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“The journey is the destination”, Ralph Waldo Emerson.

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Abstract

Bringing forward an academic and practical challenge of communicating marketing in a manner easily understood in the language of finance, this paper proposes a novel approach of integrating marketing into spreadsheets. This approach aims to address more effectively financial executives as spreadsheets are central in financial decision making and corporate valuation. Thus, this study focuses on the framing of information, holding information content constant. Using a sample of participants with a background in finance, we find that (1) the spreadsheet effect increases financial executives intention to support marketing investment (2) the mechanisms operating the spreadsheet effect are partially uncovered, a positive prior attitude towards marketing accentuates the spreadsheet effect on shaping perceptions of credibility and risk (3) no significant effects on perceptions of credibility and risk are found for individuals with negative or neutral prior attitude towards marketing, while the main spreadsheet effect remains significant.

Keywords: Marketing financial impact communication, Spreadsheet effect, Representational Congruence, Cognitive Dissonance

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Chapter I: Introduction

Academics and practitioners have pinpointed the growing integration need of marketing finance into one common language. A self-examination of the field of marketing advances the marketers' urging challenge to articulate marketing's relevance in a communication manner easily understood in the language of finance (Key et al., 2020). Practitioners have also articulated this persistent challenge on proving marketing's value to Chief Financial Officers (CFOs) (Bennett, 2024; Bridgman, 2025; Moorman & Veenstra, 2021). They reveal a constant pressure to prove the value of marketing's actions and strategies to CFOs inclined to undercut marketing investment. While academic research has focused on developing marketing performance metrics (Mintz & Currim, 2013; Morgan et al., 2022), practitioners have persistently struggled to convince CFOs of marketing's value even with the use of these metrics. As a result, there is a clear gap highlighted between the theoretical methods suggested and the practical challenges faced. Acknowledging the latter, the objective of this paper is to concretely bring and test a novel approach to communicate marketing financial impact. This novel approach involves integrating marketing into spreadsheets, in a discounted cash flow (DCF) valuation specifically. Precisely the research question is thus what is the spreadsheet effect of communicating marketing into a DCF? To answer this question, the new approach is developed in accordance with theoretical foundations and corporate practices.

Academically, the marketing-finance literature points to the value creation of marketing as a driver of firm performance. A body of literature building upon market-based assets, defined as intangible assets that arise from the firm's relationships with entities in its external environment (Day & Fahey, 1988), has highlighted the positive role of marketing on firm outcomes (Edeling & Fischer, 2016). Extending these notions, market-based assets are shown to enhance cash flows, reduce cash flow volatility and increase residual value (Srivastava et al., 1998), relevant for the computation of the discounted cash flow valuation and ultimately, the enterprise value. Nonetheless, its intangibility, translating into the non-record of market-based assets on the balance sheet under GAAP except when they are acquired (Day & Fahey, 1988), creates a bridge in recognizing its value. Further demonstrating this failure of recognition, studies even reveal findings challenging two fundamental finance models, the Efficient Market Hypothesis and the Capital Asset Pricing

Model (CAPM) (Aksoy et al., 2008; Fornell et al., 2006; Madden, 2006; Srinivasan & Hanssens, 2009).

The novel approach undertaken in the present study focuses on the direct integration of marketing into spreadsheets while to date, research has primarily focused on identifying metrics at the marketing-finance interface (Edeling et al., 2021). As a core argument for this novel approach, spreadsheets are central in financial decision making (Howcroft, 2006; Poon et al., 2024) and commonly used in corporate valuation (Allman, 2012). Therefore, spreadsheet settings are familiar to financial executives. In the spirit of the framing and representational congruence theory, a congruence between the external presentation frame and the user's cognitive process leads to a low cognitive load and a more effective information retrieval process, ultimately affecting positively the decision making process (Cardinaels, 2008; Chandra & Krovi, 1999). Hence, integrating marketing into spreadsheets aims to achieve better representational congruence, ultimately impacting positively financial executives to support marketing investment. This refers to the "direct spreadsheet effect" hypothesis.

Exploring this, the mechanisms behind the direct spreadsheet effect are investigated. Since the information retrieval process is more effective when representational congruence is achieved, the current study also explores how perceptions are changed. Concretely, perceptions are shaped under a three-stages information retrieval process including the information acquisition, information evaluation and information weighting (Maines & McDaniel, 2000). Particularly, the information evaluation and weighting processes are affected by the novel approach, shaping financial executives' perceptions. Since previous research highlights that the disclosure of information into different framings has effects on perceived credibility (Quick & Sayar, 2024) and perceived risk (Monteiro & Bressan, 2021), these two measures are tested in the present study. It is assumed that the spreadsheet framing of marketing will impact perceived credibility and perceived risk of financial executives, ultimately impacting intention to support marketing investment. These constitute our second and third hypotheses.

The last assumption is in accordance with the theory of cognitive dissonance, stating that individuals tend to be biased by preexisting attitudes or beliefs (Festinger, 1957; Harmon-Jones & Mills, 2019). Specifically, an incongruence between prior attitude and current information triggers cognitive dissonance, a state of discomfort that can be

associated with negative emotions (Harmon-Jones & Mills, 2019). As a coping strategy, individuals adopt a confirmation bias, thus seeking or interpreting evidence in ways that align with pre-existing beliefs or attitudes (Nickerson, 1998). Empirical research highlights that the cognitive dissonance shapes perceptions, specifically the confirmation bias further enhances credibility attributed to information consistent with prior attitude (Nistor et al., 2025; van Strien et al., 2016) while effects on perceived risk are also shaped by prior attitude (Baack et al., 2015). Hence, prior attitude towards marketing is also tested in our models to explore its moderator role on the relationship between the spreadsheet framing effect and the respective perceived credibility and risk mediators. These constitute our fourth and fifth hypotheses.

Our empirical findings can be summarized as follows. First, we find that, consistent with the testable hypotheses we develop in Section 2, the spreadsheet effect is effective on average, thus financial executives intent to support marketing investment more when marketing is framed into spreadsheets. Secondly, the mechanisms driving the spreadsheet effect on marketing investment through perceived credibility and perceived risk are only significant for individuals with a positive prior attitude towards marketing, hence operating as a confirmation bias for raising perceived credibility while becoming more conscious of the risks associated. For individuals with a low or neutral prior attitude towards marketing, no effects on perceptions are found, but the main spreadsheet effect remains significant suggesting that other mechanisms than the ones tested in this study are driving the main spreadsheet effect for these individuals.

We conduct additional robustness tests by restricting the sample based on financial knowledge, by controlling for prior attitude in the direct spreadsheet effect, and thirdly by controlling for heterogeneity in evaluation process. From the findings, we derive several implications. An important practical implication is the effectiveness of this novel approach in convincing financial executives to support marketing initiatives, thus marketers are encouraged to communicate to CFOs with the design used in this study. Furthermore, the findings support the theories of framing and representational congruence when disclosing information. The theory of cognitive dissonance also holds as prior attitude accentuates the spreadsheet effect for individuals with positive prior attitude towards marketing while no significant effects are found for individuals with negative or neutral attitude.

The remainder of this paper is organized as follows. Section 2 discusses how this paper relates to the existing literature and describes its contribution to the academic literature and practical challenges. Section 3 describes our data and experimental design. Section 4 presents the empirical tests and results while Section 5 further discusses the findings. Section 6 concludes.

Chapter II: Literature Review and Hypotheses

2.1 The Value Creation of Marketing

Building upon the market-based assets literature, marketing actions and capabilities are demonstrated as drivers of firm performance. Market-based assets are defined as intangible assets that arise from the firm's relationships with entities in its external environment (Day & Fahey, 1988). Market-based assets are either relational, such as brand equity, customer relationship or customer loyalty, or either intellectual, such as buyer behaviour patterns or market tacit knowledge (Srivastava et al., 1998). One core feature of market-based assets is their intangibility, also translating into the non-record of market-based assets on the balance sheet under GAAP except when they are acquired (Day & Fahey, 1988). Even though they fail to be recorded as assets of the firm, a vast body of research establishes the role of marketing on firm outcomes. Interestingly, Edeling & Fischer (2016) study the marketing's impact on firm value through a meta-analysis drawn on 83 studies revealing that a 1% increase in marketing assets raises firm value by 0.54% on average. Other studies analyse specific marketing actions and their associated firm's financial outcomes. Edeling et al. (2021) review the marketing-finance literature and indicate that the strongest positive stock returns are associated with marketing actions such as a new product introduction, customer satisfaction, customer-based brand equity, product quality and positive social media sentiment. The superior relative performance of marketing compared to other capabilities, such as operations or research and development, is also demonstrated (Krasnikov & Jayachandran, 2008). Collectively, these studies highlight the importance of marketing on firm financial outcomes, stock returns, profit and enterprise value.

