of 110, 8.18%).

TABLE 2 Number of papers in four key theoretical themes.

1.	Source of funds	15 papers
2.	Intended use of funds	26 papers
3.	Pricing	45 papers
4.	Payments	24 papers
	Total	110 papers

3.2 | Theoretical themes

The article finds and defines four main theoretical themes in the literature: (1) source of funds, (2) intended use of funds, (3) pricing, and (4) payments. As shown in Table 2, the publications mainly focus on the topics of pricing and payments.

This grouping is based on the sequence of PDP and becomes more concrete in every theoretical theme (see Figure 2).

Source of funds: Where does the money come from? Existing research shows that even before a concrete purchase decision when a targeted product or service category is present, consumers practice MA by assigning the source of their funds to different mental accounts.

Intended use of funds: What is the money spent on? While the first theme focuses on the impact of the source of funds, this theme presents the existing research around the intended use of the funds, the category applied by the consumer, and its impact on MA and the PDP.

Pricing: How is the product or service offered? In theory, consumers evaluate options based on mental accounts, and the value of an option is in general based on its advantages and disadvantages (Thaler, 1980). This section on pricing, however, presents the existing research around the observation that consumers struggle to evaluate choices objectively if they are confronted with different forms of pricing.

Payments: How is the payment made? The fungibility of money suggests that money is exchangeable and that there should be no difference in the valuation of varying forms of payments (e.g., bills or coins). Nevertheless, the existing research outlined in this section shows that consumer purchasing behavior varies according to the method and design of payment.

3.2.1 | Source of funds

Income framing

The behavioral life-cycle model by Shefrin and Thaler (1988) laid the foundation for research into mental income accounts. The model suggests that consumers categorize the origin of their funds into three mental accounts: (1) current income, (2) current assets, and (3) future income. Abeler and Marklein (2017) conclude that consumers violate the principle of fungibility even in simple, incentivized setups, and suggest that as soon as part of a consumer's income is assigned to an account, the consumer adapts their consumption accordingly. When a purchase scenario requires that the consumer spends money from one of these mental accounts, consumers tend to show different marginal propensities to consume (Shefrin & Thaler, 1988). Consumers

tend to spend more money when the source is their current income, and spend less when they use money from their future income (Shefrin & Thaler, 1988).

Windfall gains

Further research shows that consumers differentiate between their income accounts even further. This seems to apply to windfall gains in particular (i.e., unexpected gains). Hodge and Mason (1995) show that consumers spend more of their savings when they originated from a windfall gain than from an equivalent amount obtained from an asset that they worked for. Consumers also tend to spend more when using unexpected gains (e.g., through a lottery win) compared to anticipated income in general (Arkes et al., 1994; Shaw & Schaubroeck, 2003; Thaler, 1999). Landsberger (1970) found that the higher the amount of a windfall gain, the lower the marginal propensity to consume, indicating that consumers assign larger windfall gains to a current assets account but smaller gains to a current income account. Chambers and Spencer (2008) observed that consumers are willing to spend a higher portion of their tax refund when it is received as a lump sum in comparison to receiving it through multiple installments. They explain this as due to the assignment of lump sum payments to windfall gains, and the assignment of multiple installments to regular income. Beyond this, research shows that the assigned mental income account not only has an impact on the amount of money consumers spend, but also affects the specific product or service the money is used for: for example, consumers prefer to spend their windfall gains on luxury goods (e.g., spending a yearly bonus on a luxury watch) in comparison to other income sources (O'Curry, 1999).

Self-relevance

Studies (Z. Liu et al., 2017; C. Liu et al., 2018) show that consumers mentally differentiate between money and spending that is relevant to themselves or to others. In general, MA effects seem to be weaker when individuals make decisions for others, regardless of whether the other person is socially close or distant (Z. Liu et al., 2017). A study by C. Liu et al. (2018) shows that the source of funds can also have an effect on how self-relevant purchases are. Consumers seem to differentiate between pride- and surprise-tagged money: pride-tagged money (e.g., money earned through a scholarship) is more often spent on self-relevant products (e.g., a gym subscription), whereas consumers more commonly spend surprise-tagged money (e.g., a lottery win) on others-relevant products which can be shared (e.g., plants for the office).

Restricted money

A study by Reinholtz et al. (2015) focuses on consumer behavior when using retailer-specific money or restricted substitutes for money such as gift cards or food vouchers. The study found that when consumers shop with a retailer-specific gift card and therefore separate the money mentally to a retailer-specific account, they show an increased preference to purchase products associated with the retailer's brand. For example, consumers with a gift card from a Timberland store tend to purchase shoes, because shoes are a typical

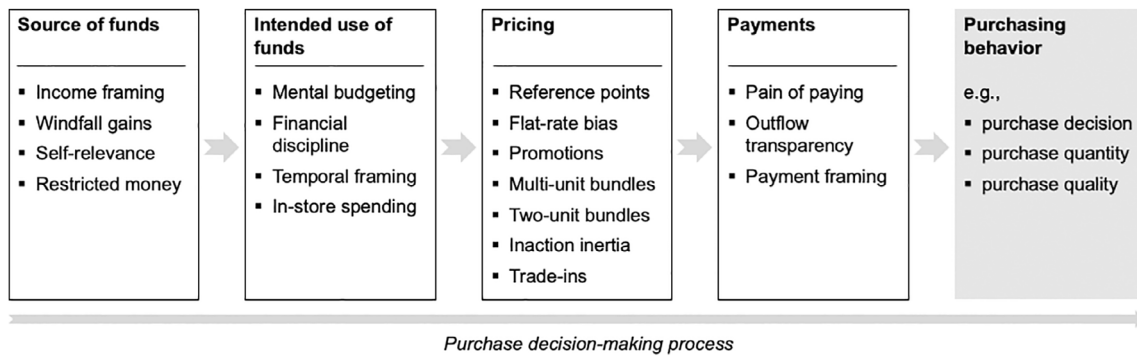


FIGURE 2 Structure of the findings with its four main themes.