2.2 Is the market (in)efficient in pricing marketing ?

Research also focuses on understanding the core mechanism behind the impact of marketing on firm outcomes. Srivastava et al. (1998) outline that market-based assets enhance cash flows, reduce cash flow volatility and increase residual value. These three

elements are relevant for the computation of the discounted cash flow valuation method and thus tied to the firm's value. Several authors further research the marketing reflection onto capital markets, challenging two fundamental finance theoretical models. On the one hand, some studies confronts the Efficient Market Hypothesis, which states that asset prices reflect all available information to the market (Fama, 1970). Correspondingly, Srinivasan & Hanssens (2009) reveal that marketing assets decrease the volatility of cash flows and the systematic risk, but investors under-recognise these intangible assets. Aksoy et al. (2008) further analyse one marketing metric, the customer satisfaction. Their paper reveals that firms performing high on the customer satisfaction metric generate superior long-term returns but fails to be immediately reflected into the stock prices, refuting the efficient market hypothesis. On the other hand, some authors challenge the Capital Asset Pricing Model (CAPM), illustrating the positive relationship between risk and return (Sharpe, 1964). Fornell et al. (2006) demonstrate that firms with high customer satisfaction achieve significantly higher returns while offering lower risks. Hence, their study contrasts the CAPM theory by revealing the positive impact both on reducing risks and enhancing returns. Another marketing metric, the brand equity, is also proven to increase stock returns without enhancing risk, further supporting the argument advanced contrasting the CAPM (Madden, 2006). These studies therefore stress the positive outcomes associated with marketing assets while featuring the market's failure to fully incorporate their value into stock prices, confronting both the Efficient Market Hypothesis and the Capital Asset Pricing Model theories.

2.3 Marketing-Finance Gap

Despite the empirical findings of market-based assets, these remain under-recognized which further accentuates the marketing-finance misalignment. Previous studies address a call for bridging the marketing-finance gap by developing an improved communication of marketing's financial impact (Srinivasan & Hanssens, 2009; Srivastava et al., 1998). Besides, an integrative review of the marketing-finance interface fosters future research on the ever-expanding topic of marketing in assessing firm value (Edeling et al., 2021). Another systematic review of marketing-finance-accounting interface academic journals further emphasizes the growing stream of research needed in investigating the

long-term focus of marketing strategies and its intersection with corporate finance (Dimitropoulos et al., 2025).

Marketing studies have focused on marketing accountability, measurement and performance metrics (Mintz & Currim, 2013; Morgan et al., 2022; Rust, Ambler, et al., 2004). Other studies have investigated the marketing departments' power and influence within firms as well as their translation into the actual firm performance (Feng et al., 2015; Verhoef & Leeflang, 2009). Mixed results regarding the marketing function are drawn, attracting considerable public and academic attention. Both academics and practitioners have unrevealed the growing marketing-finance integration's need into one common language. A theoretical and conceptual self-examination of the field of marketing advances the marketers' urging challenge to articulate marketing's relevance in a communication manner easily understood in the language of finance (Key et al., 2020). Further supporting the academic arguments advanced, practitioners also unpack this persistent challenge on proving marketing's value to their Chief Financial Officers (CFOs) (Bennett, 2024; Bridgman, 2025; Moorman & Veenstra, 2021). Marketing leaders reveal a constant pressure to prove the value of marketing's actions and strategies to CFOs inclined to undercut marketing investment. While academic research has focused on developing marketing performance metrics (Mintz & Currim, 2013; Morgan et al., 2022), practitioners have persistently struggled to convince CFOs of marketing's value even with the use of these metrics. As a result, there is a clear gap highlighted between the theoretical methods suggested and the practical challenges faced. Acknowledging the latter, the next section explores a framing theoretical approach to marketing's financial communication.

2.4 The Framing Theory

Under classic corporate finance theory, perfect capital markets assume frictionless markets, perfect information and rational investors (Modigliani & Miller, 1958). As investors have perfect information and act rationally, a change in the presentation frame should have no impact on marketing investment decisions, since the information content is identical regardless of the presentation used. Notwithstanding, behavioral finance studies demonstrated that investors deviate from rationality by undertaking mental shortcuts while also getting affected by biases (Barberis & Thaler, 2003; Tversky & Kahneman, 1981). Besides, investors have limited attention and processing power (Hirshleifer & Teoh, 2003). As a consequence, informationally equivalent disclosures have different effects on

individuals processing the information displayed. Building upon this, the framing theory explores the effects of framing information differently while the information content is held constant. The framing theory was originally introduced by Tversky & Kahneman (1981), presenting the systematic reversals of preferences introduced by variations in the framing of problems or outcomes. In fact, people tend to become risk-averse when outcomes are framed positively, involving gains, but tend to become risk-taking when outcomes are negatively framed, involving losses. Building upon this original theory, research has focused on understanding the mechanisms underlying individuals' decision making changes. Early research notably altered formats between graphical and tabular presentations (Desanctis & Jarvenpaa, 1989; Remus, 1984) while later research focused on altering presentation on the broader scope such as altering the presentation prominence (Huang et al., 2025). Concretely, framing was revealed to facilitate the shift of the weights given to the different attributes displayed, thus impacting the decision maker's outcome (Diamond & Lerch, 1992). Interestingly, framing triggers two cognitive processes in the individual's mind, the selection and salience processes. The selection process includes selecting which pieces of information to display while the salience process renders pieces of information more salient, thus more noticeable or meaningful to the target audience (Entman, 1993).

Moreover, the theory of representational congruence elaborates on the congruence between the external presentation frame and the user's internal cognitive model (Chandra & Krovi, 1999). The external presentation frame encompasses the information displayed to the decision maker while the internal cognitive model refers to the user's information retrieval and cognitive process to analyse the information given. The representational congruence theory suggests that a mismatch between the external presentation frame and the user's cognitive process leads to a high cognitive load and less effective information retrieval process, ultimately affecting negatively the decision making process (Cardinaels, 2008). Furthermore, as information or cognitive load decreases, the decision maker's reliance on affective responses decreases as well (Rose et al., 2004).

As a result, mitigating cognitive load is revealed positive for two reasons, an effective information retrieval process and a limited reliance on affective responses ensuring a more rational decision making process. Summarising these findings, varying the information presentation frame affects the decision making process (Huang et al., 2025; Kelton et al., 2010) while the representational congruence theory recommends developing an external

presentation frame aligned with the user's internal cognitive process to eventually mitigate cognitive load (Cardinaels, 2008; Chandra & Krovi, 1999).

The broad implication of the framing and the representational congruence theories is that a closer presentation frame of marketing to financial executives' cognitive processes will reduce cognitive load and ensure a more effective information retrieval process, allowing it to induce a higher intention to support marketing investment. Practically, research reveal that spreadsheets are central in financial decision making (Howcroft, 2006; Poon et al., 2024) and commonly used in corporate valuation (Allman, 2012). Hence, disclosing marketing into spreadsheets will increase the fit with financial executives' cognitive process as they are familiar with processing information in spreadsheets.

Understanding current practices of disclosing marketing initiatives and outcomes is useful in further addressing the marketing framing change conducted in this study. Current practice discloses marketing initiatives and outcomes as textual disclosures or management notes (Frösén & Stewart, 2023). In our setting, marketing is incorporated into corporate valuation displayed in spreadsheets. This leads to our main hypothesis:

H₁: Financial executives report higher intention to support marketing investment in the spreadsheet frame than in the standard frame.

2.5 The Theory of Cognitive Dissonance

To develop a further understanding of the mechanisms underlying the information retrieval process, we examine how a change in marketing frame results in a change in perceptions ultimately impacting decision-making. As mentioned above, a closer presentation frame of marketing to financial executives' cognitive processes will ensure a more effective information retrieval process. Concretely, perceptions are shaped under a three-stages information retrieval process including the information acquisition, information evaluation and information weighting (Maines & McDaniel, 2000). In this setting, we assume that information acquisition does not play a role since the only factor altered is the framing of information, holding the information content constant. Thus, individuals do not acquire information themselves. Nonetheless, individuals conduct the information evaluation and weighting processes. Individuals first evaluate the characteristics of the information provided in a way that enables its use (Hirshleifer & Teoh, 2003), which is assumed to be eased when the frame of marketing matches financial executives' cognitive process. Individuals finally attribute weights to the elements displayed in the information given, while

higher weighting of the information leads to higher investment-related judgments (Reimsbach et al., 2018).

Furthermore, research highlights that the disclosure of information into different framings is shown to have effects on perceived reliability, understandability and usability (Quick & Sayar, 2024). Accordingly, this study analyses the effects of framing on perceived credibility as a mediator between the marketing frame and the marketing investment decision. Since a more effective information retrieval process is assumed due to the match between the external framing and the user's cognitive process, we expect that presenting marketing into a financial framing will enhance perceived credibility, which will then increase intention to support marketing investment.

H_{2a}: The spreadsheet frame will increase the perceived credibility which will result in higher intention to support marketing investment.

Alternatively, framing effects of information affect risk perceptions (Monteiro & Bressan, 2021) and specifically, financial information presentation affects investors' risk and volatility perceptions (Weber et al., 2005). In addition, increased complexity of financial information disclosure intensifies risk perception (Linciano et al., 2018). However, individuals' risk perceptions are also influenced by personal traits, behavioural biases, financial knowledge, age and gender, in addition to the disclosure format and complexity of information (Linciano et al., 2018).

In this study, we assume that presenting marketing information into spreadsheets will reduce complexity of information due to representational congruence but since other factors may also alter risk perceptions, the followed hypothesis is developed as below.

H_{2b}: The spreadsheet frame will influence the perceived risk which will ultimately impact the intention to support marketing investment.

Exploring further the information retrieval process and building upon the theory of cognitive dissonance, individuals tend to be dissonance-averse and thus often biased by their preexisting attitudes or beliefs (Festinger, 1957; Harmon-Jones & Mills, 2019). Specifically, an incongruence between prior attitude and current information triggers cognitive dissonance, a state of discomfort that can be associated with negative emotions (Harmon-Jones & Mills, 2019). As a coping strategy, individuals adopt a confirmation bias, thus seeking or interpreting evidence in ways that align with pre-existing beliefs or attitudes (Nickerson, 1998). Empirical research highlights that the cognitive dissonance shapes

perceptions. In particular, individuals reduce the credibility attributed to the current piece of information contradicting their prior attitude (Nistor et al., 2025; van Strien et al., 2016) while effects on perceived risk are also observed when information confirms prior beliefs or attitudes (Baack et al., 2015). Resultingly, we expect prior attitude towards marketing to moderate the strength of the relationship between the spreadsheet frame and the perceptions of financial executives. Since prior attitude is shown to impact of the perceived credibility attributed to the current information, we assume that a positive attitude towards marketing will strengthen the impact of spreadsheet framing on perceived credibility, such as prior attitude reinforces the perceived credibility ultimately motivating behavioural intention towards marketing investment.

H_{3a}: The positive relationship between spreadsheet frame and perceived credibility will be stronger for financial executives with a positive prior attitude towards marketing.

On the other hand, prior attitude is shown to impact perceived risk but the direction of the impact is uncertain (Baack et al., 2015). We thus expect prior attitude towards marketing to moderate the strength of the relationship of framing on perceived risk, affecting behavioural intention towards marketing investment.

H_{3b}: The relationship between spreadsheet frame and perceived risk will be moderated by prior attitude towards marketing.

2.6 Conceptual Framework

Figure 1 displays the conceptual framework investigating the role of disclosing marketing into spreadsheets in motivating marketing investment decision. This conceptual framework builds directly upon the hypotheses developed. The following section further defines the variable operationalization of the dependent variable that will be used to test implications.

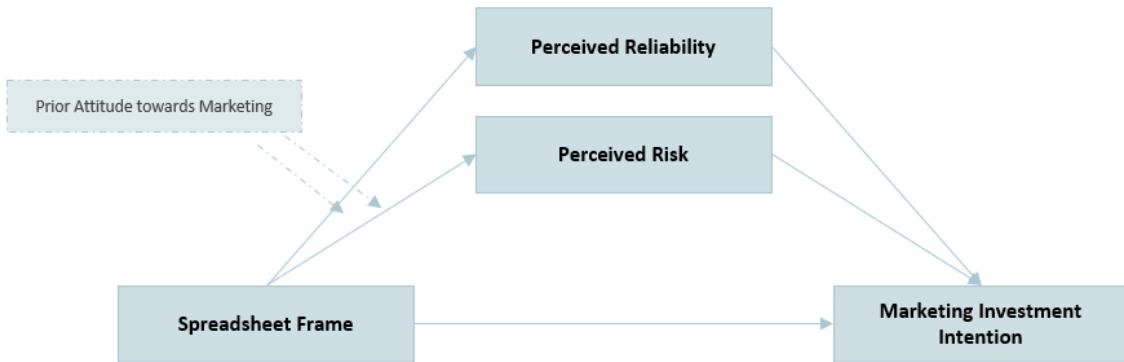


Figure 1. : Conceptual Framework

2.6.1 Dependent Variable: Marketing Investment Intention

The dependent variable used in this study is the marketing investment intention defined as the financial executives' willingness to support marketing investment. The variable is constructed along two dimensions. The adoption dimension refers to the individual's intention to adopt the marketing initiative, while the funding dimension refers to the individual's intention to support funding the marketing initiative, reflecting financial support. While literature has advocated that marketing should be considered as an investment rather than an expense (Srivastava et al., 1998), the marketing investment variable has been mostly treated as an independent variable (Ge et al., 2025; Wang et al., 2025). Furthermore, research has focused on measuring the marketing investment variable quantitatively (Ge et al., 2025; Wang et al., 2025). This study takes a different approach by focusing on the financial executives' intention to support marketing, thus on behavioral intention rather than a quantitative measure of marketing investment. In addition, this variable is chosen as the dependent variable of this study to examine the cognitive process ultimately resulting in the marketing investment decision. In support of this, a study which centers its analysis on investigating the heuristics and analytics undertaken by individuals when forming their advertising budget decision, also adopts the latter as the dependent variable (Kolsarici et al., 2020). Consistent with this research, this study investigates the cognitive process of financial executives when determining their behavioral intention to support marketing investment.

In a summary, the behavioral intention is adopted as the dependent variable to encompass the financial executives' intent to adopt and financially support marketing initiative. The variable builds upon the literature pinpointing marketing treatment as an investment rather than an expense derived from the firm value creation enabled by marketing (Edeling & Fischer, 2016b; Madden, 2006; Srivastava et al., 1998) and on the literature treating marketing budget decision as an outcome (Kolsarici et al., 2020).

Chapter III: Research Design

The primary objective of this study is to test empirically the hypotheses developed in section 2.4 and 2.5 and to eventually answer the research questions addressed in section 1. This section thus discusses the methodology applied in this study by first elaborating on the sample and procedures, then developing the experimental manipulations and measures and lastly, presenting the data analysis that will be discussed in further detail in section 4.2.

3.1 Sample and Procedures

The main objective is to lay the foundations for testing the hypotheses developed in section 2, and ultimately examining the spreadsheet effect. Quantitative research has therefore been selected and an experiment has been built to collect data. An experiment is chosen for this study as it is suggested as the strongest test for testing hypothesized causal relationships (Denson & Anderson, 2023). Experiments perform better on internal validity than external validity (Schram, 2005). To mitigate this and ensure generalizability, participants in the sample were carefully selected as individuals with a background in finance. The sample consisted of 266 students in the third-year bachelor course "Investment Analysis and Portfolio Management". As such, participants had a certain level in finance prior to completing the experiment. Using finance students as the sample is consistent with prior experimental research in finance and accounting, in which students with relevant knowledge are used as proxies for professional decision-makers (Libby et al., 2002). In this study, the target population consists of financial executives involved in the decision-making process of allocating or supporting marketing activities within a company. As such, the student population with financial knowledge is expected to approximate the target population.

From the initial sample, three participants had missing data on the moderator variable while one participant had missing data on the survey items measuring the mediator

perceived risk. Therefore, these cases were excluded only from analyses involving the respective variable. The participants were retained for all other analyses where their data was complete. All participants are undergraduate students. Besides the theoretical finance knowledge, 160 out of 266 participants (60.2%) indicated to have at least one practical experience in finance such as an internship, student investment fund membership or trading experience for examples. Furthermore, 113 out of 266 (42.5%) participants indicated being confident in their valuation skills. Since the survey was primarily focused on collecting data on the task, no further personal information was asked as such data was not required for the main analysis and could hinder participants from sharing honest answers on the following survey questions.

The experiment was conducted offline during scheduled tutorials of the course “Investment Analysis and Portfolio Management”. The course was composed of 25 tutorial groups which conducted the experiment on the same day, the 14th of October 2025, under constant conditions. Accordingly, tutors of each tutorial group received instructions sheets informing them of the experiment conditions and time frame. Discussion and questions were not allowed during the task to ensure that participants would provide personal answers. To further motivate sincerity, additional instructions were also provided to participants mentioning once more that the objective of the research was to obtain honest personal answers and thus, there was no right or wrong response. Participants received one stapled set of sheets each. Each set was composed of one sheet including the spreadsheet, campaign proposal and instructions while the second sheet consisted of the survey questions. Besides, the experiment was purposely designed to be on paper since the task required careful inspection of the spreadsheet to be able to answer the survey questions. The experiment design enabled participants to review both sheets at the same time in order to facilitate the analysis process. In addition, since the experiment was conducted in an offline tutorial setting, distractions were reduced and participants were also supervised during the process, ultimately augmenting the internal validity of this study. The experiment took around 8-10 minutes to complete.