TABLE 3 Summary of the source of funds effects with an impact on purchase decisions.

Source of funds		
Theme	Description	Publications
Income framing	Consumers separate the origin of their funds into three mental accounts: (1) current income, (2) current assets, and (3) future income	Abeler and Marklein (2017); Shefrin and Thaler (1988)
Windfall gains	Consumers spend windfall gains (i.e., unexpected gains) differently than money from other sources	Arkes et al. (1994); Chambers and Spencer (2008); Hodge and Mason (1995); Landsberger (1970); O'Curry (1999); Shaw and Schaubroeck (2003); Thaler (1999)
Self-relevance and purchase behavior	Consumers display different MA and purchase behavior depending on whether the money and spending is self- or others-relevant	C. Liu et al. (2018); Z. Liu et al. (2017)
Restricted money	Consumers spend restricted money (e.g., retailer-specific gift cards) differently than unrestricted money	Hastings and Shapiro (2013); Kooreman (1997); Nakhata (2014); Reinholtz et al. (2015)

product for the brand. Table 3 shows a summary of the source of funds effects with an impact on purchase decisions.

3.2.2 | Intended use of funds

Mental budgeting

Consumers not only practice MA for categorizing their income, but also for their expenses, which are assigned to certain “budgets”

(Heath & Soll, 1996). Researchers call this behavior “mental budgeting” and explain that mental budgets consist of groups of advantages and disadvantages of a specific action or event (Thaler, 1999). They can result in irrational behavior, however, when a consumer evaluates the sets of advantages and disadvantages in isolation (Henderson & Peterson, 1992). Read et al. (1999) further explain that individuals group choices or event outcomes together, and call this practice “choice bracketing.” Individuals can bracket choices narrowly by isolating them, or bracket them broadly and try to assess all choices together. Mental budgeting helps to simplify these complex PDPs by limiting the choices that households face (Thaler, 1999). Galperti (2019) describes budgeting as the grouping of expenses into categories and constraining each budget with an implicit or explicit cap applied to a specified time period (e.g., a month). The segregation of funds by consumers can affect demand for certain products and services (Zhang & Sussman, 2018). Mental budgeting can also encourage financial discipline (Shefrin & Thaler, 1988), help to define spending rules and financial goals, and cause pain of paying,¹ ultimately increasing an individual's success in financial management (Fernbach et al., 2015). When they pre-commit their spending according to budgets, consumers create heuristic decision rules reminding them how and when to spend (Thaler & Shefrin, 1981). Researchers have found, however, that setting a mental budget alone is not sufficient, but that in order to achieve successful self-control, the mental budget must include a trackable consumption-goal during PDP (Krishnamurthy & Prokopec, 2010). Conversely, other studies found that mental budgeting can also lead to under- or overconsumption in specific situations. If budgets for certain expenses are designed as too flexible or too rigid, consumers fail to assign expenses to the right budgets in unclear situations. Studies also show that consumers are flexible when assigning expenses to different mental accounts, or even willing to construct new accounts to justify their spending (Cheema & Soman, 2006). As described earlier, in certain situations consumers evaluate purchases separately (narrow bracketing) and in other situations jointly (broad

¹“Pain of paying” describes the feeling similar to pain that a consumer who pays for a product or service experiences. The term was first discussed by Zellermyer (1996) in his doctoral thesis of the same name (“The pain of paying”). Prelec and Loewenstein (1998) later found that pain of paying helps consumers use self-regulation to keep their expenses in line with their budgets.

bracketing), resulting in different levels of depletion in the mental budgets (Koch & Nafziger, 2016; Read et al., 1999). A study conducted by Sussman and Alter (2012) found that while consumers seem to be trained in assessing the value of ordinary items and assigning them to the correct budgets, they struggle with exceptional purchases, tending to underestimate their cost and overspend on them. For example, birthday presents are often considered exceptional one-off expenses and consumers struggle to determine appropriate budgets for them which can ultimately lead to overconsumption (Sussman & Alter, 2012). Another study shows that consumers do not properly account for frequent expenses if they are very small, because they tend to ignore expenses that appear immaterial to them (Gourville, 1998).

Financial discipline

Studies focusing on the impact of mental budgeting on financial discipline show that imposing a price restraint on oneself can backfire and increase spending (Larson & Hamilton, 2012; Zemack-Rugar & Corus, 2018). Researchers argue that price restraints partition a consumer's evaluation of price and quality, increase perceived quality differences between options and ultimately lead to overconsumption because consumers overemphasize quality as a factor in the PDP (Larson & Hamilton, 2012). Research into goal setting has investigated how anticipated overspending (goal-inconsistent behavior) affects current spending behavior. It suggests that if future goal-inconsistent behavior is perceived as changeable, consumers will tend to ignore it. However, if the overspending is perceived as unchangeable, consumers do not act against it, but surprisingly even intensify the goal-inconsistent behavior (Zemack-Rugar & Corus, 2018). These small differences in individual mental budgeting situations and their comparatively large effects on financial discipline (positive vs. negative) show that further research is required to explain different behaviors in specific circumstances. On the one hand, research explains that the defined categories of expenses should be as clear and distinctive as possible to prevent consumers evading the self-control effect of budgets (Imas et al., 2021). On the other hand, broader budgets can encourage consumers to process a more complete set of information, but with the cost of a more intensive PDP and a higher cognitive load (Read et al., 1999). Soster et al. (2014) found that consumers are less satisfied with purchases that exhaust a budget. They explain that this "bottom dollar effect" increases with the effort to refill the respective budget, but decreases when windfall gains are received, or the budget is refilled relatively quickly. Homburg et al. (2010) found that mental budgeting strengthens the negative effect of price increases on a future PDP in the same expense category.

Temporal framing

As indicated previously, research also reveals that consumers apply different temporal frames when defining their budgets, for example, they may budget USD 20 per week for restaurant visits or USD 80 per month (Uelkuemen et al., 2008). An experiment conducted by Liu and Chou (2016) indicates that when (1) budgeted amounts are small, (2) there are no alternative temporal frames present, and

(3) self-control is low, consumers with short temporal frames experience a greater risk of overspending and therefore reduce their purchase intentions.

In-store spending

Another research stream focuses on the behavior of budget shoppers who use MA strategies to track their in-store spending. Studies show that consumers also use mental budgets, either explicit or implicit, to track their shopping trips, and that these budgets also include budgets for so-called in-store slack² (Stilley et al., 2010a). The researchers found that consumers react differently to product promotions depending on the status of their in-store slack (Stilley et al., 2010b). If in-store slack is still available and the consumer is confronted with a promotion on a planned item, they will stockpile the promoted item. However, if consumers are confronted with a promotion on a planned item after their budgeted in-store slack is already depleted, they will increase their spending on unplanned items. These effects become stronger with the increasing income of the consumer. Smart shopping carts are shopping carts equipped with scanners to identify products and constantly show the total price of the shopping basket to the consumer. They allow researchers to measure the impact of real-time feedback on consumer budgets on PDPs. Van Ittersum et al. (2013) found that the effect differs depending on whether consumers have a pre-set budget for the shopping trip or not. Budget shoppers tend to spend more if they receive direct feedback on the total price of their basket, because they tend to buy more expensive national brands³ and are less afraid to exceed their budget due to the increased transparency. Real-time feedback motivates non-budget shoppers to spend less, however, because they tend to prefer store brands over national brands (Van Ittersum et al., 2013). Table 4 shows a summary of intended use of funds effects with an impact on purchase decisions.

3.2.3 | Pricing

Reference points

A set of studies show that individuals perceive gains and losses from reference states depending on how the deviations are presented to them (Heath et al., 1995; Moon et al., 1999). Irrationalities such as loss aversion harm the ability to clearly separate advantages and disadvantages (Thaler, 1980). The literature supports this by presenting evidence that the presentation of a promotion is a major factor in its effectiveness (Krishna et al., 2002). Tversky and Kahneman (1981) show that individuals judge different choices by separating decision-making problems without evaluating them in an integrated sense. As a result, they found that individuals prefer relative saving offers to absolute saving offers, although they promise the same overall savings and impact on their wealth. Their studies also reveal that consumers

²In-store slack are funds in a shopper's total budget that are not supposed to be spent on specific products but remain unplanned for in-store purchase decisions.

³National brands are distributed and sold via multiple retailer stores. Store brands are acquired by retailers for exclusive sale in their stores. In general, national brands are perceived by consumers as superior to store brands (De Wulf et al., 2005).

TABLE 4 Summary of intended use of funds effects with an impact on purchase decisions.

Intended use of funds		
Theme	Description	Publications
Mental budgeting	Consumers group their expenses into certain budgets and spend accordingly to them	Cheema and Soman (2006); Fernbach et al. (2015); Galperti (2019); Gourville (1998); Heath and Soll (1996); Henderson and Peterson (1992); Hirst et al. (1994); Koch and Nafziger (2016); Krishnamurthy and Prokopec (2010); Loureiro and Haws (2015); Shefrin and Thaler (1988); Sussman and Alter (2012); Thaler and Shefrin (1981); Thaler (1999); Tully and Sharma (2018); Zhang and Sussman (2018)
Financial discipline	Consumers mental budgeting behavior can influence financial discipline, causing over- or underspending	Homburg et al. (2010); Imas et al. (2021); Larson and Hamilton (2012); Read et al. (1999); Soster et al. (2014); Zemack-Rugar and Corus (2018)
Temporal framing	Consumers apply temporal frames in their purchase behavior	Duke and Amir (2019); Liu and Chou (2016); Uelkueken et al. (2008)
In-store spending	Consumers use MA strategies to track their in-store shopping trips	Stilley et al. (2010a, 2010b); Van Ittersum et al. (2013)

evaluate price reductions in comparison to the regular price of a discounted product (the so-called topical mental account). These findings are in line with research conducted by Saini et al. (2010) who suggest that the willingness to seek a promotion depends not only on the absolute value of the promotion, but also on the regular price of the product itself. However, consumers prefer high relative savings over low relative savings, even when the absolute savings might be the same (Tversky & Kahneman, 1981). Research extending this study shows that the preference for higher relative saving offers becomes weaker when the two discounted products are strongly related, for example, downhill and cross-country skis (Bonini & Rumiati, 2002). As described, discount framings with relative savings are more favorable for price reductions than absolute savings (Tversky & Kahneman, 1981). Homburg et al. (2010) were able to present the opposite effect for price increases: the relative framing of a price increase led to a lower probability of purchase than absolute framing. Another phenomenon that can be explained by reference points is the sunk-cost effect. An example is the irrational behavior where individuals purchase unneeded goods mainly because they have paid a higher price for them in the past (Arkes & Blumer, 1985; Thaler, 1980).

Promotions

Diamond and Campbell (1989) discovered that consumers tend to prefer product promotions, which offer an extra free product, over price promotions, which offer a percentage discount, due to their innate loss aversion (Tversky & Kahneman, 1979). Customers perceive product promotions as segregated gains, which they find more appealing than reduced losses connected with price promotions. The urge to prevent losses motivates this preference for separated gains. Research building on this effect has found that labeling and grouping promotions as gains can improve the likelihood that individuals will purchase regularly priced products in the same mental category (Jha-Dang, 2006) and can also result in consumers hoarding and upgrading to higher quality products (Blattberg et al., 1995). The so-called “silver-lining effect,” which Thaler (1985) explains using prospect theory,