The offline experiment employed a between-subjects design. The independent variable (Framing Condition) was directly included into the spreadsheet design, hence participants were manipulated to either have marketing incorporated into the spreadsheet frame or a standard spreadsheet frame. Participants were randomly assigned to one of the

conditions. All participants first read a declaration of consent and preliminary instructions. These instructions mentioned the information provided in the experiment including a discounted cash flow valuation and a campaign proposal for the company Soluna Rituals. Next, participants viewed a spreadsheet of expected cash flow following a standardized discounted cash flow valuation design (Berk & DeMarzo, 2019). This table incorporated projected elements over the next four years plus the terminal year underlying the following calculations:

(1) Calculations to compute PV(Free Cash Flow):

$$((1+Growth\ Rate_t) * Revenues_t) - Cost\ of\ Goods\ Sold_t = Gross\ Profit_t$$

$$Gross\ Profit_t - Operating\ Expenses_t - Depreciation_t = EBIT_t$$

$$EBIT_t - (Tax\ Rate * EBIT_t) = NOPLAT_t$$

$$NOPLAT_t + Depreciation_t = Free\ Cash\ Flow_t$$

$$PV(FCF_t) = \sum_1^t \frac{FCF_t}{(1+r_{WACC})^t}$$

(2) Calculation to compute PV(Terminal Value):

$$PV(TV_t) = \sum_1^t \frac{TV}{(1+r)^t}$$

(3) Calculation to compute Enterprise Value:

$$Enterprise\ Value = PV(FCF_t) + PV(TV_t)$$

Subsequently, participants read the “Circle of Radiance” proposal, designed to align with how marketing initiatives are usually described in corporate disclosures. Thus, the description is designed to resemble how marketing activities are communicated to financial executives in order to align as closely as possible to real-life practices and enable a better transferability of the results to real-life settings, ultimately enhancing ecological validity of the research. Since companies do not share private information about their marketing activities, sections displaying marketing activities in publicly available Form 10-K filings (Apple Inc., 2025; Netflix, 2025) and investor presentations (e.g. Heineken N.V., 2025; Nestlé, 2025; Uber, 2024) are adopted as proxies. Participants read the following scenario:

“The “Circle of Radiance” Proposal

We have invested \$65 million in our new branding campaign, “Circle of Radiance”, building a loyalty ecosystem inside our mobile app. At Soluna Rituals, we already offer high-quality skincare products. This campaign aims to provide personalized offerings and exclusive products to our premium members. This campaign represents an investment for our company to drive future growth.

Our investment in the “Circle of Radiance” campaign indicates a 10% increase in marketing conversion through premium memberships, a 7.5% increase in customer engagement through personalized recommendations and a 2% increase in customer referrals.

Furthermore, our churn rate should decrease by more than 10% due to regular re-engagements and loyalty rewards. Ultimately, this campaign boosts our company’s growth rate of 5% by 1-3%. Based on these assumptions, we expect that our enterprise value will therefore increase by \$70.62 million.”

Next, participants read further instructions directing them to the next page on which they completed the survey questions. Furthermore, participants were reminded of the absence of right or wrong answers and also instructed that they were allowed to complete the survey while still reviewing the first page including the discounted cash flow valuation and campaign proposal.

3.2 Experimental Manipulation

As indicated previously, participants received a spreadsheet displaying a discounted cash flow valuation for the company “Soluna Rituals”. The spreadsheet therefore reported projected growth rates and revenues, cost of goods sold and expenses, free cash flow, terminal value and the ultimate enterprise value. The general layout of the spreadsheet was held constant across experimental conditions but elements regarding the “Circle of Radiance” proposal were incorporated in the spreadsheet in the treatment condition but not in the control condition as explained further in this section. Hence, the differentiation between experimental conditions is the (non-)integration of the campaign proposal’s assumptions into the spreadsheet. Appendices A and B contain the experiment designs for the control and treatment condition respectively.

Importantly, the narrative explaining the “Circle of Radiance” proposal remained identical across conditions. This campaign further highlights the expected 10% increase in

marketing conversion, 7.5% increase in customer engagement, a 2% increase in customer referrals and a 10% decrease in churn rate. Consequently, the campaign is expected to increase Soluna Rituals' baseline growth rate of 5% by 1 to 3%. Based on these assumptions, an increase of \$70.62 million in enterprise value is expected.

3.2.1 Control Condition

In the control condition, the marketing assumptions are only discussed narratively in the campaign proposal but fail to be reflected in the spreadsheet valuation. The spreadsheet displayed a baseline growth rate of revenues of 5% and a terminal growth rate of 3%. Resulting from discounting the cash flow of year 1 to 4 and the terminal value, the ultimate enterprise value of Soluna Rituals displayed in the spreadsheet is \$392.23 million.

3.2.2 Treatment Condition

In the treatment condition, the marketing assumptions are both included in the spreadsheet and the narrative section. In the spreadsheet, the baseline growth rate of 5% and terminal rate of 3% are displayed followed by an additional growth rate of marketing campaign of 2% presented in a separate subsequent line in bold to render it salient. This additional growth rate is also applied to revenues. At the bottom of the spreadsheet, both the enterprise value without the marketing campaign and the enterprise with the marketing campaign are shown as well as the resulting increase in enterprise value from the campaign. The enterprise value without the marketing campaign is identical to the control condition, thus \$392.23 million. The enterprise value with the marketing campaign is \$462.84 million, obtained from applying the additional growth rate of marketing campaign of 2% in addition to the baseline growth rate. Hence, the increase in enterprise value associated with the marketing campaign is \$70.62 million, which is also explicitly shown in the spreadsheet. Besides, this number is also displayed in the narrative section.

3.3 Survey Design

The survey questionnaire was designed to capture participants' evaluation process which was expected to differ depending on the framing condition. Since this study examines a novel approach, the direct integration of marketing into a discounted cash flow valuation, no fully existent scales were directly applicable to this study. However, measures were developed to closely align with the task conducted by participants. Furthermore, the constructs relate to concepts which have already been researched as developed

conceptually in Section 2. All survey items are measured on 7-point scales as they are proven as reliable, valid and with the highest discriminating power compared to 5-point scales (Preston & Colman, 2000). The marketing investment variable was measured along two items examining participants' behavioural intention as if they were the Chief Financial Officer at Soluna Rituals to first adopt the "Circle of Radiance" campaign and to secondly approve the "Circle of Radiance" campaign for funding. Both survey items are measured on a scale from 1 to 7 on which 1 represents "Very Unlikely" and 7 represents "Very Likely". For purposes of analysis, these two scales are combined into one single variable yielding a Pearson correlation of .83 significant at the .01 significance level. The mediator perceived credibility was measured on various survey items investigating the extent to which framing affected participants' perceptions of confidence, reliability and relevance of the "Circle of Radiance" campaign. These five survey items are combined into one variable yielding a Cronbach's Alpha of .72 which is thus above the acceptable threshold of .7, indicating internal consistency. The mediator perceived risk was measured on two survey items asking participants to rate the extent to which they perceived the risk associated with future cash flow displayed in the spreadsheet. These two items are combined into one variable yielding a Pearson correlation of .39 significant at the .01 significance level. The moderator prior attitude was asking participants to rate the extent to which they considered marketing as a driver of firm performance before completing the experiment. The last part of the survey tested participants' technical knowledge in finance and gathered information about participants' practical experience in finance as well as their evaluation process of the task at hand. A confirmatory factor analysis using maximum likelihood estimation further indicates good model fit ($\chi^2(24) = 38.18$, $p = 0.033$, CFI = .98, TLI = .97, 90% CI[.014;.074], SRMR = .037). All items loaded significantly on their respective variables ($p < .001$) with standardized loadings over .5 except for one item which rated lower comparatively. Since the item is theoretically meaningful and the reliability analysis testing the variable including that item reveals a Cronbach's Alpha above .7, the item is held in the variable construct.

3.4 Preliminary Analysis

To conduct the statistical analysis, the software SPSS version 31.0.0.0 is used. Since the data collection process was on paper, the data was converted manually to an Excel file before being transferred to SPSS. Before testing the hypotheses, the assumptions were checked. First, for the independent samples t-test, the independence of observations can be

assumed since each participant appears only once in the dataset. This assumption was further supported by a Durbin-Watson test of 1.76 indicating that the residuals are uncorrelated (Field, 2018). Then, normality was checked by conducting the Shapiro-Wilk test for the four variables. All variables showed statistical significance, thus deviating from normality. However, since the sample size is large ($N = 266$), the Central Limit Theorem applies which implies that normality can be assumed (Khilyuk et al., 2005). Then, the homogeneity of variances is met as the Levene's test fails to be statistically significant for each of the four variables, thus indicating that equal variances can be assumed.

For the following analyses, some further assumptions are checked. The normality of residuals is met since the Q-Q plots and histograms of standardized residuals approximate normality (Field, 2018). The homoscedasticity assumption is also met, thus revealing comparable spread across conditions (Field, 2018). Lastly, the multicollinearity assumption is met as all variance inflation factors (VIFs) are below the acceptable threshold 3, thus indicating the absence of multicollinearity issues which would hinder the individual effects of each variable (Field, 2018).

Furthermore, Chi-Squared tests were conducted to check if groups were comparable across conditions. The Chi-Squares reveal that firstly prior attitude toward marketing was distributed similarly across the control and framing conditions ($\chi^2(6) = 3.78, p = .707$). Secondly, confidence in valuation skills was also distributed similarly across conditions ($\chi^2(6) = 7.90, p = .245$). Thirdly, practical experience in finance was also distributed similarly across conditions ($\chi^2(2) = 2.40, p = .302$). Thus, random assignment was successfully completed across conditions.