is another element that builds on this behavior. The effect demonstrates that people prefer to view a small gain that is isolated from a greater loss as more favorable than a reduction in the loss of equal magnitude. Thus, the buyer overestimates the small gain and views it as a “silver lining” (Jarnebrant et al., 2009). This effect has implications for pricing decisions, since it can be utilized by marketers to increase sales. Instead of reducing prices through a discount offer, marketers can pay a smaller refund (i.e., cashback) to consumers and accomplish the same sales-promoting effect for the same or a lower cost. Liu and Chiu (2015) demonstrated that consumers perceive promotions with focused-discount framings as more appealing than promotions with all-discount framings. The first framing entails paying 50% of the price of the second item, while the second framing entails receiving a 25% discount when purchasing two goods. This is because consumers tend to compare the last discount of a mixed promotion with the original price, which results in a higher perceived discount in the focused-discount scenario. For certain price promotions, multiple mental deductions are perceived as particularly desirable by consumers. For example, if a consumer pays USD 100 now and receives a USD 10 voucher for a future purchase, the value of the offer is deducted twice: first, from the immediate purchase, then afterwards, when the voucher is redeemed, from the future purchase. This practice is known as “double mental accounting” (Cheng & Cryder, 2018) because it results in a diminished sense of the whole cost, which can lead to overconsumption. Lee et al. (2019) present another effective measure to increase spending. They discovered that small probabilistic price promotions, such as a 5% chance that the entire purchase is free, are more effective than regular price promotions at boosting consumption. From a MA perspective, small probabilistic price promotions reduce the perceived pain of paying for spending resources (Prelec & Loewenstein, 1998), which stimulates stronger demand.

Flat-rate bias

While it would be expected that rational consumers would choose a pricing that offers the cheapest rate for their usage, studies have revealed that many consumers diverge from this expectation and

frequently choose for flat-rate pricing even though pay-per-use models would be less expensive given their usage habits. (DellaVigna & Malmendier, 2006; Lambrecht & Skiera, 2006). Several consumer behavior-related factors contribute to the preference for flat-rate solutions. First, consumers tend to avoid variations in their recurring rates, which can disturb their budgeting and planning (Miravete, 2002; Winer, 2005). Second, consumers decouple consumption from payment through mental prepayment, making flat-rate pricing options more attractive (Prelec & Loewenstein, 1998; Thaler, 1999). Third, consumers favor convenience over information costs and opt for flat-rate choices since they demand less effort to understand (Train, 1991). Fourth, consumers pick flat-rate solutions to reduce the danger of paying unexpectedly high usage fees if they underestimate their usage of a product or service (Nunes, 2000). Overall, these data show that customers may not always choose pricing models logically. By understanding the factors that drive customer decisions in this area, marketers can build pricing strategies that are more in line with consumer preferences and increase revenue.

Multi-unit bundles

The following studies focus on product bundles, or more specifically multi-unit promotions (MUPs) and their different pricing models. The conflicting results of these studies indicate that consumers code bundling scenarios rather flexibly (Thaler & Johnson, 1990). Johnson et al. (1999) suggest that consumers prefer to see sale packages in a consolidated single bundle price. At the same time, they show an increased willingness to purchase if the discounts on each product are shown separately. These observations are in line with prospect theory regarding integrating losses and segregating gains (Thaler, 1985, 1999). A study by Chakravarti et al. (2002), however, found that consumers tend to evaluate product bundles as more attractive when their price is presented as partitioned (each mandatory component is shown with its separate price) instead of consolidated. They explain this observation which contradicts the previously presented study with the fact that consumers are able to easily add up the prices and account for the overall price (they integrate losses), but they struggle to accumulate the benefits of the bundle's components when prices are separate, and therefore keep gains segregated. According to prospect theory, the concave curve of the value function means that consumers perceive the segregated component gains as more valuable. Drechsler et al. (2017) conducted a more recent study that found consumers generally prefer price promotions (e.g., three apples for USD 5) over product promotions (e.g., two apples and one for free) in multi-unit bundle scenarios. The authors also found that the strength of the effect depends on the product category and quantity requirements for the promotion. Consumers were more price-sensitive when purchasing functional products, and therefore preferred price promotions, while product promotions were more relevant for hedonic products that emphasize the benefits of a purchase, such as fun. Sheng et al. (2007) found that bundle promotions have a long-term effect on discounted products and result in the perception of a higher regular

price and lower quality. These negative effects appear to be weaker if the components are highly complementary (e.g., as in our previously described example of downhill and cross-country skis). In conclusion, the results of these studies suggest that consumers exhibit flexible behavior when evaluating product bundles, which is influenced by factors such as the presentation of pricing information, the type of product, and the quantity requirements of the promotion.

Two-unit bundles

Research in the area of product bundles has also examined the effectiveness of marketing strategies for bundles consisting of a base product and an add-on product. The add-on product is typically intended to increase the value of the base product, such as in the case of a pair of shoe insoles as an add-on to a pair of shoes. As only owners of the base product can drive demand for the add-on product, the marketing strategy applied is of particular importance (Mahajan & Peterson, 1978). Studies have found that consumers are more likely to purchase add-on products when the unrecovered value of the base product is high, which is calculated as the price of the product minus the already obtained benefits. This observation suggests that the loss-leader strategy, which involves selling low-priced base products at little or no profit and offsetting the cost with high-profit add-on products (Lal & Matutes, 1994), may not be effective. To increase the sales of add-on products, it is therefore recommended that marketers focus on enhancing the quality of both the base product and the add-on product (Erat & Bhaskaran, 2012). By offering high-quality products, marketers can increase the perceived value of both the base product and the add-on product, encouraging consumers to purchase both items together. In conclusion, the marketing strategies applied to product bundles with base and add-on products are crucial for driving demand for the add-on product. By understanding consumer behavior in relation to these types of bundles, marketers can develop pricing and marketing strategies that effectively promote the sale of both the base and add-on products.

Inaction inertia

The concept of inaction inertia is another important phenomenon in the field of MA research on pricing. It describes the situation when consumers miss an attractive promotion and remain passive about a second, less attractive promotion (Tykocinski et al., 1995). This behavior can be explained by MA, which suggests that past events influence subsequent events when individuals assign them to the same mental account (Thaler, 1985, 1999). Van Putten et al. (2007) found that the tight coupling of two promotions is a prerequisite for inaction inertia, which is consistent with the theory of MA. The effect of inaction inertia becomes weaker when the promotions are not directly comparable, such as when the first promotion has different requirements. Further analysis by Liu and Chou (2018) indicates that inaction inertia is particularly strong for monetary promotions, as they are easier to compare than non-monetary promotions. This highlights the importance of carefully designing and sequencing promotions to maximize their effectiveness and avoid inaction inertia.

TABLE 5 Summary of the pricing effects with an impact on purchase decisions.

Pricing		
Theme	Description	Publications
Reference points	Consumers perceive gains and losses from reference points	Arkes and Blumer (1985); Bonini and Rumiati (2002); Egozcue et al. (2014); Heath et al. (1995); Homburg et al. (2010); Krishna et al. (2002); Moon et al. (1999); Saini et al. (2010); Thaler (1980); Tversky and Kahneman (1981)
Promotions	Consumers react differently to promotions depending on how they are presented	Blattberg et al. (1995); Chatterjee (2010); Cheng and Cryder (2018); Diamond and Campbell (1989); Liu and Chiu (2015); Heilman et al. (2002); Jarnebrant et al. (2009); Jha-Dang (2006); Tversky and Kahneman (1979); Lee et al. (2019); Milkman and Beshears (2009); Morwitz et al. (1998); Prelec and Loewenstein (1998); Thaler (1985)
Flat-rate bias	Consumers prefer flat-rate options even if pay-per-use models fit their needs better	DellaVigna and Malmendier (2006); Lambrecht and Skiera (2006); Miravete (2002); Nunes (2000); Prelec and Loewenstein (1998); Thaler (1999); Winer (2005)
Multi-unit bundles	Consumers spend differently on financially equal bundle discounts, depending on how they are presented	Chakravarti et al. (2002); Chandon et al. (2000); Drechsler et al. (2017); Johnson et al. (1999); Thaler (1985, 1999); Thaler and Johnson (1990)
Two-unit bundles	Consumers react differently to varying two-unit bundle promotions, especially if they consist of base and add-on products	Erat and Bhaskaran (2012); Liu and Chou (2015); Lal and Matutes (1994); Mahajan and Peterson (1978); Sheng et al. (2007)
Inaction inertia	Consumers who miss a promotion tend to remain passive for subsequent promotions	Liu and Chou (2018); Thaler (1985, 1999); Tykocinski et al. (1995); Van Putten et al. (2007)
Trade-ins	Consumers overvalue the price they receive for their old trade-in product	Miller et al. (2019); Okada (2001, 2006); Prelec and Loewenstein (1998); Purohit (1995); Thaler (1980, 1985); Zhu et al. (2008)

Trade-ins

In many PDPs for durable products, consumers already own an older version, and therefore, trade-ins are a popular marketing tool. At the same time, the endowment effect explains that consumers value a product they want to sell more than buyers of the same product who do not own it (Thaler, 1980, 1985). These insights might suggest that a consumer's assessment of trade-in scenarios is unfavorable for the company that offers the trade-in, because consumers overvalue the product they own. Indeed, Purohit (1995) found that in trade-in scenarios, the trade-in price is more important for a consumer's satisfaction in a transaction than the price of the new product. However, the author also found that consumers who are overpaid for their old trade-in product are also willing to pay a premium on the price for the new product. Zhu et al. (2008) validated this observation and even found that trade-in consumers show a higher willingness-to-pay for a new product than consumers who buy a new product without using a trade-in. Okada (2001, 2006) suggests that the main factor when consumers hesitate to upgrade an old product is the psychological cost of closing the mental account for the old product with a negative balance. They found that trade-ins can prevent this negative feeling and can therefore accelerate replacement decisions. In addition, in line with MA theory, Miller et al. (2019) show that longer ownership of the trade-in product leads to a higher upgrade, because consumers begin to reduce the negative balance of the mental account according to their use of the product. The closer the negative balance of the mental account moves to zero, the more likely the consumer is to replace it, and the higher the degree of upgrade (Okada, 2001). In summary, although the endowment effect may suggest that

consumers will overvalue their owned products and thus find trade-in scenarios unfavorable, research indicates that consumers are willing to pay a premium for the new product if they are overpaid for their trade-in product. Moreover, trade-ins can prevent negative feelings associated with closing a mental account with a negative balance, thus accelerating replacement decisions. Table 5 shows a summary of the pricing effects with an impact on purchase decisions.

3.2.4 | Payments

Pain of paying

Various anomalies show us that consumers violate the principle of money's fungibility on a daily basis (Thaler, 1990). A well-known example is the fact that consumers tend to spend more when using their credit card (Prelec & Simester, 2001). Zellermyer (1996) attributes this behavior to the previously described pain of paying. Prelec and Loewenstein (1998) support this by explaining that decoupling the purchase from the payment (i.e., through the time-lag that occurs when paying the credit card bill only once per month) reduces the pain of paying and ultimately leads to the consumer's higher willingness to pay.

Outflow transparency

Researchers also describe the degree of a payment method's transparency as another factor influencing a consumer's willingness to pay. The degree of transparency depends on the salience of the physical form (i.e., how visible the physical outflow of money is) and the salience of the amount (i.e., how memorable the paid amount is).

TABLE 6 Summary of the effects of payments with an impact on purchase decisions.