Chapter IV: Results

The next section presents the empirical findings. Table 1 first presents the descriptive statistics of the dependent, independent, mediator and moderator variables used in the statistical tests computed in a subsequent section. Table 2 then reports the analysis results conducted to test the hypotheses. Table 3 and 4 finally presents the moderated mediation analyses.

4.1 Descriptive Statistics

The means and standard deviations split by condition for the study's variables as well as the results of the t -tests are reported in Table 1 (p.24). An independent samples t -test

indicates a significant difference in the means of the marketing investment variable between the two conditions ($M = 5.2, SD = 1.1$ vs. $M = 4.8, SD = 1.1$; $t(264) = -2.33$; $p = .021$). In line with preliminary assumptions, the descriptive statistics of the mediator 1 also indicates a higher mean for the perceived credibility in the spreadsheet framing condition compared to those in the standard framing condition but the independent samples t -test fails to reject the null hypothesis indicating that there is no significant difference in perceived credibility across conditions ($M = 4.5, SD = .8$ vs. $M = 4.4, SD = .9$; $t(264) = -1.35$; $p = .178$). The descriptive statistics of the mediator 2 reveals a higher mean for the perceived risk in the spreadsheet framing condition compared to those in the standard framing condition but the independent samples t -test also fails to reject the null hypothesis indicating that there is no significant difference in perceived risk across conditions ($M = 4.1, SD = 1$ vs. $M = 4, SD = 1.1$; $t(263) = -0.7$; $p = .487$). The independent samples t -test of the moderator reports that there is no statistically significant difference in prior attitude between the treatment and control conditions ($M = 5, SD = 1.6$ vs. $M = 4.9, SD = 1.5$; $t(261) = -0.47$; $p = .638$). This result further supports that randomization was successful and that participants did not differ in their prior attitude towards marketing, which could confound the results. Consequently, this indication strengthens the internal validity of this analysis and the effects on the dependent variable can be more confidently attributed to the experimental manipulation rather than pre-existing attitudes.

Table 1

Descriptive Statistics

Variable	Control		Treatment		$t(df)$	p	Cohen's d
	M	SD	M	SD			
Marketing Investment	4.8	1.1	5.2	1.1	-2.33 (264)	.021	-0.29
Perceived Credibility	4.4	.9	4.5	.8	-1.35 (264)	.178	-0.17
Perceived Risk	4.0	1.1	4.1	1.0	-.70 (263)	.487	-0.09
Prior Attitude	4.9	1.5	5.0	1.6	-.471 (261)	.638	-0.06

Note. Mean parameter values for each of the analyses are shown for the control and treatment condition, as well as the results of t tests (assuming equal variance) comparing the parameter estimates between the two conditions. Degrees of freedom correspond to the appropriate test based on the Levene's test for equality of variances. Cohen's d measures the standardized difference between the two condition means. Significance levels are two tailed.

4.2 Hypotheses Tests

Hypothesis 1 predicted that financial executives will report higher behavioural intention to support marketing investment in the spreadsheet framing condition than those

in the standard framing condition. To test this hypothesis, an independent samples *t*-test was conducted to measure the mean difference between the two groups. The independent samples *t*-test demonstrates that the participants in the spreadsheet framing condition have significantly higher behavioral intention to support marketing investment than those in the standard framing condition ($M = 5.2, SD = 1.1$ vs. $M = 4.8, SD = 1.1$; $t(264) = -2.33$; $p = .021$). As a result, Hypothesis 1 is supported.

Hypothesis 2a suggested that the relationship between the framing condition and the marketing investment is mediated by the perceived credibility. This hypothesis was tested using Hayes PROCESS model 4 for a simple mediation analysis. Model 2 (Table 2) reveals that the framing condition does not significantly predict perceived credibility ($\beta = 0.14, SE = 0.11, t(264) = 1.35, p = .178$). However, perceived credibility significantly predicts marketing investment ($\beta = 0.75, SE = 0.06, t(263) = 11.73, p < .001$). The direct effect of framing condition on marketing investment is partially significant when perceived credibility is included in the model ($\beta = 0.21, SE = 0.11, t(263) = 1.88, p = .061$) while the indirect effect through perceived credibility is not statistically significant ($\beta = 0.11, SE = 0.08, 95\% \text{ CI } [-0.05; 0.27]$). Conclusively, perceived credibility does not mediate the relationship between framing condition and marketing investment, and H2a is not supported.

Hypothesis 2b predicted that the relationship between the framing condition and the marketing investment is mediated by the perceived risk. This hypothesis was tested using Hayes PROCESS model 4 for a simple mediation analysis. Model 3 (Table 2) highlights that the framing condition does not significantly predict perceived risk ($\beta = 0.09, SE = 0.13, t(263) = 0.70, p = .487$). However, perceived risk significantly predicts marketing investment ($\beta = 0.33, SE = 0.06, t(262) = 5.49, p < .001$). The direct effect of framing condition on marketing investment remains statistically significant when perceived risk is included in the model ($\beta = 0.28, SE = 0.13, t(262) = 2.22, p = .028$) while the indirect effect through perceived risk is not statistically significant ($\beta = 0.03, SE = 0.05, 95\% \text{ CI } [-0.05; 0.13]$). Conclusively, perceived risk does not mediate the relationship between framing condition and marketing investment, and H2b is not supported.

Table 2*Direct Effect, Simple Mediation and Moderated Mediation Models*

	(1)	(2)	(3)		(4)		(5)		
Dependent Variable	MI ^b	PC ^c	MI	PR ^d	MI	PC	MI	PR	MI
	<i>B(SE)</i>								
<i>Intercept</i>	4.84	4.39	1.54	3.98	3.51	4.47	1.78	4.04	3.79
	(.1)***	(.08)***	(.29)***	(.1)***	(.26)***	(.05)***	(.3)***	(.06)***	(.25)***
<i>Framing Condition^a</i>	.31	.14	.21	.09	.28	.11	.2	.07	.26
	(.14)**	(.11)	(.11)*	(.13)	(.03)**	(.1)	(.11)*	(.13)	(.13)**
<i>Perceived Credibility</i>			.75				.72		
			(.06)***				(.07)***		
<i>Perceived Risk</i>					.33			.30	
					(.06)***			(.06)***	
<i>Prior Attitude</i>						.08		.03	
						(.03)**		(.04)	
<i>Condition x Prior</i>						.2		.22	
<i>Attitude</i>						(.07)***		(.09)**	
R ²	.006	.357***	.002	.121***	.06***	.334***	.029*	.103***	
<i>N</i>	266	266	265	265	263	263	262	262	

Note. β = Coefficient Estimate; SE = Standard Error. Unstandardized coefficients are reported using ordinary least squares (OLS) regressions for direct effects and bootstrap confidence intervals with 5,000 resamples for indirect effects. The table presents the results from regressions of: framing condition on marketing investment (Model 1); framing condition on marketing investment through the mediator perceived credibility (Model 2); framing condition on marketing investment through the mediator perceived risk (Model 3); moderated mediation of framing condition x prior attitude on marketing investment through perceived credibility (Model 4); moderated mediation of framing condition x prior attitude on marketing investment through perceived risk (Model 5). Model 1 corresponds to PROCESS 1 (direct effect); Models 2 and 3 correspond to PROCESS 4 (simple mediation); Models 4 and 5 correspond to PROCESS 7 (moderated mediation). For Models 4 and 5, the dependent variable and moderator were mean-centered prior to creating the interaction term. Significance levels are two-tailed. *, **, *** denote the respective significance level 10%, 5%, 1%.

^a0 = control, 1 = treatment. ^bMI = Marketing Investment. ^cPC = Perceived Credibility. ^dPR = Perceived Risk.

Hypothesis 3a predicted that the positive relationship between spreadsheet presentation frame and perceived credibility will be stronger for financial executives with a positive prior attitude towards marketing. This hypothesis was tested using Hayes PROCESS model 7 for a moderated mediation analysis displayed under Model 4 (Table 2). The direct and indirect effects are further reported under Table 3. Framing condition is not significantly related to perceived credibility ($\beta = 0.11$, $SE = 0.1$, $t(262) = 1.05$, $p = .295$). Prior attitude is

significantly related to perceived credibility ($\beta = 0.08$, $SE = 0.03$, $t(262) = 2.4$, $p = .017$). The interaction term between condition and prior attitude is statistically significant ($\beta = 0.20$, $SE = 0.07$, $t(262) = 2.93$, $p = .004$). Furthermore, perceived credibility significantly predicts marketing investment ($\beta = 0.72$, $SE = 0.07$, $t(262) = 11.12$, $p < .001$). Table 3 demonstrates that the index of moderated mediation is statistically significant ($\beta = 0.14$, $SE = 0.05$, 95% CI [0.04 ; 0.26]). Furthermore, the analysis outlines the conditional indirect effects at different levels of the moderator prior attitude, thus displaying the indirect effects at different levels of the moderator prior attitude, thus displaying the indirect effects at one standard deviation below the mean, at the mean and one standard deviation above the mean. The analysis reveals that the indirect effect of spreadsheet framing on marketing investment through the perceived credibility is only statistically significant at high levels of prior attitude ($\beta = 0.23$, $SE = 0.1$, 95% CI [0.04 ; 0.45]). The direct effect of framing condition on marketing investment is partially significant when perceived credibility is included in the model ($\beta = 0.2$, $SE = 0.11$, $t(262) = 1.81$, $p = .071$).