Payments		
Theme	Description	Publications
Pain of paying	Consumers show different purchasing behavior depending on the payment method they use (e.g., cash, checks, and credit cards)	Chatterjee and Rose (2012); Feinberg (1986); Helion and Gilovich (2014); Prelec and Loewenstein (1998); Prelec and Simester (2001); Sarofim et al. (2020); Thaler (1990, 1999); Thomas et al. (2011); White (2006, 2008); Zellermyer (1996)
Outflow transparency	Consumers' willingness to pay depends on the outflow transparency of the payment method	Boden et al. (2020); Falk et al. (2016); Naderer et al. (2016); Raghurir and Srivastava (2008, 2009); Runnemark et al. (2015); Soman (2001, 2003)
Payment framing	Consumers show different purchasing behavior depending on the payment framing	Atlas and Bartels (2018); Gourville (1998); Heath and Soll (1996); Loewenstein and Prelec (1993); Prelec and Loewenstein (1998); Schulz et al. (2015); Siemens (2007); Soman (2001); Soman and Lam (2002); Thaler (1985)

Soman (2001) suggests that certain payment methods enable an easier rehearsal of past expenses (e.g., checks) while some limit the consumer's ability to recall expenses (e.g., credit cards) and therefore have a less suppressing impact on future PDP. Multiple studies rank cash as the payment method that causes the highest pain of paying due to its increased transparency and low decoupling effect. In these studies, cash is followed by checks, credit cards, debit cards, stored value cards, and lastly direct debits (Naderer et al., 2016; Raghurir & Srivastava, 2008; Runnemark et al., 2015; Soman, 2003). Research on new payment methods such as mobile payments is still limited, however, early studies indicate that there is no significant difference between the pain of paying on credit card or by mobile payment (Boden et al., 2020; Falk et al., 2016).

Payment framing

The payment framing also plays a crucial role in how consumers perceive expenses in PDP scenarios. One widespread phenomenon in this area is the effect of temporal reframing on transaction

evaluation, the so-called "pennies-a-day" strategy. Gourville (1998) found that when one large payment is reframed into a series of small payments, consumers perceive offers as more attractive because they compare the small expenses with other trivial expenses of the same size (e.g., a cup of coffee). Atlas and Bartels (2018) extended this finding and explain that consumers apply similar MA to the benefits of a purchase. They show that consumers are more likely to agree to contracts when the payment is framed in periodic terms. In their experiment, which asks individuals to donate to a charity, they show that single, large donations (i.e., aggregated payments) are also associated with single, large benefits. However, if the donation is framed as a daily recurring one (i.e., periodic payment), individuals perceive benefits from the multiple smaller donations, and this is evaluated as the more attractive option, again in line with prospect theory and the theory of segregated gains. In an experiment investigating real money "buy now, pay later" transactions, Siemens (2007) validates that consumers are more satisfied when transaction benefits and costs are coupled. They also seem to prefer short over long delays when experiencing time gaps between costs and benefits. This suggests that perceived benefits psychologically decay over time and lead to an increased pain of paying when the payment is due. Schulz et al. (2015) examined so-called advance payment systems, in which the billing company estimates the consumer's future consumption and subsequently bills the consumer in recurring monthly payments. At the end of the year, an additional payment or refund settles the difference between estimated and actual consumption. Their empirical studies using survey and billing data found that consumers who received a refund show lower price awareness, reduced churn and tariff switching rates, and an increased likelihood of recommendation. The findings are in line with prior research on preferences for refund sequences, hedonic framing, and mental budgeting. The authors argue that the observation can in particular explained by the previously described silver lining argument (Thaler, 1985). Table 6 shows a summary of the effects of payments with an impact on purchase decisions.

4 | DIRECTIONS FOR FUTURE RESEARCH

In order to provide an overview on potential further research dimensions of the impact of MA on consumers, the following section outlines the limitations of the literature regarding MA and its effects on PDP. Further, Table 7 shows a summary of the directions for future research and their potential themes, research questions, research methods and existing publications.

As indicated in Section 3.2.3, dealing with MA effects and pricing, consumer PDP results in varying outcomes depending on the product category (Egozcue et al., 2014). While early results connect the source of funds and product categories, for example, the tendency to spend windfall gains on luxury goods (O'Curry, 1999), further research, especially around material, experiential, hedonic and utilitarian purchases, would enable a broader understanding of expense-specific differences in connection with varying sources of income and clearly distinguish

TABLE 7 Directions for future research and their potential themes, research questions, research methods and existing publications.

Directions for future research			
Theme	Research questions	Research methods	Existing publications
Different product categories and their varying influence on MA	Does mental accounting behavior differ depending on the product or category? What are the mental accounting differences between material, experiential, hedonic and utilitarian products?	Survey, experiment, Interview, focus groups, observation	Egozcue et al. (2014); O'Curry (1999)
Flexibility in the budget setting process and its impact on MA behavior	What are the consumers' motivations for designing mental budgets? What are the differences in the budget setting processes among different types of consumers? Which circumstances result in flexible or strict budget behaviors of consumers? How do consumers match budgets with purchase frequencies?	Survey, experiment, interview, focus groups	Cheema and Soman (2006); Uelkuemen et al. (2008)
Long-term effects of mental budgeting on financial wealth	What are the long-term effects of mental accounting behaviors, such as mental budgeting, on long-term wealth accumulation, debt repayments or financial knowledge?	Survey, interview, focus groups, long-term field experiment, observation	Zhang and Sussman (2018)
Integration-segregation behavior in the context of PDPs and pricing	How do pricing models relate to consumer perceptions of gains and losses, especially regarding bundle promotions and the new pricing models developing?	Experiment, observation	Egozcue et al. (2014); Chandon et al. (2000)
Influence of consumer characteristics on MA behavior	How do the individual characteristics of consumers, such as their religious affection, education, or their profession, influence MA behavior?	Survey, interview, focus groups, long-term field experiment, observation	Abeler and Marklein (2017); Antonides et al. (2011); Benjamin et al. (2013); Casari et al. (2007); Frederick (2005); Simon (1959); Shah et al. (2015); Wertenbroch (2003)
Impact of increased financial transparency through technology on MA	How can new technological developments such as budgeting apps and their instant notifications impact mental accounting behavior in purchase decision processes?	Experiment, observation	Boden et al. (2020); Falk et al. (2016)

the findings of other research efforts from the effect of product characteristics. In terms of appropriate research methods, surveys can be used to gather quantitative data on consumer preferences and behavior related to specific product categories. For example, researchers can ask consumers about their likelihood of engaging in MA for different types of purchases and their reasons for doing so. Researchers could conduct experiments to investigate how different product categories affect MA behavior. For example, they could manipulate the price and presentation of different products and observe how consumers respond. Interviews and focus groups could explore how consumers perceive different products and how these perceptions influence their MA behavior. These methods can also be used to

identify underlying psychological or emotional factors that drive MA behavior. Observations can provide researchers with firsthand insights into consumer behavior related to different product categories. For example, researchers could observe consumers in a retail setting to see how they interact with different products and how they make purchase decisions. Overall, a combination of these research methods would allow researchers to gather both qualitative and quantitative data on the influence of product categories on MA behavior. This approach could provide a broader understanding of expense-specific differences in connection with varying sources of income and distinguish the findings of other research efforts from the effect of product characteristics.

4.1 | Flexibility in the budget setting process and its impact on MA behavior

Existing literature shows that consumers are flexible when assigning expenses to different mental accounts, as they tend to sometimes budget broadly and sometimes narrowly; for example, a bucket of popcorn at the cinema could be assigned to the broad “entertainment” budget or to the narrow “food in the cinema” budget (Cheema & Soman, 2006). However, there is no research on whether consumers show similar flexibility one step in advance, when designing the budgets. Research currently does not fully explore motivations for designing budgets in general, or differences in the budget setting process among different types of consumers. Research is also limited when it comes to explaining the circumstances in which, and for which products, budget users are flexible or strict (e.g., it seems unlikely that budget users avoid purchasing toothpaste if their budget for grocery shopping is exhausted). We already know that consumers apply different temporal frames to their budgets, for example, weekly or monthly (Uelkueken et al., 2008). Exploring how consumers match budgets with purchase frequencies in their budget designing process (e.g., consumers might set monthly clothing budgets, but conduct bi-monthly shopping trips) could help to understand how to design efficient budgets and avoid budget designs that are detached from real consumption. Surveys, experiments, interviews, and focus groups are all appropriate research methods for analyzing the research gap outlined in this question. Surveys can be used to gather large amounts of data on budget-setting behavior and preferences, including motivations for budget-setting, differences in budget-setting processes among different types of consumers, and the circumstances under which budget users are flexible or strict. Experiments can be used to test the effects of different budget-setting approaches on consumer behavior and outcomes, allowing for a more causal understanding of budget-setting behavior. Interviews and focus groups can provide deeper insights into the reasons behind consumers' budget-setting behavior and how they match budgets with purchase frequencies. Additionally, they can be useful in exploring more complex aspects of budget-setting behavior, such as the temporal frames consumers use when setting budgets. By using a combination of these research methods, researchers can gain a comprehensive understanding of consumers' budget-setting behavior and preferences, which can inform the design of efficient budgets that better align with consumers' real consumption habits.

4.2 | Long-term effects of mental budgeting on financial wealth

Almost all papers extracted in this systematic literature review analyzed consumer behavior over rather short timeframes. The majority of papers conducted experiments which provide only a snapshot, with limited information about the long-term patterns of consumer behavior. The long-term effects of certain MA processes in PDP scenarios, such as the impact of mental budgeting on long-term developments such as wealth accumulation, debt repayments or financial knowledge, could

enable and motivate financial institutions and policymakers to implement assistance in adapting consumption behavior. The collection of data for such long-term studies might furthermore be eased by applying new technological tools, such as personal financial management apps. They could allow the consumption and mental budgeting behavior of consumers to be analyzed over longer periods without excessive effort. Surveys and interviews are valid research methods to obtain information on consumers' mental budgeting practices and the impact of MA on long-term financial outcomes. These methods can provide rich qualitative data on the psychological and behavioral factors that shape long-term consumption patterns and financial decision-making. Focus groups can also be useful in exploring the complex and dynamic relationships between individuals' mental accounting and consumption patterns over time. Long-term field experiments and observations can provide a more quantitative understanding of the long-term effects of different MA processes in PDP scenarios, as well as the impact of mental budgeting on long-term financial outcomes. These methods can help researchers identify and track changes in consumer behavior over an extended period and understand how different factors contribute to the development of long-term financial habits.

4.3 | Integration-segregation behavior in the context of PDPs and pricing

The sometimes-contradictory research results in the theoretical theme of pricing indicate that integration-segregation affects inherit complex decision-making processes depending on factors like consumer preferences and underlying product values (Egozcue et al., 2014). The interaction of these factors should therefore be thoroughly analyzed for each specific case when making assumptions about strategic pricing decisions. It is important to understand the circumstances under which, and for which product categories, consumers perceive different pricing frames as gains or losses, especially when it comes to bundle promotions, as either two-unit or multi-unit bundle promotions. Existing research shows that, for example, price-sensitivity is in general stronger for functional products than hedonic products, because the focus is relatively rational in contrast to the fun element of hedonic products (Chandon et al., 2000). Consumers thus prefer price promotions over product promotions. Further research is needed to better understand how pricing models relate to consumer perceptions of gains and losses, especially with regard to bundle promotions and the new pricing models developing through the increasing importance of e-commerce (e.g., including or excluding shipping costs or promotion codes). Experiments and observations can help analyzing the research gap regarding integration-segregation behavior in the context of PDPs and pricing. Experiments allow for controlled manipulation of pricing and promotion strategies, helping to isolate the effect of specific factors on consumer behavior. By observing consumer reactions in these controlled environments, researchers can gain insight into the underlying factors that influence integration-segregation behavior. Observations can also be useful in this context, as they allow researchers to study consumer behavior in natural settings without the confounding effects of an

experimental setting. This is important in the context of PDPs and pricing, as it enables researchers to examine how consumers respond to various pricing models and promotions in real-world settings.

4.4 | Influence of consumer characteristics on MA behavior

A small amount of research indicates that the individual characteristics of the consumer can have an effect on their MA behavior (Abeler & Marklein, 2017). A comprehensive study by Antonides et al. (2011) suggests that mental budgeting behavior is positively correlated with general education, having saving goals, having debts, financial knowledge and time orientation. It also suggests that mental budgeting is negatively correlated with income, higher education, having savings, and being male. Other studies can support parts of these suggestions and show that consumers with high mathematical and cognitive skills tend to behave in accordance with standard economic theory, whereas their counterparts tend to make decisions in accordance with theories of boundedly rational behavior (Benjamin et al., 2013; Casari et al., 2007; Frederick, 2005; Simon, 1959). Other research validates that the economic characteristics of consumers also influence their MA behavior and PDP; for example, lower-income consumers seem to be less sensitive to certain MA biases (Shah et al., 2015). In general, impulsive individuals with low self-control seem to prefer to avoid the self-controlling function of MA (Wertenbroch, 2003). A better understanding of how the characteristics of consumers, such as their religious affection, education, or their profession, influence MA behavior would add significant value to the discussion, especially with regard to the managerial implications for practitioners and their incentive for designing targeted marketing campaigns, however, the research on this topic is still limited and requires further attention. Surveys, interviews, focus groups, long-term field experiments, and observations are suitable research methods to analyze the influence of consumer characteristics on MA behavior. Surveys and interviews can be used to collect data on individual characteristics such as education, income, and self-control, which can then be analyzed to identify relationships between these characteristics and MA behavior. Focus groups can provide valuable insights into consumer attitudes and behaviors, while long-term field experiments and observations can capture the dynamics of MA behavior over extended periods. For instance, long-term field experiments could be useful in exploring how certain consumer characteristics, such as impulsivity or self-control, affect MA and how this behavior changes over time. Observations can provide a deep understanding of the context and nuances of consumer behavior in real-life situations.

4.5 | Impact of increased financial transparency through technology on MA

Smartphones are omnipresent in today's society—including in PDP. Online banking applications allow consumers to review their financial status anywhere and at any time. Quickly checking an account balance can either

encourage or discourage purchases. Many financial institutions go even further and integrate financial budgeting and tracking applications in their offering. These applications allow the consumer to create budgets for certain expenses (e.g., restaurant visits), set themselves saving goals, or compare their spending behavior with peer groups. Some applications even enable the consumer to consolidate financial accounts held with multiple banks into one single overview. These technological innovations can help to make MA more concrete, support consumers in reminding themselves about their financial constraints and ultimately lead to more sustainable consumption. In addition to the financial industry, large e-commerce players such as Amazon have also entered the personal finance space, for example, by issuing credit cards. It remains to be seen how players who can collect information on consumer budgets while at the same time offering them products will benefit from this information advantage. On the one hand, leveraging information of the consumer's budget status may enhance their shopping experience, for example, by displaying the current budget status right next to a product on e-commerce platforms or by filtering out products that are outside their budget. On the other hand, knowledge about the current budgets and current financial status of their consumers could enhance product recommendation algorithms and result in even more tailored marketing efforts. While there are early studies about how for example, mobile payment influences PDPs (Boden et al., 2020; Falk et al., 2016), research into how more sophisticated innovations, such as budgeting apps, affect MA and a consumer's PDP is still lacking. Instant notifications on current financial status and the depletion of specific budgets could enable researchers to analyze the reactions of the consumer (e.g., emotions) and their subsequent impact on purchase decision making and future budget setting. Experiments and observations are suitable research methods to analyze the impact of increased financial transparency through technology on MA. Experiments would enable the manipulation of specific variables in a controlled environment to observe the impact on consumer behavior. For example, researchers could randomly assign participants to a condition where they receive real-time notifications about their account balances and another group where they do not. Researchers could conduct field experiments to test the effectiveness of various budgeting and tracking applications on consumer behavior. Observations in real-world settings would also provide valuable insights into how consumers interact with these technological innovations and how it affects their MA behavior.

5 | CONCLUSION

The existing literature on MA and its impact on PDP can be structured along four key theoretical themes that follow a chronological sequence in decision processes. As outlined in Section 3.1, the analysis shows an increasing number of publications on the topic of MA in recent years, which emphasizes the increasing interest in, and importance of MA among researchers and practitioners. There are still major gaps in the research field, however, especially with regard to the newest technological advances.

This systematic literature review has intrinsic limitations deriving from its research design, and especially from the determination of the

sample including the selection of databases, the keywords used for extraction, and the inclusion and exclusion criteria that narrowed the extracted literature. The review was conducted using broad databases to identify as many relevant papers as possible, however, it is likely that some relevant papers have been omitted. Nevertheless, after reviewing 786 extracted publications in the selection of studies phase, it is improbable that including further publications would change the core structure of the review. This paper was limited to investigating the impact of MA on PDP. The broader topic of MA and its sophisticated relationships with other aspects of financial behavior, such as assets versus debts decisions or implications for investing, were beyond the scope of this paper.

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ORCID

Florian Skwara  <https://orcid.org/0000-0001-5183-4417>

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APPENDIX A

AUTHOR BIOGRAPHY

A.1 | Types of publications

TABLE A1 Number of publications for each research type.

Research type	Total	In percent	Cumulative
Quantitative	80	72.73%	72.73%
Conceptual	9	8.18%	80.91%
Qualitative	7	6.36%	87.27%
Mixed methods	7	6.36%	93.64%
Narrative	7	6.36%	100%
Total	110	100%	

Florian Skwara is a PhD candidate at the Chair of Marketing Management and Sustainability at HHL Leipzig Graduate School of Management, under the supervision of Professor Kirchgeorg. He has been a researcher in consumer behavior and mental accounting at HHL since 2019. His current research is concerned with mental accounting behavior in the context of purchase decision making processes.

A.2 | Research methods of publications

TABLE A2 Number of publications for each research method.

Research method	Total	In percent	Cumulative
Experiment	67	60.91%	60.91%
Survey	10	9.09%	70.00%
Secondary data analysis	9	8.18%	78.18%
Literature review	8	7.27%	85.45%
Mixed methods	7	6.36%	91.82%
Mathematical modelling	7	6.36%	98.18%
Content analysis	1	0.91%	99.09%
Meta-analysis	1	0.91%	100.00%
Total	110	100%	