In summary, the positive relationship between spreadsheet framing condition and perceived credibility is stronger for financial executives with a positive prior attitude towards marketing, ultimately motivating marketing investment. Thus, H3a is supported.

Table 3

Moderated Mediation Analysis through Perceived Credibility

Direct Effect of X on Y				
	β	SE	P	
Framing Condition ^a	.20	.11	.071	
Conditional Indirect Effects				
		95% CI		
		LL	UL	
Low Level (-1SD)	-.20	.12	-.44	.03
Medium Level (mean)	.09	.08	-.06	.25
High Level (+1SD)	.23	.10	.04	.45
Index of Moderated Mediation				
Prior Attitude	.14	.06	.04	.26

Note. N = 263. β = Coefficient Estimate; SE = Standard Error; CI = Confidence Intervals. Estimates are unstandardized coefficients. Direct Effect of X on Y is reported using OLS regression; Conditional Indirect Effects and Index of Moderated Mediation are reported using bootstrapped confidence intervals with 5,000 resamples.

^a0 = control, 1 = treatment.

Hypothesis 3b suggested that the relationship between spreadsheet frame and perceived risk will be moderated by prior attitude towards marketing. Hayes PROCESS model 7 was used to test this hypothesis for a moderated mediation analysis reported under Model 5 (Table 2) while further effects are reported in Table 4. Framing condition is not significantly related to perceived risk ($\beta = 0.07$, $SE = 0.13$, $t(261) = 0.54$, $p = .588$). Prior attitude is not significantly related to perceived risk ($\beta = 0.03$, $SE = 0.04$, $t(261) = 0.59$, $p = .556$). Nonetheless, the interaction term between condition and prior attitude is statistically significant ($\beta = 0.22$, $SE = 0.09$, $t(261) = 2.58$, $p = 0.01$). Furthermore, perceived risk significantly predicts marketing investment ($\beta = 0.3$, $SE = 0.06$, $t(261) = 4.98$, $p < .001$). Table 4 then highlights that the index of moderated mediation is statistically significant ($\beta = 0.07$, $SE = 0.03$, 95% CI [0.02 ; 0.14]). Furthermore, the analysis of the conditional indirect effects indicates that the indirect effect of framing on marketing investment through the perceived risk is only statistically significant at high levels of prior attitude ($\beta = 0.1$, $SE = 0.06$, 95% CI [0.01 ; 0.23]). The direct effect of framing condition on marketing investment is statistically significant when perceived risk is included in the model ($\beta = 0.26$, $SE = 0.13$, $t(261) = 2.04$, $p = .043$). Considering these results, the positive relationship between spreadsheet framing and perceived risk is stronger for financial executives with a positive prior attitude towards marketing, ultimately motivating marketing investment. Thus, H3b is supported.

Table 4

Moderated Mediation Analysis through Perceived Risk

Direct Effect of X on Y			
	β	<i>SE</i>	<i>p</i>
Framing Condition ^a	.26	.13	.04
Conditional Indirect Effects			
		95% CI	
		LL	UL
Low Level (-1SD)	-.11	.07	-.25
Medium Level (mean)	.03	.04	-.05
High Level (+1SD)	.10	.06	.01
Index of Moderated Mediation			
Prior Attitude	.07	.03	.02
			.14

Note. $N = 262$. β = Coefficient Estimate; SE = Standard Error; CI= Confidence Intervals. Estimates are unstandardized coefficients. Direct Effect of X on Y is reported using OLS regression; Conditional Indirect Effects and Index of Moderated Mediation are reported using bootstrapped confidence intervals with 5,000 resamples.

^a0 = control, 1 = treatment.

4.3 Post-Hoc Analyses

This section exhibits alternative models that have been tested to further test the robustness of the results. These analyses focus exclusively on testing the direct effect and moderated mediations since only these analyses revealed statistical significance.

First, the sample was restricted to participants who indicated the correct answer to the question purposefully designed to assess the financial knowledge of participants. Even if the primary sample already included only individuals with knowledge in finance, restricting further the sample to the participants who correctly identified the weighted average cost of capital answer as the discount rate to compute the present value of the free cash flow enables to further test the robustness of the results. Table 5 in Appendix C illustrates that among this restricted sample, participants in the spreadsheet framing condition still exhibit significantly higher behavioral intention to support marketing investment than those in the standard framing condition ($M = 5.2, SD = 1.1$ vs. $M = 4.8, SD = 1.1$; $t(220) = -2.77$; $p = .006$). Table 6 in Appendix C indicates that the results from the moderated mediation through the perceived credibility hold. Interestingly, the direct effect of framing on marketing investment is statistically significant ($\beta = 0.28, SE = 0.12, t(220) = 2.48, p = .014$) and the indirect effects through the perceived credibility are significant only when prior attitude is high, even among experts ($\beta = 0.21, SE = 0.11, 95\% CI [0.01 ; 0.44]$). Table 7 in Appendix C outlines that the results from the moderated mediation through the perceived risk hold but become slightly weaker. The direct effect of framing on marketing investment remains statistically significant ($\beta = 0.34, SE = 0.14, t(219) = 2.48, p = .014$) while the index of moderated mediation is also statistically significant ($\beta = 0.07, SE = 0.04, 95\% CI [0.01 ; 0.16]$). However, the conditional indirect effects are not statistically significant at any level of the moderator. Thus, prior attitude is assumed to moderate the relationship of condition on perceived risk, but not to a sufficient extent to obtain significance at specific levels of prior attitude. Hence, the moderated mediation effects through perceived risk are attenuated but directionally consistent with prior results. In summary, this first analysis supports the robustness of our results even among this knowledge based restricted sample.

Secondly, an alternative model is tested to explore the robustness of the main framing effects controlling for prior attitude. This regression model reveals that framing condition remains a statistically significant predictor of marketing investment ($\beta = 0.28, SE = 0.13, t(262) = 2.1, p = .037$) while prior attitude is not a statistically significant predictor ($\beta =$

0.02, $SE = 0.04$, $t(262) = 0.37$, $p = .712$). Interestingly, framing condition has a general effect on everyone even when controlling for prior attitude. Therefore, this post-hoc analysis further supports the robustness of the direct effects of framing on marketing investment.

The third analysis aims to rule out an alternative explanation which could drive the main framing effect on marketing investment. This exploratory analysis focuses on understanding the evaluation process of individuals when reviewing the information given and ultimately, forming a decision. The dual-system theory describes two systems in individuals' minds, the intuitive, fast, effortless System I and the reflective, controlled, slow System II, which impact the decision-making process (Kahneman, 2011). To rule out the alternative explanation that observed framing effects are driven by differences in evaluative process of intuitive versus analytic rather than the framing manipulation itself, an alternative model was tested controlling for heterogeneity in evaluative process. The regression testing the effect of framing condition on marketing investment and including evaluation process as a control variable reveals that framing condition remains a statistically significant predictor of marketing investment ($\beta = 0.34$, $SE = 0.14$, $t(262) = 2.51$, $p = .013$). On the other hand, evaluation process is not a significant predictor ($\beta = -0.03$, $SE = 0.06$, $t(262) = -0.42$, $p = .674$). Consequently, these results rule out the alternative explanation that the framing effects are merely an artifact driven by heterogeneity in evaluation process. Thus, this last robustness analysis further supports the robustness of our results.

Chapter V: Discussion

The main objective of this research is to investigate the spreadsheet effect. This study examines how the integration of marketing into spreadsheets impacts financial executives' decision making on marketing investment and investigates the psychological mechanisms of perceptions underlying this effect. This section thus summarizes the main findings, the theoretical and practical implications, and lastly, suggests a future outlook.

5.1 General Discussion

The research findings uncover that framing marketing into spreadsheets exerts a significant effect on influencing financial executives' intention to support marketing investment, while the mechanisms through which this effect operates differ among individuals. Indeed, the results indicate a significant spreadsheet effect, as participants have a significantly higher intention to support marketing investment in the spreadsheet framing

than in the control condition. Importantly, the main framing effects remain significant even when controlling for prior attitude. Thus, the spreadsheet effect is significant across heterogeneous individuals. Interestingly, the mechanism through which the spreadsheet effect operates differs across individuals. For individuals with a positive prior attitude towards marketing, the spreadsheet effect reinforces their prior belief through two mechanisms, significantly enhancing the perceived credibility and perceived risk associated with the marketing investment, thus resulting in a higher intention to support marketing investment. However, for individuals with a negative or average prior attitude towards marketing, framing does not significantly affect their perceptions.

These results are thus consistent with the theory of cognitive dissonance (Festinger, 1957; Harmon-Jones & Mills, 2019) and the associated coping strategy, the confirmation bias (Nickerson, 1998). Indeed, the spreadsheet effect on perceived credibility is even stronger for individuals with positive prior attitude towards marketing, thus when framing is aligned to prior attitude inducing a confirmation bias. The spreadsheet effect on perceived risk is also stronger for individuals with positive prior attitude towards marketing. Interestingly, this effect is significantly positive, indicating that the spreadsheet framing may render the associated risks to marketing more salient. Indeed, the spreadsheet framing quantifies further the marketing initiative's impact, activating risk salience and accountability. Thus, for these individuals who had a positive prior attitude towards marketing, the spreadsheet framing may trigger a reconsideration of consequences and risks, thus increasing perceived risk. Notwithstanding, they remain willing to support marketing investment. In contrast, individuals who had a negative or neutral prior attitude towards marketing dismiss cognitive dissonant information which is accentuated in the framing condition. This greater cognitive dissonance does not result in a significant change in perceptions, thus no significant effects on perceived credibility and perceived risk are found. Notwithstanding, the main framing effects remain significant even for these individuals with a low or neutral prior attitude towards marketing. Taken together, these results suggest that the spreadsheet effect operates through reinforcing perceptions of existing beliefs when cognitive dissonance is low while other cognitive processes may drive the spreadsheet effect on marketing investment when cognitive dissonance is high. The robustness analyses further confirm the results of the main analyses, strengthening the validity of our findings.

Overall, the spreadsheet effect is effective even when controlling for prior attitude, inducing that the spreadsheet framing of marketing successfully increases intention to support marketing investment heterogeneously across financial executives. The spreadsheet effect increases perceived credibility and perceived risk when individuals already have a positive prior attitude towards marketing. However, the mechanism of the effect of spreadsheet framing on marketing investment remains unsure for individuals with low or neutral prior attitude towards marketing. For these individuals, their pre-existing beliefs hinder the reshape of perceptions but the main spreadsheet effect remains significant suggesting that alternative mechanisms, not researched in this study, may drive the decision making of supporting marketing investment.

5.2 Theoretical and Practical Implications

The present study provides theoretical contributions by first building upon the marketing-finance literature by responding to a call of previous researchers for a better communication of marketing's financial impact (Key et al., 2020; Srinivasan & Hanssens, 2009; Srivastava et al., 1998). This research proposes a framing theoretical approach to address this need by developing a novel communication approach of integrating marketing into spreadsheets, thus communicating marketing in a financial language that aligns more closely with financial executives' cognitive process than traditional marketing communications. Furthermore, the findings also support the notion that framing impacts decision making outcomes consistent with prior research showing that presentation frames impact decision makers even when the information content is held constant (Diamond & Lerch, 1992; Entman, 1993). Additionally, the findings also align with the theory of representational congruence theory extending the notion that a match between the external presentation frame and the internal user's cognitive process impacts the decision outcome by reducing cognitive load and ensuring a more effective information retrieval (Cardinaels, 2008; Chandra & Krovi, 1999). Finally, the theory of cognitive dissonance provides an explanation for the heterogeneity of mechanisms among individuals with various levels of prior attitude towards marketing. Accordingly, the results suggest that the confirmation bias operates as a copying strategy to the cognitive dissonance level, resulting in belief reinforcement for individuals with a positive prior attitude while no significant changes are noted for individuals with a low or neutral prior attitude.

In addition to the theoretical implications, the current research derives implications for practice. Indeed, the study design was developed in accordance to current corporate practices such as corporate valuation spreadsheet and marketing communications. Hence, important implications can be derived from the findings with the most important one as the effective spreadsheet effect. Respectively, marketers should integrate this novel communication model of marketing's financial impact by designing spreadsheets integrating marketing's growth rate and expected impact on enterprise values in corporate valuations, as outlined in this research. The design implemented in this research enables marketing to be communicated in a financial language that addresses better financial executives, thus resulting in higher intention to support marketing investment. Since practitioners have continuously struggled to communicate their marketing activities, this practical implication may participate crucially in convincing financial executives of the importance of marketing activities within a company.

5.3 Limitations and Future Research

Several limitations of this research should be acknowledged. First, the sample was chosen to align to the target population of financial executives by selecting students with a finance background. Nonetheless, since the sample includes only students, this may constitute a limitation on generalizing findings to the extended population. Future research should conduct the research on a sample including participants with more diversified backgrounds in terms of age, work experience and education establishments to further ensure the robustness of the findings. Then, another limitation is the use of self-reported scales to measure the variables. Future research should use other measurements such as immersive tasks requiring participants to allocate amounts on the marketing investment or testing the actual behaviour of participants in a more practical setting. The research also fails to find statistical significance for the mechanism underlying the spreadsheet effect for individuals with a low or neutral prior attitude towards marketing. This provides opportunities for future research to explore the mechanisms underlying the spreadsheet effect affecting the decision outcome for these individuals. Finally, the positive effect of spreadsheet framing on marketing investment through perceived risk significant for individuals with positive prior attitude towards marketing should also be further researched. Indeed, this finding indicates that the spreadsheet framing also renders risk more salient, thus fostering individuals with positive prior attitude to reconsider their risk perception.

Further research should focus on understanding this phenomenon, acknowledging also the reasons motivating these individuals to still support marketing investment even with this increase in perceived risk.

Chapter VI: Conclusion

In the growing marketing-finance academic literature, the challenge of communicating marketing's financial impact has been commonly addressed. Furthermore, this challenge relates to practitioners who struggle to communicate marketing's impact to their CFOs, ultimately limiting marketing activities as they are not recognized to their full value. This study has empirically tested a novel framing theoretical approach to address this communication challenge by integrating marketing into spreadsheets. We hypothesized that financial executives will have higher intention to support marketing investment in the framing condition incorporating marketing into spreadsheets than in the control condition, and that the mechanisms operating the effect would result in changes in perceived credibility and risk. Our empirical results can be summarized as follows. We find that the spreadsheet effect is effective on average, thus financial executives intent to support marketing investment more when marketing is integrated into spreadsheets. Secondly, the mechanisms driving the spreadsheet effect on marketing investment through perceived credibility and perceived risk are only significant for individuals with a positive prior attitude towards marketing, hence operating as a confirmation bias for raising perceived credibility while becoming more conscious of the risks associated. However, for individuals with a low or neutral prior attitude towards marketing, a change in perceptions is not found, but the main spreadsheet effect remains significant suggesting that other mechanisms than the ones tested in this study are driving the main spreadsheet effects for these individuals. Besides, the results were further confirmed by the robustness analyses by first repeating the tests on a restricted sample of participants who indicated the correct answer to the question purposefully designed to assess financial knowledge of participants, secondly by controlling for prior attitude in the direct effect model, and thirdly by ruling out the alternative explanation that the framing effects are merely an artifact driven by heterogeneity in evaluation process.

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Appendices

Appendix A Experiment Design of the Control Condition

Declaration of Consent:

Dear Participant, by taking part in this experiment, you consent that Manon Spronck, Master Student and Dr. Thomas Post, thesis supervisor and Associate Professor of Finance, use the information obtained through the survey for research purposes. The data will be stored in anonymized form on the server of University Maastricht to allow assessment and validation by educational accreditation bodies or research ethics committees.

Instructions:

The following experiment presents information about a discounted cash flows valuation for the company Soluna Rituals and a campaign proposal. Please read the information carefully.

Table: Spreadsheet of expected cash flows

Incremental Earnings Forecast (\$Million)	Year	0	1	2	3	4	Terminal Year
1. Growth Rate of Revenues			5%	5%	5%	5%	3%
2. Revenues	60	63.00	66.15	69.46	72.93		
3. COGS	(25.00)	(25.00)	(25.00)	(25.00)	(25.00)		
4. Gross Profit	35.00	38.00	41.15	44.46	47.93		
5. Operating Expenses	(6.67)	(9.00)	(9.00)	(9.00)	(9.00)		
6. Depreciation	-	(6.00)	(6.00)	(6.00)	(6.00)		
7. EBIT	28.33	23.00	26.15	29.46	32.93		
8. Income Tax at 25%	(7.08)	(6.05)	(7.17)	(8.37)	(9.67)		
9. NOPLAT	21.25	16.95	18.98	21.09	23.26		
Plus: Depreciation	-	6.00	6.00	6.00	6.00		
10. Free Cash Flow	21.25	22.95	24.98	27.09	29.26		
11. PV(Free Cash Flow)		21.40	21.72	21.96	22.12		
12. Terminal Value						403.59	
13. PV(Terminal Value)						305.04	
14. Enterprise Value						392.23	

The “Circle of Radiance” Proposal

We have invested \$65 million in our new branding campaign, “Circle of Radiance”, building a loyalty ecosystem inside our mobile app. At Soluna Rituals, we already offer high-quality skincare products. This campaign aims to provide personalized offerings and exclusive products to our premium members. This campaign represents an investment for our company to drive future growth.

Our investment in the “Circle of Radiance” campaign indicates a 10% increase in marketing conversion through premium memberships, a 7.5% increase in customer engagement through personalized recommendations and a 2% increase in customer referrals. Furthermore, our churn rate should decrease by more than 10% due to regular re-engagements and loyalty rewards. Ultimately, this campaign boosts our company’s growth rate of 5% by 1-3%. Based on these assumptions, we expect that our enterprise value will therefore increase by \$70.62 million.

Further Instructions:

After reading the discounted cash flow valuation and the proposal, please proceed to the following page and complete the survey. We are interested in your personal view, therefore there is no right or wrong response. You can easily return to this first page at any time if you would like.

Please return both sheets to your tutor after you are finished.

Appendix B

Experiment Design of the Treatment Condition

Declaration of Consent:

Dear Participant, by taking part in this experiment, you consent that Manon Spronck, Master Student and Dr. Thomas Post, thesis supervisor and Associate Professor of Finance, use the information obtained through the survey for research purposes. The data will be stored in anonymized form on the server of University Maastricht to allow assessment and validation by educational accreditation bodies or research ethics committees.

Instructions:

The following experiment presents information about a discounted cash flows valuation and a campaign proposal. Please read the information carefully.

Table: Spreadsheet of expected cash flows

Incremental Earnings Forecast (\$Million)	Year	0	1	2	3	4	Terminal Year
1. Growth Rate of Revenues		5%	5%	5%	5%	5%	3%
2. Additional Growth Rate of Marketing Campaign		2%	2%	2%	2%	2%	
3. Revenues	60	64.2	68.69	73.50	78.65		
4. COGS	(25.00)	(25.00)	(25.00)	(25.00)	(25.00)		
5. Gross Profit	35.00	39.2	43.69	48.50	53.65		
6. Operating Expenses	(6.67)	(9.00)	(9.00)	(9.00)	(9.00)		
7. Depreciation	-	(6.00)	(6.00)	(6.00)	(6.00)		
8. EBIT	28.33	24.2	28.69	33.5	38.65		
9. Income Tax at 25%	(7.08)	(6.05)	(7.17)	(8.37)	(9.67)		
10. NOPLAT	21.25	18.15	21.52	25.12	28.99		
Plus: Depreciation		6.00	6.00	6.00	6.00		
11. Free Cash Flow	21.25	24.15	27.52	31.12	34.99		
12. PV(Free Cash Flow)		22.52	23.93	25.23	26.44		
13. Terminal Value						482.56	
14. PV(Terminal Value)						364.72	
15. Enterprise Value without Marketing Campaign						392.23	
16. Enterprise Value with Marketing Campaign						462.84	
17. Increase in Enterprise Value						70.62	

The “Circle of Radiance” Proposal

We have invested \$65 million in our new branding campaign, “Circle of Radiance”, building a loyalty ecosystem inside our mobile app. At Soluna Rituals, we already offer high-quality skincare products. This campaign aims to provide personalized offerings and exclusive products to our premium members. This campaign represents an investment for our company to drive future growth.

Our investment in the “Circle of Radiance” campaign indicates a 10% increase in marketing conversion through premium memberships, a 7.5% increase in customer engagement through personalized recommendations and a 2% increase in customer referrals. Furthermore, our churn rate should decrease by more than 10% due to regular re-engagements and loyalty rewards. Ultimately, this campaign boosts our company’s growth rate of 5% by 1-3%. Based on these assumptions, we expect that our enterprise value will therefore increase by \$70.62 million.

Further Instructions:

After reading the discounted cash flow valuation and the proposal, please proceed to the following page and complete the survey. We are interested in your personal view, therefore there is no right or wrong response. You can easily return to this first page at any time if you would like.

Please return both sheets to your tutor after you are finished.

Appendix C
Tables of the Post-Hoc Analyses

Table 5*Descriptive Statistics with Restricted Sample*

Variable	Control		Treatment		<i>t</i> (df)	<i>p</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Marketing Investment	4.8	1.1	5.2	1.1	-2.77 (220)	.006	-0.37
Perceived Credibility	4.4	0.9	4.5	0.8	-1.19 (220)	.236	-0.16
Perceived Risk	4.0	1.1	4.1	1.0	-0.92 (219)	.360	-0.12
Prior Attitude	4.9	1.5	5.0	1.5	-0.48 (219)	.634	-0.06

Note. Mean parameter values for each of the analyses are shown for the control and treatment condition, as well as the results of *t* tests (assuming equal variance) comparing the parameter estimates between the two conditions. Degrees of freedom correspond to the appropriate test based on the Levene's test for equality of variances. Cohen's *d* measures the standardized difference between the two condition means. Significance levels are two tailed.

Table 6*Moderated Mediation Analysis with Restricted Sample through Perceived Credibility*

Direct Effect of X on Y				
	β	SE	<i>P</i>	
Framing Condition ^a	0.29	0.12	.014	
Conditional Indirect Effects				
		95% CI		
		LL	UL	
Low Level (-1SD)	-0.16	0.14	-0.45	0.12
Medium Level (mean)	0.09	0.09	-0.08	0.27
High Level (+1SD)	0.21	0.11	0.01	0.44
Index of Moderated Mediation				
Prior Attitude	0.12	0.06	0.01	0.25

Note. *N* = 219. β = Coefficient Estimate; SE = Standard Error; CI = Confidence Intervals. Estimates are unstandardized coefficients. Direct Effect of X on Y is reported using OLS regression; Conditional Indirect Effects and Index of Moderated Mediation are reported using bootstrapped confidence intervals with 5,000 resamples.

^a0 = control, 1 = treatment.

Table 7*Moderated Mediation Analysis with Restricted Sample through Perceived Risk*

Direct Effect of X on Y			
	β	SE	P
Framing Condition ^a	0.34	0.14	.014
Conditional Indirect Effects			
		95% CI	
		LL	UL
Low Level (-1SD)	- 0.11	0.08	- 0.28
Medium Level (mean)	0.04	0.05	- 0.06
High Level (+1SD)	0.12	0.07	- 0.01
Index of Moderated Mediation			
Prior Attitude	0.07	0.04	0.01
			0.16

Note. N = 219. β = Coefficient Estimate; SE = Standard Error; CI = Confidence Intervals. Estimates are unstandardized coefficients. Direct Effect of X on Y is reported using OLS regression; Conditional Indirect Effects and Index of Moderated Mediation are reported using bootstrapped confidence intervals with 5,000 resamples.

^a0 = control, 1 = treatment.

Appendix D
Official Statement of original thesis

Official statement of original thesis

By signing this statement, I hereby acknowledge the submitted thesis (hereafter mentioned as "product"), titled:

"The Spreadsheet Effect"

to be produced independently by me, without external help.

Wherever I paraphrase or cite literally, a reference to the original source (journal, book, report, internet, etc.) is given.

By signing this statement, I explicitly declare that I am aware of the fraud sanctions as stated in the Education and Examination Regulations (EERs) of the SBE.

Place: Maastricht

Date: 8th of January 2026

First and last name: Manon Spronck

Study programme: MSc International Business specialization Strategic Corporate Finance and specialization Strategic Marketing

Course/skill: EBS4012 Writing a Master's Thesis Proposal IB-Finance

ID number: i6282618

Signature:



Appendix E
SDG Statement

Sustainable Development Goals (SDG) Statement

Name	Manon Spronck
ID	i6282618
Supervisor	Dr. Thomas Post
Date	8 th of January 2026

Through the research conducted for this master's thesis, I seek to contribute to one or more of the 17 SDG(s) set forth by the United Nations (<https://www.undp.org/sustainable-development-goals>). Specifically:



SDG Code(s): 08, 17

Explanation (max. 300 words): The research addressed in this thesis aims to reduce the marketing-finance gap by proposing a new approach of communicating marketing financial impact. Achieving a better alignment between marketers and financial executives will ultimately impact economic growth of firms as the marketing's role on firm performance has been proven but remains under-recognized. Thus, improving the communication of marketing financial impact aims to target more effectively financial executives, enhancing

the recognition of marketing initiatives. Furthermore, the research proposes a novel approach bridging the gap between marketers and financial executives, ultimately motivating a better partnership between the two. Thus, this thesis contributes to goal 8 “Decent work and economic growth” while also contributing to goal 17 “Partnership for the Goals”.

Appendix F
GenAI Statement

Statement on the use of Generative AI (GenAI) in the master thesis

I hereby certify that I adhered to the SBE guidelines on the use of GenAI tools such as ChatGPT in the master thesis. In the box below, I document how and for what purposes I used GenAI.

During the preparation of this work, I used GenAI for the following purposes:

- Search engine: ChatGPT; support for summarizing academic articles and help in searching for academic articles, Anara; help in searching academic articles
- Ideation helper: ChatGPT; help to design case scenario
- Text summarizer: /
- Explanation provider: ChatGPT; support for verifying my analysis
- Language assistant: /
- Table editor: /
- Translator: /
- Other: /

After using any tool, I reviewed, quality-checked, and edited the content as needed and take full responsibility for the content of the thesis.

By signing this statement, I explicitly declare that I am aware of the fraud sanctions as stated in the Education and Examination Regulations (EERs) of the SBE.

Place: Maastricht

Date: 8th of January 2026

First and last name: Manon Spronck

Study programme: MSc International Business specialization Strategic Corporate Finance and specialization Strategic Marketing

Course/skill: EBS4012 Writing a Master's Thesis Proposal IB-Finance

ID number: i6282618

Signature:

