

# Don't They Know or Don't They Care? The Role of Knowledge in Private Disability Insurance Purchase Behavior in Germany

Sascha Kwasniok<sup>1</sup>

**Abstract:** The loss of the ability to work poses substantial financial risks that are often not adequately covered by state benefits. Although private disability insurance (DI) may complement public insurance systems, demand remains comparatively moderate in many countries. Using Germany as an empirical setting, this study examines behavioral factors associated with private DI purchase intentions and purchase behavior. An exploratory sequential mixed methods design is employed. First, semi-structured interviews with financial advisors are conducted to assess the practical relevance of the Theory of Planned Behavior (TPB) and to identify additional salient factors for DI demand emerging from advisory practice. Building on these insights, the study develops a two-layered research model in which TPB serves as a behavioral foundation and qualitative findings inform model extensions. Second, the resulting model is tested using survey data from 323 consumers through partial least squares structural equation modeling (PLS-SEM) and importance-performance map analysis (IPMA). The results confirm the suitability of TPB for explaining private DI demand. Beyond this behavioral baseline, perceived product benefits and risks shape attitudes toward private DI. Furthermore, DI knowledge emerges as an important product-specific dimension of insurance literacy that influences perceived product benefits, perceived product risks, and perceived behavioral control. The study contributes to the literature on insurance demand behavior by integrating DI-specific evaluative and knowledge-related mechanisms into a TPB framework. Furthermore, the findings provide practical implications for improving insurance literacy and supporting informed and needs-appropriate decisions regarding protection against disability-related income loss.

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## I. INTRODUCTION

For most people, their capacity to work is the basis for financing their livelihood. A permanent threat to this source of income due to occupational disability, such as disease or injury, can pose an existential threat (Autor et al., 2014). In recognition of this, most OECD countries offer public disability insurance (DI) schemes as part of their social safety nets (OECD, 2022). However, these schemes usually replace only a portion of previous earnings and are not designed to maintain the same standard of living as before disability (Fischer et al., 2024; Low & Pistaferri, 2020). As a result, private DI can help address disability-related protection gaps (Soika, 2018; Carroll et al., 2024; Koning & Van Lent, 2024).

Germany offers a particularly interesting setting for studying the demand for private DI. In response to rising expenditures in 2001, Germany implemented fundamental pension reforms that cut its public DI generosity, paving the way for a mixed public-private insurance system (Fischer et al., 2024). Despite these institutional incentives for private provision, market coverage of private DI in Germany has plateaued at a modest 25% (Seibold et al., 2025).

Recent studies such as Fischer et al. (2024) and Seibold et al. (2025) suggest that the limited response of private DI demand to the 2001 reform can be explained by interactions among the social safety net, asymmetric information, and administrative costs. These studies also document strong income- and health-related gradients in take-up. While these studies clarify the macro- and market-level determinants of private DI demand, they do not consider the influence of psychological factors on individual purchase decisions. From a financial services perspective, it is crucial to understand these behavioral mechanisms in order to design effective advice, communication, and policy interventions (Driver et al., 2018; De Jonge et al., 2024).

This raises the research question of this study: Which behavioral factors are associated with private DI purchase intentions and purchase behavior in Germany? Therefore, the study focuses on explaining behavioral drivers of private DI decision-making rather than assessing coverage adequacy or the universal appropriateness of private DI.

To answer the research question, this study examines private DI purchase intentions and purchase behavior in Germany through the lens of the Theory of Planned

Behavior (TPB) (Ajzen, 1991). An exploratory sequential mixed methods design is employed. First, semi-structured interviews with financial advisors are conducted to assess the practical relevance of TPB constructs in private DI advisory contexts and to identify additional salient factors for DI demand emerging from advisory practice. Building on these insights, the study develops a two-layered research model. The core TPB relationships serve as a behavioral foundation for explaining private DI purchase intentions and behavior, while the qualitative findings inform model extensions concerning DI-specific evaluations and insurance-related knowledge. Second, this model is tested using survey data from 323 consumers, applying partial least squares structural equation modeling (PLS-SEM) and importance-performance map analysis (IPMA).

The study offers three contributions to the financial services and personal insurance literature. First, it empirically validates TPB as a suitable behavioral foundation for explaining private DI demand in Germany and thereby complements existing macro- and market-level explanations of this insurance demand puzzle. Second, building on qualitative evidence from advisory practice, the study extends this behavioral foundation by incorporating DI-specific evaluations in the form of perceived product benefits and risks. Third, the study contributes to the emerging insurance literacy literature by conceptualizing DI knowledge as a product-specific antecedent construct and examining its relationships with several purchase-related mechanisms.

The paper is structured as follows: Section II outlines the German DI system, prior research, and the TPB framework. Section III details the mixed methods design. Section IV incorporates the results of the qualitative study into a two-layered research model and develops the hypotheses. Section V presents the survey and modeling of the quantitative study. Section VI reports its results. Section VII discusses implications, limitations, and future research.

## II. BACKGROUND AND LITERATURE REVIEW

### A. *DI in Germany*

Germany provides disability protection through a combination of public and private arrangements. Public DI is part of the statutory pension system and historically consisted of two branches. The first branch is a general DI scheme, which pays benefits if individuals are unable to work more than three hours

per day in any job (Erwerbsunfähigkeit) (Deutsche Rentenversicherung, 2025a). A second branch, own-occupation DI, provides supplementary coverage in the event of an inability to work in one's trained or comparable occupation (Berufsunfähigkeit) (Deutsche Rentenversicherung, 2025b). Motivated by rising expenditures, a fundamental reform in 2001 abolished public own-occupation DI for cohorts born after 1960, while maintaining general disability coverage. As a result, younger cohorts now face stricter eligibility criteria and receive lower replacement rates in the event of disability than cohorts born before 1961, who were grandfathered into the old system.

The benefit level of general DI illustrates the potential magnitude of the protection gap faced by individuals affected by the 2001 reform. In 2023, the average amount of general disability pensions paid out was 978 EUR per month (Deutsche Rentenversicherung, 2024), only slightly above the statutory minimum subsistence level in Germany. Statistically, the probability of becoming occupationally disabled at least once during one's working life is about 25% (Deutsche Aktuarvereinigung, 2021; Seibold et al., 2025). In this context, private DI may constitute an important instrument for maintaining the standard of living after a disability shock.

The German private DI market is predominantly an individual market, not a group market as in some other countries such as the United States (Koning & Van Lent, 2024). The ten largest insurance companies hold around 60% of the total market share and offer similar products (Willis Towers Watson, 2022). Private DI contracts are underwritten individually and priced based on age, occupation, health status, and lifestyle factors (e.g., extreme sports). Based on representative private insurer microdata, the average monthly DI premium is 86 EUR, and insured monthly benefits are 1,494 EUR. The average purchase age is 32 with a left-skewed distribution (64% of new policyholders being below the age of 31). On average, people become occupationally disabled at age 46, and contracts run until age 64 (Fischer et al., 2024; Seibold et al., 2025). In contrast to some other jurisdictions, in Germany, public and private DI are completely independent, meaning there is no reduction in benefits for simultaneous claims (Seitz, 2025).

Financial advice plays an important role in this market. Given the complexity of product design, medical

underwriting, and the interaction with public benefits and other financial products, many consumers rely on professional advice to assess their protection needs and choose suitable coverage (Nam et al., 2025). Thus, in Germany, private DI is typically sold through personal financial advisors, including brokers (56% based on annual premium equivalent), tied agents of insurance companies (37%), and bank advisors (5%) (Willis Towers Watson, 2022).

### B. *Prior Research on DI Purchase Behavior*

Despite the existence of private DI products and the strong institutional incentive created by the 2001 reform, in Germany private DI coverage remains modest at around 25%. Existing studies explaining private DI purchase behavior are based on welfare-improving arguments. The focus is on the interaction between public and private systems. With a difference-in-differences estimation based on a German insurer's dataset, Seibold et al. (2025) show that private DI tends to be concentrated among individuals with a high income, a high level of education, and a low disability risk. Fischer et al. (2024) likewise confirm the relevance of high income using representative survey data and a general equilibrium modeling approach. In addition, they identify health status as a factor in purchasing private DI.

While these studies illuminate macro- and market-level determinants of coverage, they do not explicitly consider the behavioral intentions of individuals. However, the consideration of behavioral intentions is particularly important for understanding the demand for insurance, as insurance decisions are rarely driven exclusively by rational judgment, but are also grounded in psychological patterns (Pitthan & De Witte, 2021).

A systematic study of DI demand from a behavioral perspective at the individual level is still lacking. Existing studies look at individual aspects of the DI purchase process, such as subjective risk perception (Scholl & Jeske, 2024) or loss aversion (Hwang, 2021). To address this gap, TPB is used as a framework.

### C. *TPB and Insurance Literacy*

TPB, first introduced by Ajzen (1985), is a widely accepted social-psychological theory that has been used extensively to understand and predict individual behavior in various domains (Bosnjak et al., 2020). It posits that an individual's behavior is driven by behavioral intention, which in turn is determined by

three components: attitude toward the behavior, subjective norm, and perceived behavioral control. Attitude reflects the overall evaluation of performing a behavior as positive or negative. Subjective norm captures perceived social pressure from important others (e.g., family). Perceived behavioral control reflects the perceived ease or difficulty of performing the behavior, given internal and external constraints (Ajzen, 1991).

TPB has been applied to several insurance decisions. Prior studies have used TPB to explain health insurance purchase intentions in Indonesia (Brahmana et al., 2018) and Malaysia (Mamun et al., 2021), and life insurance demand in several Asian markets (Mai et al., 2020; Masud et al., 2021), as well as the adoption of usage-based car insurance (Alfiero et al., 2022) and cyber insurance (Branley-Bell et al., 2021). These applications consistently find that attitude, subjective norm, and perceived behavioral control are significant predictors of insurance purchase intentions. Thus, TPB provides a useful framework for integrating psychological determinants into insurance decision-making. However, to the best of the author's knowledge, TPB has not yet been used to explain demand for private DI in a mature European market such as Germany.

In addition to TPB, a growing body of work on insurance literacy emphasizes the role of knowledge and understanding in insurance decision-making (for an overview, see Weedige & Ouyang, 2019). Insurance literacy refers to consumers' ability to understand insurance products, assess coverage needs, and make informed choices (Lin et al., 2019). Empirical studies show that insurance literacy contributes to a better understanding of insurance products (Driver et al., 2018) and more accurate insurance premium expectations (Lin et al., 2019). In contrast, individuals with low insurance literacy are more susceptible to behavioral biases in financial decision-making, such as overconfidence (Pitthan & De Witte, 2021). They also tend to distrust insurers, insurance products, and financial advisors (Driver et al., 2018). These factors can lead to misestimation of risks, underinsurance, and suboptimal product choices (Bongini et al., 2023).

### III. METHODOLOGY

This study uses a qualitative-quantitative approach to examine private DI demand from a behavioral perspective, combining theory-driven and exploratory

elements. In an initial qualitative phase, semi-structured interviews with financial advisors who regularly advise on private DI were conducted. These interviews aim to assess the practical relevance of TPB constructs in the DI context and to identify additional, practice-based factors in DI purchase behavior that may not be captured by theory alone ("confirm and discover") (Bryman, 2006).

Thus, the resulting research model combines two analytical components. First, the core TPB relationships serve as a behavioral foundation for explaining private DI purchase intentions and behavior in Germany. Second, the qualitative phase informs model extensions regarding DI-specific mechanisms not captured in the original TPB. Building on this structure, the qualitative findings are integrated into an extended TPB model (Section IV), which is then tested using consumer survey data through PLS-SEM and IPMA (Sections V and VI).

Overall, the study follows an exploratory sequential mixed methods design, in which the qualitative phase informs model specification and hypothesis development, and the survey provides the basis for statistical hypothesis testing (Creswell & Plano Clark, 2018).

## IV. EXPERT INTERVIEWS AND RESEARCH MODEL REFINEMENT

### A. Qualitative Data Collection and Expert Sample

The qualitative part involves semi-structured expert interviews to integrate interviewees' experiences and perspectives, thereby deepening the understanding of social realities (Bogner & Menz, 2009). In general, experts are individuals who have specific knowledge about an issue, development, or event (Von Soest, 2023). The experts in this study are financial advisors who regularly counsel consumers in Germany on private DI. Given their professional experience in insurance advisory, it is reasonable to assume that this group has specific knowledge about the factors influencing consumers' decisions to purchase DI that is not accessible through survey data alone.

A purposive sampling strategy was used to capture diverse perspectives within this advisor population (Patton, 2015). Variation was sought in relevant distribution channels for private DI in Germany (independent brokers, tied insurance agents, bank advisors; Section 2) and years of advisory experience.

On this basis, five advisors were recruited via professional networks and direct invitations: two independent brokers, two tied insurance agents, and one bank advisor, with 3 to 22 years of advisory experience (Table I). It is acknowledged that all interviewees are

male. However, for the exploratory goal of identifying salient categories and relationships, variation in advisory roles and practice settings is considered more important than the gender ratio.

TABLE I  
INTERVIEW OVERVIEW

No.	Code	Type of financial advisor	Age	Advisory experience (years)	Gender	Date	Duration
1	Alpha	Broker	40	15	male	10.14.2024	31 min
2	Beta	Bank agent	43	22	male	10.18.2024	33 min
3	Gamma	Tied insurance agent	39	11	male	10.23.2024	35 min
4	Delta	Broker	25	3	male	10.24.2024	25 min
5	Zeta	Tied insurance agent	36	12	male	11.05.2024	39 min

Semi-structured questions were used to guide interviewees through the conversation, as they are designed to encourage openness, flexibility, and close engagement with each interviewee and may bring unexpected viewpoints or factors to the fore (Brinkmann & Kvale, 2015). The interview guide started with a brief introduction of the advisor and their practice context, then explored their experience with financial planning and private DI advice, clients' typical attitudes and perceived barriers, and finally probed the relevance of TPB constructs (attitude, subjective norm, perceived behavioral control) and additional aspects emerging from practice. Open questions and follow-up prompts were used to allow advisors to elaborate on their observations and to surface unexpected factors. The questions used to guide the interviews are provided in Appendix 1.

All interviews were conducted in German via video conference between October and November 2024. Each interview lasted between 25 and 39 minutes. To preserve the authenticity of the material and ensure it could be consulted as often as necessary, all interviews were recorded and transcribed. In accordance with European data protection laws, interviewees were informed of their rights regarding the collection and processing of interview data and were asked to consent to the recording of the interview.

### B. Qualitative Data Analysis

Data collection and analysis followed an iterative process. After each interview, transcripts were coded and the code categories refined using MAXQDA (VERBI Software, 2024). In line with the aim of the qualitative part of this study, the code categories were developed in two stages by combining a deductive and an inductive approach (Azungah, 2018). In a first deductive step, codes were defined to operationalize the TPB constructs. In a second inductive step, additional categories were developed for factors repeatedly mentioned by advisors, such as perceived product benefits and risks of private DI, as well as DI-specific knowledge (Table II). By the fourth interview, no new code categories relevant to DI purchase behavior emerged. All subsequently coded passages could be assigned to the existing TPB-based and inductively developed categories. The fifth interview reinforced these categories but did not introduce new themes. In line with the literature on qualitative methods, this is interpreted as an indication of thematic saturation with respect to the types of factors that the interviewed advisors perceive as important for DI purchase behavior (Saunders et al., 2018; Rahimi & Khatooni, 2024).

TABLE II  
RESULTS OF QUALITATIVE DATA ANALYSIS

<b>Coding approach, variables and aggregated statement</b>	<b>Alpha</b>	<b>Beta</b>	<b>Gamma</b>	<b>Delta</b>	<b>Zeta</b>
<b>Deductive coding approach to confirm TPB</b>					
<i>Attitude toward DI</i>	<i>strongly reflected</i>	<i>strongly reflected</i>	<i>strongly reflected</i>	<i>strongly reflected</i>	<i>strongly reflected</i>
Opinion on DI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Importance of DI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Subjective norm</i>	<i>reflected</i>	<i>reflected</i>	<i>strongly reflected</i>	<i>strongly reflected</i>	<i>reflected</i>
Opinion on family	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Opinion of close friends			<input type="checkbox"/>	<input type="checkbox"/>	
Opinion of colleagues			<input type="checkbox"/>		
<i>Perceived behavioral control</i>	<i>strongly reflected</i>	<i>strongly reflected</i>	<i>reflected</i>	<i>reflected</i>	<i>not reflected</i>
Access to product information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Information on supportive advisory services	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
Information about purchasing option		<input type="checkbox"/>			
<b>Inductive coding approach to extend TPB</b>					
<i>Perceived product benefits</i>	<i>strongly reflected</i>	<i>strongly reflected</i>	<i>strongly reflected</i>	<i>strongly reflected</i>	<i>strongly reflected</i>
Protection of living standard	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Protection of family	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Perceived product risks</i>	<i>reflected</i>	<i>strongly reflected</i>	<i>reflected</i>	<i>strongly reflected</i>	<i>reflected</i>
Financial risk of the insurance premium		<input type="checkbox"/>		<input type="checkbox"/>	
Risk of uncertain payment in the event of a disability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Disability insurance knowledge</i>	<i>strongly reflected</i>	<i>reflected</i>	<i>reflected</i>	<i>strongly reflected</i>	<i>reflected</i>
Knowledge about public DI	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>
Knowledge about private DI products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Note. statement relating to the variable was found. Reflected: One statement relating to a variable was found. Strongly reflected: Two or more statements relating to a variable were found. Not reflected: No statement relating to a variable was found.

It should be noted that the qualitative results primarily reflect the perceptions of consumers seeking insurance advice or being approached in advisory settings regarding private DI and related products. Therefore, these individuals may have a relatively high awareness of disability risk compared to a representative sample of the general German population.

Nevertheless, two consistent patterns emerged from the interviews. First, the TPB constructs (attitude toward

DI, subjective norm, and perceived behavioral control) were reflected repeatedly in advisory practice, which supports their relevance as a behavioral foundation for explaining private DI purchase behavior. Second, the interviews revealed three additional factors specific to DI that were not included in the original TPB: perceived product benefits, perceived product risks, and DI knowledge. Thus, the qualitative findings suggest a two-layered research model. TPB provides the

foundational behavioral framework, and the inductively identified factors inform extensions that aim to capture DI-specific decision-making mechanisms. The following section develops this model by formulating hypotheses, which are then tested through quantitative analysis using consumer survey data.

### C. Hypothesis Development

#### 1. TPB as Behavioral Foundation

In this study, TPB provides the theoretical foundation for explaining private DI purchase behavior. In TPB, attitude is a central determinant of behavioral intention (Ajzen, 1991). Prior TPB applications in health and life insurance consistently show that positive attitudes toward insurance are associated with stronger intentions to purchase coverage (Brahmana et al., 2018; Masud et al., 2021). This relevance is also reflected in the expert interviews, where all five advisors emphasize that favorable attitudes facilitate recognition of protection needs and motivate private provision. Therefore, the following hypothesis is proposed:

*H1: Attitude toward taking out private DI is positively linked to purchase intention.*

Subjective norm captures perceived social pressure from relevant others (e.g., parents, friends, and colleagues) and constitutes a further predictor of intention within TPB. The qualitative interviews particularly highlight the influence of family and close social environments on DI decisions. This observation aligns with research demonstrating the importance of socialization and parental influence in shaping financial behavior (Sinnewe & Nicholson, 2023). Therefore, this study assumes the following relationship:

*H2: Subjective norm regarding taking out private DI is positively linked to purchase intention.*

In TPB, perceived behavioral control reflects individuals' perceived ease or difficulty of performing a behavior (Ajzen, 1991). The interviewed financial advisors emphasize that access to information (Alpha, Beta, Gamma), supportive advisory services (Alpha, Beta, Delta), and understanding of purchasing options (Beta) shape consumers' perceived capability to navigate the DI purchasing process. Prior insurance-related TPB studies similarly report positive effects of perceived behavioral control on purchase intentions (Brahmana et al., 2018; Mamun et al., 2021). This leads to the following hypothesis:

*H3: Perceived behavioral control regarding taking out private DI is positively linked to purchase intention.*

TPB assumes a positive relationship between behavioral intention and actual behavior (Ajzen, 1991). While such intention-behavior relationships are observed in insurance decisions (Mamun et al., 2021; Alfiero et al., 2022), other studies also show intention-behavior gaps (Sheeran, 2002). Thus, a change in intentions will not necessarily be followed by a change in behavior. Whether intentions translate into private DI purchase behavior therefore remains an empirical question. Accordingly, the following hypothesis is tested:

*H4: DI purchase intention is positively linked to purchase behavior.*

#### 2. Extending by Evaluative and Knowledge-Related Mechanisms

Beyond the TPB constructs, the qualitative findings suggest that consumers' evaluations of private DI and their understanding of the product are additional mechanisms that influence purchasing decisions. The interviewed advisors repeatedly emphasize perceived product benefits, perceived product risks, and DI-specific knowledge as salient aspects of decision-making (Table II). These factors are therefore incorporated as theory-guided extensions to TPB and represent the central explanatory extension of this study.

The interviews indicate that consumers evaluate private DI through a trade-off between perceived product benefits and perceived product risks. Perceived product benefits reflect the advantages that consumers expect from private DI. The interviews revealed that consumers primarily expect private insurance to provide financial security and protect their own and their dependents' standard of living in the event of disability. Beta, Delta, and Gamma emphasize that perceived product benefits have a positive effect on consumers' attitude toward private DI. This is consistent with previous research on insurance demand behavior (Omar & Owusu-Frimpong, 2007; Brahmana et al., 2018). Therefore, the following hypothesis is proposed:

*H5: Perceived product benefits of private DI are positively linked to attitude toward taking out private DI.*

Perceived product risks of private DI refer to risks associated with purchasing such insurance itself rather than general risk tolerance or perceived individual disability risk. Such product-related risks are evident in the interviews, particularly in consumers' concerns that the insurer will not pay fairly or quickly in the event of disability (Alpha, Beta, Gamma, Delta, Zeta). Additionally, the adequacy of the insurance premium in relation to the level of risk coverage is mentioned as another product-related risk when purchasing private DI (Beta, Delta). Such product-related risks are also found in prior studies on personal insurance demand (Driver et al., 2018; Weedige et al., 2019). Weedige et al. (2019) show that perceived product risks associated with insurance coverage negatively impact purchase decisions. Hence, the following relationship is tested:

*H6: Perceived product risks of private DI are negatively linked to attitude toward taking out private DI.*

The qualitative findings further suggest that DI-specific knowledge plays an important role in private DI decision-making. In line with the insurance literacy literature, DI knowledge is conceptualized as a product-specific dimension of insurance literacy (Lin et al., 2019; Weedige & Ouyang, 2019). Beyond factual understanding of insurance products, such knowledge may function as an antecedent construct that shapes how consumers evaluate private DI and how they approach the purchasing process. Based on the qualitative findings, DI knowledge captures understanding of public and private DI coverage and its differences (Alpha, Beta, Gamma, Delta), eligibility criteria, exclusions, and the design of private DI for income protection (Alpha, Delta, Zeta).

Studies show that higher insurance literacy is associated with more accurate product evaluations and a greater likelihood of having appropriate coverage (Driver et al., 2018; Bongini et al., 2023). Therefore, consumers with greater DI knowledge are expected to perceive it as more useful for securing income and maintaining their standard of living. This leads to the following hypothesis:

*H7: Disability insurance knowledge is positively linked to perceived product benefits of private DI.*

Empirical findings on the relationship between insurance literacy and perceived product risk are

ambiguous. Some studies show that better product-specific knowledge reduces the perceived risks of an insurance product. A better understanding of how insurance works, what risks are covered, and the claims settlement process reduces the perception that insurance is opaque and that insurers will not pay out in the event of a claim (Weedige et al., 2019). However, other studies do not confirm this relationship (Dewi, 2023). The interview results suggest that consumers who understand private DI perceive product-related risks as less pronounced. Therefore, this study tests the following hypothesis:

*H8: Disability insurance knowledge is negatively linked to perceived product risks of private DI.*

Through perceived product benefits and risks, DI knowledge may indirectly shape attitudes toward private DI. In addition, prior literature suggests that insurance literacy may also directly influence insurance attitudes (Weedige et al., 2019). The following hypothesis is used to test this relationship:

*H9: Disability insurance knowledge is positively linked to attitude toward taking out private DI.*

Insurance literacy encompasses not only factual knowledge but also confidence in dealing with financial products (Amalia & Arifin, 2024). In the DI context, higher knowledge about public and private DI systems and advisory services should strengthen consumers' perceived capability to navigate the purchasing process. Therefore, the following hypothesis is tested:

*H10: Disability insurance knowledge is positively linked to perceived behavioral control regarding taking out private DI.*

Finally, prior research suggests that insurance literacy may moderate the influence of the social environment on insurance decisions (Tanpoco et al., 2022). However, the evidence remains limited, and there are no established findings for private DI. Qualitative interview data from Alpha and Beta suggest that knowledge may reinforce social recommendations, providing tentative support for such a mechanism. Accordingly, the following relationship is examined:

*H11: Disability insurance knowledge positively moderates the effect of subjective norm on the purchase intention of private DI.*

### 3. Control Variables

In addition to the hypothesized relationships, several control variables are incorporated to reduce the risk of confounded effects and to isolate the explanatory contribution of the proposed behavioral model (Atinc et al., 2012). The perceived individual disability risk can influence individuals' decisions to take out insurance. Meanwhile, age, gender, and income capture life cycle position, budget constraints, and financial capability, which may affect DI demand.

Figure 1 summarizes the proposed research model. The white nodes represent the foundational TPB relationships (H1-H4), while gray nodes indicate theory-guided extensions derived from the qualitative phase (H5-H11). Solid arrows represent hypothesized direct effects; the dashed arrow represents a moderation effect. The dashed-border block summarizes control variables. Parentheses indicate the direction of the relationship: (+) positive, (-) negative.

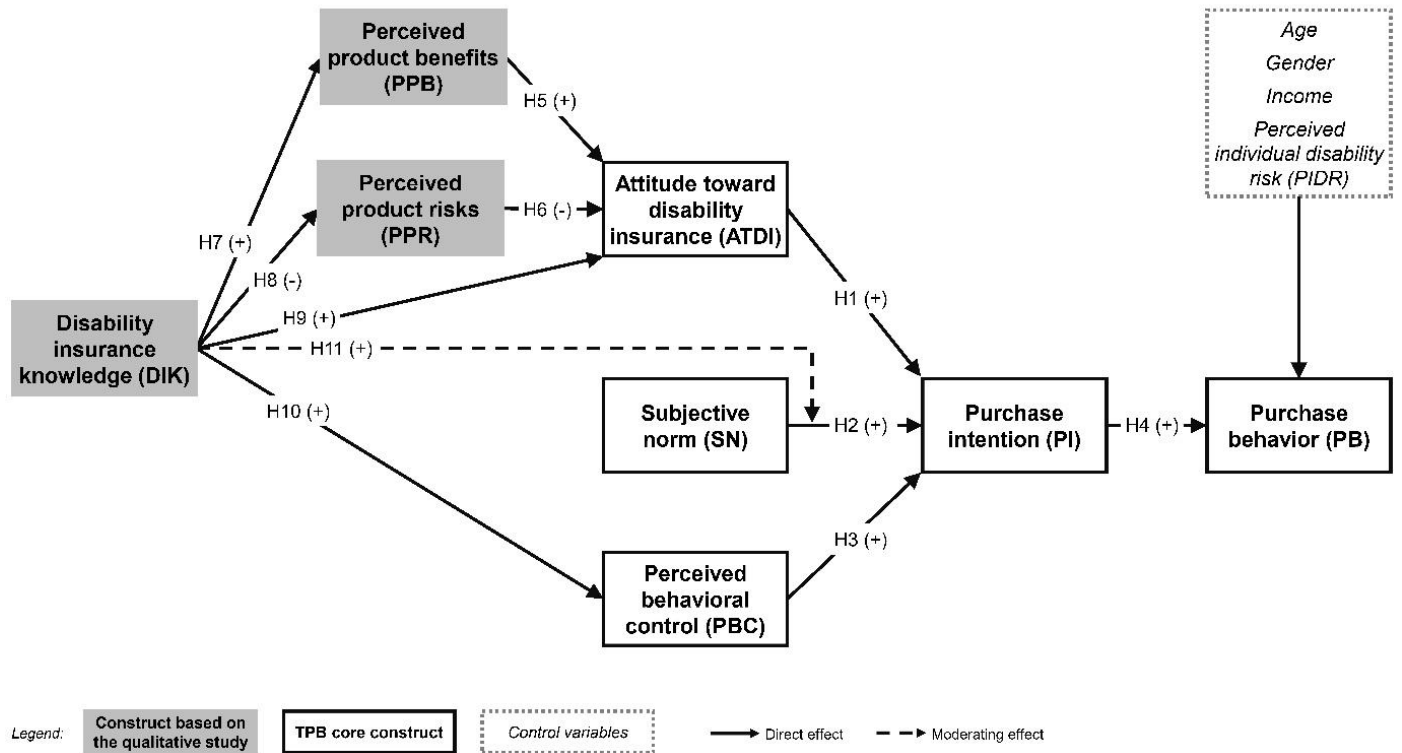


Fig. 1 Research Model

## V. HYPOTHESIS TESTING APPROACH

### A. Data Collection and Sample Size

The study uses an extended TPB model based on survey data from adults aged 18 to 65 to explain private DI purchase behavior in Germany. The lower age limit reflects the age at which individuals have the legal capacity to enter into insurance contracts. The upper age limit ensures that only cohorts affected by the 2001 reform are included.

Data were collected via an online questionnaire between January and March 2025. A non-probability

sampling approach was used, which is common in behavioral intention research because a comprehensive list for the random selection of participants is often unavailable (Tan et al., 2025). The survey link was distributed via email, social media, and personal networks. Before completing the questionnaire, participants were informed of the scope and purpose of the survey, the anonymous use of the data, the voluntary nature of participation, the option to withdraw at any time, and the survey's compliance with European data protection law, in a written preamble. The researchers' contact details were provided for any queries about the

study. Finally, participants were asked to give informed consent before proceeding to the questions.

In total, 421 individuals started the survey, and 340 of them completed it. Of the completed responses, two did not meet the defined age criteria. A further set of 15 observations was removed due to substantial item non-response or failed attention checks (e.g., straight-line response patterns on key scales), following visual inspection and descriptive diagnostics (Greszki et al., 2014). After data cleaning, 323 complete and consistent datasets remained and were used for analysis. This procedure aims to reduce potential response bias due to inattentive or careless responding, at the cost of a smaller but higher-quality sample.

The adequacy of the sample size for this study was determined using the power analysis technique (Cohen, 1988) and the inverse square root method (Kock & Hadaya, 2018). Determining the minimum sample size is important to ensure that the results of the statistical methods are robust and that the model can be generalized. The power analysis was implemented with G\*Power (Faul et al., 2009). Considering an effect size of 0.15 and a power of 0.8 (Cohen, 1992), the minimum sample size is 103 with seven predictors. Applying the inverse square root method results in a sample of 177 (Kock & Hadaya, 2018). Thus, the final sample of 323 responses exceeds the requirements for the minimum sample size.

### *B. Measurement Instrument and Common Method Bias*

The questionnaire was developed in several steps. First, the items for the TPB constructs were adapted from established TPB scales used in studies of insurance and financial decision-making, with wording adjusted to the context of private DI. For attitude toward taking out private DI, this study uses three items from Masud et al. (2021). Subjective norm is measured with two items from Fishbein & Ajzen (2010). Perceived behavioral control is measured using three items from Masud et al. (2021). Two items from Brahmana et al. (2018) and one item from Masud et al. (2021) are used to measure intention to purchase private DI. All of these items are reflective in nature. Actual purchase behavior as the outcome variable is measured by a binary single item on the existence of a private DI (“yes”, “no”).

Second, the items measuring perceived product benefits and perceived product risks are taken from studies on

personal insurance demand behavior (Weedige et al., 2019). These items also reflect the results of the qualitative interviews, capturing the context of private DI. As these items describe distinctive types of product-specific benefits and risks, they are measured formatively. All reflective and formative items were measured on a five-point Likert scale ranging from 1 (“strongly disagree”) to 5 (“strongly agree”).

Third, items to measure DI knowledge as a product-specific dimension of insurance literacy are based on Weedige et al. (2019) and adapted based on the results of the qualitative interviews. The items were designed to reflect core elements of insurance literacy in the context of DI in Germany. These elements include knowledge of the eligibility and coverage of public DI, the design of private DI, and the relationship between public and private DI in Germany. Each item can be answered as “true”, “false”, or “don’t know”. A DI knowledge score is determined by the total number of questions answered correctly.

Sociodemographic data from the participants are used as control variables for age, gender, and income. The perceived individual risk of disability is measured using a self-assessment adapted from Lermer et al. (2016). A pretest with 15 respondents was conducted to check clarity, length, and technical functionality. Minor wording changes were made to improve the clarity of items. The final measurement instrument is provided in Appendix 2.

Because predictor and outcome variables were collected from the same source, there is a risk of common method bias in the chosen measurement instrument. This can manifest itself, for example, in the tendency of participants to answer questions in a uniform way, taking into account a supposedly desired behavior (Podsakoff & Organ, 1986). On the one hand, the risk of common method bias can be reduced by questionnaire design. Thus, the order of all items was randomized. On the other hand, the existence of such a bias can be tested using statistical methods such as Harman’s single-factor test (Podsakoff et al., 2012). This involves carrying out a factor analysis on all the items in a study. If a single factor emerges that explains a large proportion of the variance (> 50%), this indicates possible distortions due to a common method bias (Podsakoff & Organ, 1986; Fuller et al., 2016). The test procedure yielded a value of 33.92% for this study.

Therefore, the validity of the results is not threatened by common method bias.

### C. Data Analysis Method

PLS-SEM was applied to evaluate the hypotheses using SmartPLS 4 (Ringle et al., 2024). PLS-SEM is a variance-based method for estimating path models with latent variables. The following properties of PLS-SEM are relevant for this study: The method is robust in the face of non-normally distributed data and small sample sizes. PLS-SEM can incorporate reflective and formative measures. It aims to maximize the amount of explained variance in the dependent variables ( $R^2$ ) and to test the predictive power of the model (Hair et al., 2022).

A two-step analysis scheme is suggested for data analysis in PLS-SEM (Chin, 2010): First, the reliability and validity of the measurement instruments were evaluated. Second, structural equation model analysis was conducted to estimate the relationships among the variables. Bootstrapping with 10,000 subsamples was used to determine the significance of the results based on 95% confidence intervals. The data analysis concludes with an IPMA. This approach extends the results of the PLS-SEM by considering not only the relative importance of each construct in the research model, but also its performance (Ringle & Sarstedt, 2016).

## VI. RESULTS OF QUANTITATIVE DATA ANALYSIS

### A. Sample Structure

Table III provides an overview of the structure of the sample. The distribution of female (49.9%) and male (49.2%) participants is similar, while other genders are only minimally represented (0.9%). Most of the participants are aged between 25 and 34 (48.0%), making this a young sample compared to the proportion of this age group in the total German population (12.6%) (Destatis, 2025). Young people at the beginning of their professional careers are an important group to consider when making decisions about private DI because their future earning capacity is high, and they usually do not have coverage for their ability to work yet. However, this bias in the sample's composition may limit the generalizability of the study's results because it cannot be ruled out that insurance needs differ between younger and older people. Age is therefore included as a control variable. The young age of the sample is also reflected in the distribution of net income, which is concentrated in the lower brackets. With 51.4% private DI coverage, the sample exceeds the overall market rate of around 25% in Germany (Section 2).

TABLE III  
STRUCTURE OF THE SAMPLE

Variable	Category	Frequency	Percent
Gender	Female	161	49.9
	Male	159	49.2
	Others	3	0.9
Age	18 and younger than 25	92	28.5
	25 and younger than 35	155	48.0
	35 and younger than 45	47	14.5
	45 and younger than 55	12	3.7
	55 and younger than 65	17	5.3
Net income (EUR)	Less than 1,500	99	30.6
	1,500 and under 2,000	33	10.2
	2,000 and under 2,500	32	9.9
	2,500 and under 3,000	38	11.8
	3,000 and under 4,000	55	17.0
	4,000 and under 5,000	29	9.0
Existence of a private DI	5,000 and more	37	11.5
	Yes	166	51.4
	No	157	48.6

### B. Evaluation of Measurements

In the following, the reflective and formative measurement models are presented. As shown in Table IV, all four reflective measurement models fulfill the relevant quality criteria for ensuring acceptance of convergent validity (loadings > 0.708, composite

reliability (CR) > 0.7, Cronbach's alpha (CA) > 0.7, average variance extracted (AVE) > 0.5) (Chin, 2010; Hair et al., 2022). One item with a loading below 0.7 but above 0.5 (PBC2 with a loading of 0.680) is retained, as the values for CR, CA, and AVE are above the acceptable thresholds.

TABLE IV  
MEASUREMENT MODEL RESULTS

Reflective measures		Loadings (p-value)	Composite reliability	Cronbach's alpha	Average variance extracted
Attitude toward DI (ATDI)	ATDI1	0.947 (0.000)	0.913	0.911	0.849
	ATDI2	0.931 (0.000)			
	ATDI3	0.886 (0.000)			
Purchase intention (PI)	PI1	0.928 (0.000)	0.831	0.795	0.710
	PI2	0.829 (0.000)			
	PI3	0.763 (0.000)			
Perceived behavioral control (PBC)	PBC1	0.853 (0.000)	0.812	0.748	0.658
	PBC2	0.680 (0.000)			
	PBC3	0.885 (0.000)			
Subjective norm (SN)	SN1	0.920 (0.000)	0.771	0.721	0.778
	SN2	0.843 (0.000)			
Formative measures		Loadings (p-value)	Outer weights (p-value)	VIF (outer model)	
Perceived product benefits (PPB)	PPB1	0.858 (0.000)	0.451 (0.000)	1.632	
	PPB2	0.715 (0.000)	0.274 (0.000)	1.497	
	PPB3	0.759 (0.000)	0.346 (0.000)	1.429	
	PPB4	0.703 (0.000)	0.219 (0.000)	1.521	
Perceived product risks (PPR)	PPR1	0.961 (0.000)	0.788 (0.000)	1.567	
	PPR2	0.507 (0.000)	0.138 (0.000)	1.208	
	PPR3	0.724 (0.000)	0.309 (0.000)	1.916	
	PPR4	0.510 (0.000)	-0.101 (0.192)	1.730	

Discriminant validity is measured using the Fornell-Larcker criterion (FLC) (Fornell & Larcker, 1981) and the heterotrait-monotrait ratio (HTMT) (Henseler et al., 2015). As shown in Table V, the square root of AVE

for each variable exceeded its correlation with other variables (FLC) and the HTMT threshold (< 0.85) is met.

TABLE V  
DISCRIMINANT VALIDITY

	ATDI	DIK	PB	PBC	PI	SN
ATDI	<b>0.922</b>	0.343	0.507	0.393	0.820	0.609
DIK	0.328	<b>1.000</b>	0.411	0.580	0.470	0.226
PB	0.486	0.411	<b>1.000</b>	0.575	0.819	0.481
PBC	0.351	0.532	0.523	<b>0.811</b>	0.587	0.349
PI	0.709	0.421	0.742	0.490	<b>0.843</b>	0.723
SN	0.501	0.196	0.423	0.294	0.568	<b>0.882</b>

Note. Square root of average variance extracted (AVE) shown on diagonal. Below square root of AVE: values for Fornell-Larcker criterion (FLC). Above the square root of AVE: values for heterotrait-monotrait ratio (HTMT), HTMT achieved at HTMT<sub>0.85</sub>. ATDI: attitude toward disability insurance, DIK: disability insurance knowledge, PB: purchase behavior, PBC: perceived behavioral control, PI: purchase intention, SN: subjective norm.

Formative measurement models were evaluated by analyzing the significance of the outer weights and the collinearity of the different indicators (Hair et al., 2022). The outer weights of the two formative constructs are significant, except for one item (PPR4). However, as this item's loading is above the critical value of 0.5 and is significant, PPR4 is retained (Cenfetelli & Bassellier, 2009). The collinearity of each indicator, measured by VIF, met the threshold of 3 (Diamantopoulos & Siguaw, 2006) (Table IV).

#### B. Results of Structural Model Evaluation

The structural model results are organized according to the distinction between foundational TPB relationships and model extensions based on the qualitative interviews. As shown in Table VI, the foundational TPB relationships are consistently supported. Attitude toward DI has the strongest significant influence on purchase intention ( $\beta = 0.482$ ,  $p < 0.001$ ), followed by subjective norm ( $\beta = 0.246$ ,  $p < 0.001$ ) and perceived behavioral control ( $\beta = 0.187$ ,  $p < 0.001$ ). In addition, purchase intention positively influences actual DI purchase behavior ( $\beta = 0.338$ ,  $p < 0.001$ ). Thus, H1-H4 are supported and confirm the suitability of TPB as a behavioral foundation for explaining private DI purchase behavior in Germany.

Beyond the TPB foundation, the model extensions derived from the qualitative phase provide additional insight into how consumers evaluate and approach private DI decisions. Perceived product benefits positively influence attitude toward DI ( $\beta = 0.434$ ,  $p < 0.001$ ), while perceived product risks exert a similarly strong negative effect ( $\beta = -0.481$ ,  $p < 0.001$ ). The similar size of these coefficients suggests that consumers' attitudes toward private DI are shaped by a

trade-off between perceived protection benefits and perceived product-related uncertainties. Therefore, H5 and H6 are supported.

DI knowledge shows significant relationships with several purchase-related constructs. While DI knowledge positively influences the benefit assessment ( $\beta = 0.297$ ,  $p < 0.001$ ), it has a reducing effect on the perceived product risks ( $\beta = -0.381$ ,  $p < 0.001$ ). Furthermore, DI knowledge has the strongest influence on perceived behavioral control ( $\beta = 0.532$ ,  $p < 0.001$ ), indicating a strong relationship between insurance-related knowledge and consumers' capability to navigate the DI purchasing process. Accordingly, H7, H8, and H10 are supported.

In contrast, no significant direct relationship is found between DI knowledge and attitude toward DI ( $\beta = 0.015$ ,  $p = 0.710$ ). Therefore, H9 is not supported. The moderation effect is not supported. DI knowledge does not significantly moderate the relationship between subjective norm and purchase intention ( $\beta = -0.022$ ,  $p = 0.560$ ), leading to the rejection of H11.

Among the control variables, income and gender show significant positive effects on DI purchase behavior. Male respondents are more likely to hold a private DI policy than female respondents ( $\beta = 0.102$ ,  $p = 0.007$ ), and higher income is associated with a higher probability of having private DI ( $\beta = 0.130$ ,  $p < 0.001$ ). In contrast, age ( $\beta = -0.008$ ,  $p = 0.629$ ) and the perceived individual disability risk ( $\beta = -0.004$ ,  $p = 0.776$ ) have no significant direct effects on DI purchase behavior.

In sum, the results reveal a layered explanatory structure. The TPB relationships provide a robust

behavioral foundation for explaining private DI purchase behavior. Meanwhile, the qualitative extensions contribute to a better understanding of the relationships between DI product evaluations,

insurance-related knowledge, and purchase intentions and behavior. Table VI summarizes the results of the structural model evaluation.

TABLE VI  
HYPOTHESIS TESTING AND DIRECT EFFECTS

Hypotheses and relationships	Path coefficient $\beta$	Bias-corrected 95% confidence interval	t-value	p-value	f <sup>2</sup>	Supported
<i>Foundational TPB relationships</i>						
H1 ATDI -> PI	0.482	[0.389; 0.568]	10.458	<b>0.000</b>	0.419	<b>Yes</b>
H2 SN -> PI	0.246	[0.164; 0.329]	5.819	<b>0.000</b>	0.116	<b>Yes</b>
H3 PBC -> PI	0.187	[0.084; 0.280]	3.736	<b>0.000</b>	0.062	<b>Yes</b>
H4 PI -> PB	0.338	[0.301; 0.371]	18.824	<b>0.000</b>	1.073	<b>Yes</b>
<i>Direct evaluative and knowledge-related relationships</i>						
H5 PPB -> ATDI	0.434	[0.358; 0.504]	11.166	<b>0.000</b>	0.382	<b>Yes</b>
H6 PPR -> ATDI	-0.481	[-0.571; -0.385]	10.150	<b>0.000</b>	0.441	<b>Yes</b>
H7 DIK -> PPB	0.297	[0.175; 0.400]	5.203	<b>0.000</b>	0.097	<b>Yes</b>
H8 DIK -> PPR	-0.381	[-0.476; -0.266]	7.191	<b>0.000</b>	0.170	<b>Yes</b>
H9 DIK -> ATDI	0.015	[-0.061; 0.100]	0.372	0.710	0.001	No
H10 DIK -> PBC	0.532	[0.445; 0.602]	13.477	<b>0.000</b>	0.396	<b>Yes</b>
<i>Moderating evaluative and knowledge-related relationship</i>						
H11 DIK x SN -> PI	-0.022	[-0.096; 0.051]	0.584	0.560	0.001	No
<i>Control variables</i>						
Age -> PB	-0.008	[-0.041; 0.022]	0.483	0.629	0.000	
Gender -> PB (male = 1)	0.102	[0.031; 0.176]	2.703	<b>0.007</b>	0.026	
Income -> PB	0.130	[0.088; 0.176]	5.886	<b>0.000</b>	0.111	
PIDR -> PB	-0.004	[-0.034; 0.027]	0.284	0.776	0.000	

Note. ATDI: attitude toward disability insurance, PI: purchase intention, PBC: perceived behavioral control, SN: subjective norm, PB: purchase behavior, PPB: perceived product benefits, PPR: perceived product risks, DIK: disability insurance knowledge, PIDR: perceived individual disability risk

The explanatory power of the structural model is examined using f<sup>2</sup> and R<sup>2</sup>. The effect size f<sup>2</sup> measures the relevance of a variable in relation to the explanatory power of the model. The results for f<sup>2</sup> (Table VI) are consistent with the findings of the hypothesis tests, in that no effects were observed for non-significant paths (f<sup>2</sup> < 0.02). However, small (f<sup>2</sup> ≥ 0.02), medium (f<sup>2</sup> ≥ 0.15), or strong (f<sup>2</sup> ≥ 0.35) effects were determined for all significant structural model paths (Cohen, 1988). For purchase behavior (R<sup>2</sup> = 0.635) and for purchase intention (R<sup>2</sup> = 0.623), the structural model reveals a moderate explanatory power (Chin, 1998). The same applies to attitudes toward DI (R<sup>2</sup> = 0.610), which the

model explains by perceived product benefits and risks, as well as DI knowledge.

While the R<sup>2</sup> values indicate the in-sample explanatory power of the model, the cross-validated predictive ability test (CVPAT) is used to assess its out-of-sample predictive relevance (Lienggaard et al., 2021). Table VII shows that for DI purchase behavior and intention as well as for attitude toward DI, the PLS predictions are significantly better than the indicator-average prediction benchmark, which is expressed by a negative difference in the average loss values (PB = -0.060, PI = -0.524, ATDI = -0.086). However, compared with the more conservative linear model prediction, the PLS

predictions for these three variables are worse (PB = 0.043, PI = 0.108, ATDI = 0.169). Overall, the PLS path model demonstrates moderate out-of-sample

predictive power for the analyzed factors (Sharma et al., 2023).

TABLE VII  
EXPLANATORY POWER AND PREDICTIVE POWER OF THE MODEL

	R <sup>2</sup>	PLS loss	IA loss	average loss (p-value)	PLS loss	LM loss	average loss (p-value)
PB	0.635	0.192	0.252	-0.060 (0.000)	0.192	0.148	0.043 (0.000)
PI	0.623	1.676	2.200	-0.524 (0.000)	1.676	1.568	0.108 (0.011)
ATDI	0.610	0.912	0.998	-0.086 (0.002)	0.912	0.743	0.169 (0.000)

Note. PB: purchase behavior, PI: purchase intention, ATDI: attitude toward disability insurance, PLS: partial least squares, IA: indicators average, LM: linear model

C. Results of Importance-Performance Map Analysis (IPMA)

The reported results of the path analysis provide information about the relative importance of the constructs in explaining the other constructs in the structural model. The IPMA adds a dimension to these results by analyzing the performance of the individual constructs. To achieve this, the total effects (importance) of the constructs are contrasted with their average values (performance). The aim is to identify the antecedents of a target construct that are relatively important (i.e., those with a strong total effect) but relatively underperforming (i.e., with low average latent variable scores). This allows constructs to be prioritized with respect to improving a particular target construct (Ringle & Sarstedt, 2016; Streukens et al., 2017).

DI purchase intention is selected as the target construct for IPMA. It is the only psychological construct in the research model with a direct relationship to DI purchase behavior. Furthermore, the path analysis reveals a significant positive effect on this relationship. Therefore, for the IPMA, DI purchase intention is used as a proxy for DI purchase behavior. The importance and performance of the other constructs for DI purchase intention are shown in Table VIII.

TABLE VIII  
IMPORTANCE AND PERFORMANCE FOR DI PURCHASE INTENTION

Target construct: DI Purchase Intention		
Variable	Importance (total effect)	Performance
ATDI	0.482	75.549
SN	0.246	56.462
PBC	0.187	64.262
PPB	0.210	69.197
PPR	0.233	60.639
DIK	0.369	60.178
Mean	0.288	64.381

Note. All total effects are significant (no sign changes for determining the 95% bias-corrected confidence intervals; p-values < 0.001). In order to ensure the same scale direction for all variables, PPR1, PPR2, and PPR3 were rescaled, while PPR4 was removed due to a negative outer weight (Ringle & Sarstedt, 2016). ATDI: attitude toward disability insurance, SN: subjective norm, PBC: perceived behavioral control, PPB: perceived product benefits, PPR: perceived product risks, DIK: disability insurance knowledge

To visualize the results, an importance-performance map was generated, which can be divided into four quadrants by entering the average importance values (vertical dashed line) and performance values (horizontal dashed line). The constructs in the bottom

right-hand area (i.e., above-average importance and below-average performance) are of greatest interest for achieving improvements in the target construct (I.), followed by the areas at the top right (II.), bottom left (III.) and finally top left (IV.) (Ringle & Sarstedt, 2016).

As Figure 2 shows, DI knowledge has an above-average importance ( $0.369 > 0.288$ ), but a below-

average performance ( $60.178 < 64.381$ ). Thus, it is located in the first quadrant. As attitude toward DI demonstrates the highest importance ( $0.482$ ) and performance ( $75.549$ ), it is located in quadrant II. Subjective norm, perceived product risks, and perceived behavioral control are located in quadrant III, while perceived product benefits are located in quadrant IV.

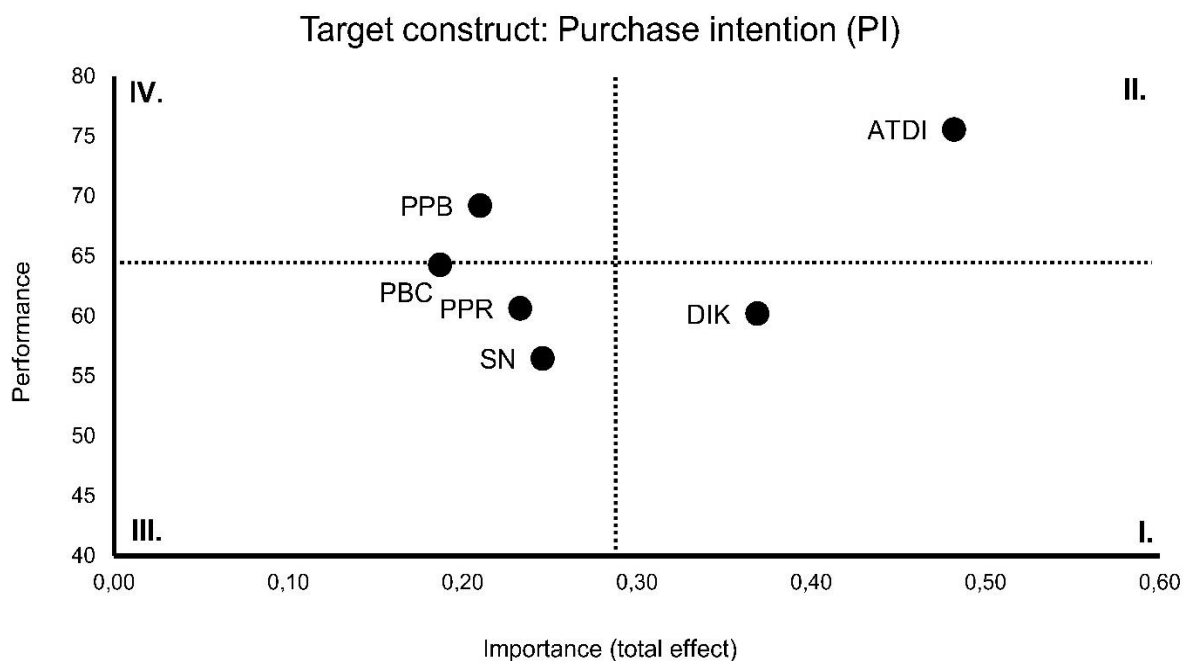


Fig. 2: Importance-Performance Map for DI Purchase Intention

Note. ATDI: attitude toward disability insurance, PBC: perceived behavioral control, SN: subjective norm, PPB: perceived product benefits, PPR: perceived product risks, DIK: disability insurance knowledge

## VII. DISCUSSION, CONTRIBUTIONS, AND LIMITATIONS

### A. Discussion

According to the research question, this study focuses on explaining private DI purchase intentions and behavior, rather than on assessing the adequacy of coverage or on determining whether taking up private DI is appropriate in general. Using a qualitative-quantitative approach, the study combines a TPB-based behavioral foundation with DI-specific model extensions derived from advisory practice. While the TPB relationships establish the behavioral baseline for understanding private DI demand, the primary contribution of the study lies in explaining how DI-specific product evaluations and insurance-related knowledge are linked to purchase intentions and behavior. Three main findings emerge.

First, the results confirm the suitability of TPB as a behavioral foundation for explaining private DI demand. Purchase behavior is positively influenced by purchase intention, which in turn is shaped by attitude, subjective norm, and perceived behavioral control. Among these predictors, attitude toward DI has the strongest effect on purchase intention, followed by subjective norm and perceived behavioral control. These findings are consistent with previous TPB applications in insurance demand behavior, including health and life insurance (Brahmana et al., 2018; Mamun et al., 2021; Masud et al., 2021), and support the applicability of TPB in the German DI context. The results of the IPMA reinforce this hierarchy by identifying attitude as the construct with the greatest importance for DI purchase intention.

Second, the qualitative and quantitative findings show that consumers' evaluations of private DI constitute an important mechanism linking product perceptions to purchase intentions. Perceived product benefits and perceived product risks strongly shape attitudes toward DI. Together, these constructs explain 61% of the attitudinal variance (Table VII). This is particularly relevant given the strong influence of attitude on DI purchase intention revealed in the TPB baseline. Furthermore, formative measurement of perceived product benefits and risks enables interpretation of each indicator's relative contribution. Financial security (PPB1) and maintaining living standards (PPB3) are the most relevant perceived product benefits. In contrast, uncertainty about whether private DI is a worthwhile financial investment (PPR1) is the most important perceived product risk, followed by uncertainty about whether DI provides adequate protection against occupational disability (PPR3). However, concerns about the fair and timely payment of claims in the event of occupational disability (PPR4) are considered less relevant. This contrasts with findings reported by Driver et al. (2018), who identify stronger concerns regarding claims settlement. One possible explanation is that this study focuses on a specific product in the German insurance market and surveys relatively young consumers, whereas Driver et al. (2018) analyze a broader range of insurance products and consumer groups across different age segments and contexts (e.g., claims experiences). Differences in product type, sample composition, and recent claims experience may therefore lead to the weaker salience of claim-payment concerns observed in this study.

Third, this study clarifies the role of DI knowledge within insurance decision-making. Rather than functioning solely as a direct attitudinal driver, DI knowledge is associated with several purchase-related mechanisms. Higher DI knowledge is linked to stronger perceived product benefits, lower perceived product risks, and higher perceived behavioral control. However, no significant direct relationship is observed between DI knowledge and attitude toward DI, nor does DI knowledge strengthen the influence of subjective norms. Taken together, these findings suggest that DI knowledge primarily operates as an antecedent construct, influencing how consumers evaluate and approach decisions about private DI. Those with a greater understanding of public and private DI arrangements appear better able to evaluate product-related advantages and disadvantages and navigate the

purchase process. This interpretation is in line with insurance literacy research that emphasizes the role of knowledge in facilitating informed insurance decisions, rather than merely fostering favorable attitudes (Driver et al., 2018; Bongini et al., 2023).

The IPMA findings further underscore the importance of DI knowledge. Although its performance values are comparatively low, DI knowledge has one of the strongest total effects on purchase intention (Figure 2). One possible explanation for this could be limited awareness of public DI eligibility and coverage, which may lead individuals to overestimate the protection provided by the statutory system and underestimate the financial consequences of disability (Scott & Finke, 2013; Giannikos et al., 2024). In line with the insurance literacy literature, such gaps in DI-specific knowledge can dampen purchase intentions regarding private DI and contribute to underinsurance (Pitthan & De Witte, 2021).

Finally, the control variables provide additional contextual insight. Higher income and male gender are associated with a greater likelihood of purchasing private DI, whereas age and perceived individual disability risk show no significant direct effects once behavioral and evaluative constructs are considered. The positive income effect aligns with previous research emphasizing affordability and socioeconomic gradients in DI demand (Fischer et al., 2024; Seibold et al., 2025). Gender differences may reflect broader patterns in financial product use and financial security arrangements documented in related literature (Bartels et al., 2023; Gough & Nurullah, 2009).

### B. *Theoretical and Practical Contributions*

This study contributes to the theoretical and practical understanding of private DI decision-making. From a theoretical perspective, the study makes three related contributions. First, it establishes TPB as a suitable behavioral foundation for explaining private DI purchase behavior in Germany, complementing predominantly economic and market-based explanations of insurance demand with a behavioral perspective. Second, building on qualitative evidence from advisory practice, the study extends this foundation by incorporating DI-specific evaluative mechanisms in the form of perceived product benefits and risks. This extension enriches the explanation of insurance demand by capturing product-related considerations not explicitly represented in the original

TPB. It also adds methodological value by combining theory-driven and exploratory elements. Third, the study contributes to the emerging insurance literacy literature by conceptualizing DI knowledge as a product-specific dimension of insurance literacy and embedding it within a broader behavioral framework. Unlike prior studies such as Mamun et al. (2021) and Amalia & Arifin (2024), which treated insurance knowledge as a direct predictor of purchase intention, this study examines how DI knowledge relates to evaluative factors and perceived behavioral control. This provides a more differentiated understanding of insurance purchase decisions.

From a practical perspective, the findings suggest that attitudes toward DI, product-related evaluations, and DI-related knowledge are relevant factors in private DI decision-making. However, the results do not imply that private DI is universally appropriate or that increasing DI demand should be treated as a policy objective in itself. Rather, the findings provide practical implications for supporting informed and needs-appropriate DI decisions. From a state perspective, this highlights the importance of improving understanding of social insurance systems and private provision options. Financial and insurance literacy initiatives, accessible information regarding public DI and eligibility criteria, and transparent communication regarding potential protection gaps may support individuals in assessing their own protection needs and the role that private provision may play within their financial situation. One approach to improving transparency and facilitating informed financial planning involves the provision of centralized digital information on individual protection and retirement arrangements. In Germany, the “Digital Pension Overview” represents an initial step in this direction, although its complex authentication process currently limits usage (Bundesministerium für Finanzen, 2025).

For financial advisors and insurers, the findings provide more specific implications for DI advisory. Consumers appear to evaluate private DI based on a trade-off between expected protection benefits and perceived product-related risks. Therefore, advisory conversations may benefit from explicitly addressing both dimensions rather than focusing solely on product features or premium levels. The findings suggest that discussions addressing the role of private DI in maintaining financial security and preserving living standards in the event of disability are especially relevant, as these aspects emerge as the most salient

perceived benefits. At the same time, consumers are concerned about whether private DI represents a worthwhile financial investment and whether premium levels are adequate relative to the expected protection. Transparently addressing these concerns may support more informed and needs-appropriate evaluations of disability risk protection. Furthermore, the strong relationship between DI knowledge and perceived behavioral control suggests that advisory practice may benefit not only from providing recommendations but also from strengthening consumers’ understanding of how public and private DI interact and how private provision functions within their financial situations.

Finally, the findings regarding the subjective norm suggest that social environments influence private DI decision-making. Because opportunities to discuss financial protection and gain insurance-related knowledge may vary across households and social groups, it may be insufficient to rely solely on parental or familial socialization to raise awareness about occupational disability risk. Consequently, schools, workplaces, and advisory settings may complement the family context by fostering awareness of disability-related risks and available protection options.

### *C. Conclusion, Limitations, and Future Research*

Occupational disability poses substantial income risks for working-age populations. Since the 2001 reform, this risk has only been partially covered by public disability protection in Germany, while the use of additional private DI remains comparatively limited. Against this background, this study examined private DI demand from a behavioral perspective using a qualitative-quantitative research design. The study shows that TPB provides a suitable behavioral foundation for explaining private DI purchase intentions and behavior in Germany. Building on this baseline, the qualitative phase identified additional salient factors that were incorporated into the extended model. In particular, the findings highlight the relevance of perceived product benefits, perceived product risks, and DI knowledge for understanding private DI decision-making. A central contribution is the clarification of DI knowledge as a product-specific dimension of insurance literacy. Rather than treating insurance knowledge solely as a direct predictor of purchase intentions, the results suggest that DI knowledge is associated with several purchase-related mechanisms, including product evaluations and perceived behavioral control. Besides contributing to

further theorizing on insurance demand, the findings provide practical implications for supporting informed and needs-appropriate decisions regarding protection against disability-related income loss.

As with any study, the results are subject to several limitations that future research could address. First, the behavioral explanation of private DI demand developed in this study is largely intention-driven. It does not capture long-term retention, coverage adjustments, or lapses. Therefore, these results primarily speak to the initiation of private DI contracts. However, a comprehensive assessment of the adequacy and appropriateness of coverage decisions throughout one's lifetime would require more extensive longitudinal data on coverage needs, levels, and changes.

Another limitation of this study is that the qualitative phase relied solely on financial advisors as experts and did not include consumers directly. While this provides rich insight into perceived drivers of DI purchases in advisory settings, it may overlook aspects that are salient from the consumer perspective alone. Future research could extend the qualitative design by combining advisor and consumer interviews or focus groups to capture both perspectives within a unified behavioral framework.

The quantitative part is limited by the size and scope of the sample. While the sample size meets the required number of participants needed for the chosen analysis method, larger samples are often desirable for statistical inference (Van der Valk et al., 2016). In terms of scope, the study focuses on Germany. However, the behavioral explanation of private DI demand is also relevant in other national contexts, such as the United States (Hwang, 2021). Therefore, repeating this study with samples from other nations offers opportunities to explore further aspects of insurance demand, such as cultural factors.

Finally, the results for the control variables suggest avenues for further research. The findings of this study indicate that higher income and male gender are associated with a higher likelihood of having private DI, while age and perceived individual disability risk do not significantly affect the decision to purchase insurance. Future research could examine in more detail how these socioeconomic and gender differences influence coverage levels, contract design, and the adequacy of protection over the life course. Research could also examine how these factors interact with

other constructs, such as risk tolerance and health status.

## REFERENCES

- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action Control* (pp. 11–39). Springer Berlin Heidelberg. [https://doi.org/10.1007/978-3-642-69746-3\\_2](https://doi.org/10.1007/978-3-642-69746-3_2)
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Alfiero, S., Battisti, E., & Hadjielias, E. (2022). Black box technology, usage-based insurance, and prediction of purchase behavior: Evidence from the auto insurance sector. *Technological Forecasting and Social Change*, 183, 121896. <https://doi.org/10.1016/j.techfore.2022.121896>
- Amalia, E., & Arifin, A. Z. (2024). The influence of financial literacy, personal sales, and consumer trust on private health insurance product purchase decisions. *International Journal of Application on Economics and Business*, 2(1), 2842–2851. <https://doi.org/10.24912/ijaeb.v2i1.2842-2851>
- Atinc, G., Simmering, M. J., & Kroll, M. J. (2012). Control variable use and reporting in macro and micro management research. *Organizational Research Methods*, 15(1), 57–74. <https://doi.org/10.1177/10944281110397773>
- Autor, D., Duggan, M., & Gruber, J. (2014). Moral hazard and claims deterrence in private disability insurance. *American Economic Journal: Applied Economics*, 6(4), 110–141. <https://doi.org/10.1257/app.6.4.110>
- Azungah, T. (2018). Qualitative research: Deductive and inductive approaches to data analysis. *Qualitative Research Journal*, 18(4), 383–400. <https://doi.org/10.1108/QRJ-D-18-00035>
- Bartels, C., Sierminska, E., & Schroeder, C. (2023). Wealth creators or inheritors? Unpacking the gender wealth gap from bottom to top and

- young to old. SSRN Electronic Journal. <https://doi.org/10.2139/ssrn.4422891>
- Bogner, A., & Menz, W. (2009). The theory-generating expert interview: Epistemological interest, forms of knowledge, interaction. In A. Bogner, B. Littig, & W. Menz (Eds.), *Interviewing Experts* (pp. 43–80). Palgrave Macmillan UK. [https://doi.org/10.1057/9780230244276\\_3](https://doi.org/10.1057/9780230244276_3)
- Bongini, P., Cucinelli, D., & Soana, M. G. (2023). Insurance holdings: Does individual insurance literacy matter? *Finance Research Letters*, 58, 104511. <https://doi.org/10.1016/j.frl.2023.104511>
- Bosnjak, M., Ajzen, I., & Schmidt, P. (2020). The theory of planned behavior: Selected recent advances and applications. *Europe's Journal of Psychology*, 16(3), 352–356. <https://doi.org/10.5964/ejop.v16i3.3107>
- Brahmana, R., Brahmana, R. K., & Memarista, G. (2018). Planned behaviour in purchasing health insurance. *The South East Asian Journal of Management*, 12(1). <https://doi.org/10.21002/seam.v12i1.7465>
- Branley-Bell, D., Gómez, Y., Coventry, L., Vila, J., & Briggs, P. (2021). Developing and validating a behavioural model of cyberinsurance adoption. *Sustainability*, 13(17), Article 9528. <https://doi.org/10.3390/su13179528>
- Brinkmann, S., & Kvale, S. (2015). *InterViews: Learning the craft of qualitative research interviewing* (3rd ed.). Sage.
- Bryman, A. (2006). Integrating quantitative and qualitative research: How is it done? *Qualitative Research*, 6(1), 97–113. <https://doi.org/10.1177/1468794106058877>
- Bundesministerium für Finanzen (2025). Überblick bei der Planung der Altersvorsorge – Die Digitale Rentenübersicht. *Monatsbericht des BMF April 2025*, 31–34.
- Carroll, D., Hadjian, A., Collier, N., & McCoy, M. (2024). Disability insurance: The financial planning industry's great blind spot. *Journal of Financial Planning*, 36(7), 54–62.
- Cenfetelli, R., & Bassellier, G. (2009). Interpretation of formative measurement in information systems research. *MIS Quarterly*, 33(4), 689–707. <https://doi.org/10.2307/20650323>
- Chin, W. W. (1998). The partial least squares approach for structural equation modeling. In G. A. Marcoulides (Ed.), *Modern methods for business research* (pp. 295–336). Psychology Press. <https://doi.org/10.4324/9781410604385>
- Chin, W. W. (2010). How to write up and report PLS analyses. In V. Esposito Vinzi, W. W. Chin, J. Henseler, & H. Wang (Eds.), *Handbook of Partial Least Squares* (pp. 655–690). Springer Berlin Heidelberg. [https://doi.org/10.1007/978-3-540-32827-8\\_29](https://doi.org/10.1007/978-3-540-32827-8_29)
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). L. Erlbaum Associates. <https://doi.org/10.4324/9780203771587>
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155–159. <https://doi.org/10.1037/0033-2909.112.1.155>
- Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE.
- De Jonge, P., Ungureanu, O., Zeelenberg, M., & Verlegh, P. W. J. (2024). The acceptability of behavioural interventions in financial decision-making. *Behavioural Public Policy*, 8(4), 759–772. <https://doi.org/10.1017/bpp.2024.10>
- Destatis. (2025) *Bevölkerungsfortschreibung auf Basis Zensus 2022* (EVAS-No. 12411). [https://www.statistischebibliothek.de/mir/receive/DEHeft\\_mods\\_00156997](https://www.statistischebibliothek.de/mir/receive/DEHeft_mods_00156997) (accessed May 30, 2026).
- Deutsche Aktuarvereinigung (2021). *Berufsunfähigkeit: Die unterschätzte Gefahr?! Aktuar Aktuell*, 55, 10–11.
- Deutsche Rentenversicherung (2024). *Jahresbericht 2023 in Zahlen*. <https://jahresbericht.deutscherentenversicherung.de/artikel/in-zahlen/> (accessed May 30, 2026).
- Deutsche Rentenversicherung (2025a). *Erwerbsminderungsrente: Das Netz für alle Fälle* (20th ed.). <https://www.deutscherentenversicherung.de/SharedDocs/Download>

- s/DE/Broschueren/national/erwerbsminderung\_srente\_das\_netz\_fuer\_alle\_faelle.html (accessed May 30, 2026).
- Deutsche Rentenversicherung (2025b). Berufsunfähigkeit. <https://www.deutsche-rentenversicherung.de/SharedDocs/Glossareintraege/DE/B/berufsunfaehigkeit.html> (accessed May 30, 2026).
- Dewi, C. S. (2023). The effect of insurance literacy, perceived product benefits, trust in insurance & perceived product risk on decision to purchase personal insurance. *Jurnal Multidisiplin Madani*, 3(6), 1215–1224. <https://doi.org/10.55927/mudima.v3i6.3012>
- Diamantopoulos, A., & Sigauw, J. A. (2006). Formative versus reflective indicators in organizational measure development: A comparison and empirical illustration. *British Journal of Management*, 17(4), 263–282. <https://doi.org/10.1111/j.1467-8551.2006.00500.x>
- Driver, T., Brimble, M., Freudenberg, B., & Hunt, K. H. M. (2018). Insurance literacy in Australia: Not knowing the value of personal insurance. *Financial Planning Research Journal*, 4, 53–75. <https://doi.org/10.2478/fprj-2018-0003>
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G\*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, 41(4), 1149–1160. <https://doi.org/10.3758/BRM.41.4.1149>
- Fischer, B., Geyer, J. M., & Ziebarth, N. (2024). Fundamentally reforming the DI system: Evidence from German notch cohorts. NBER Working Paper Series. <https://doi.org/10.3386/w30812>
- Fishbein, M., & Ajzen, I. (2010). Predicting and changing behavior. Psychology Press. <https://doi.org/10.4324/9780203838020>
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.2307/3151312>
- Fuller, C. M., Simmering, M. J., Atinc, G., Atinc, Y., & Babin, B. J. (2016). Common methods variance detection in business research. *Journal of Business Research*, 69(8), 3192–3198. <https://doi.org/10.1016/j.jbusres.2015.12.008>
- Giannikos, C. I., Kakolyris, A., & Suen, T. S. (2024). Risk attitudes and private disability insurance holdings. *Journal of Economics and Finance*. <https://doi.org/10.1007/s12197-024-09689-4>
- Gough, O., & Nurullah, M. (2009). Understanding what drives the purchase decision in pension and investment products. *Journal of Financial Services Marketing*, 14(2), 152–172. <https://doi.org/10.1057/fsm.2009.14>
- Greszki, R., Meyer, M., & Schoen, H. (2014). The impact of speeding on data quality in nonprobability and freshly recruited probability-based online panels. In M. Callegaro, R. Baker, J. Bethlehem, A. S. Göritz, J. A. Krosnick, & P. J. Lavrakas (Eds.), *Online Panel Research* (1st ed., pp. 238–262). Wiley. <https://doi.org/10.1002/9781118763520.ch11>
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). A primer on partial least squares structural equation modeling (PLS-SEM) (3rd ed.). SAGE.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- Hwang, I. D. (2021). Prospect theory and insurance demand: Empirical evidence on the role of loss aversion. *Journal of Behavioral and Experimental Economics*, 95, 101764. <https://doi.org/10.1016/j.socec.2021.101764>
- Kock, N., & Hadaya, P. (2018). Minimum sample size estimation in PLS-SEM: The inverse square root and gamma-exponential methods. *Information Systems Journal*, 28(1), 227–261. <https://doi.org/10.1111/isj.12131>
- Koning, P., & Van Lent, M. (2024). Workers' moral hazard and private insurer effort in disability insurance. *Journal of Risk and Insurance*,

- 91(4), 1049–1088. <https://doi.org/10.1111/jori.12464>
- Lerner, E., Streicher, B., Sachs, R., Raue, M., & Frey, D. (2016). Thinking concretely increases the perceived likelihood of risks: The effect of construal level on risk estimation. *Risk Analysis*, 36(3), 623–637. <https://doi.org/10.1111/risa.12445>
- Liengaard, B. D., Sharma, P. N., Hult, G. T. M., Jensen, M. B., Sarstedt, M., Hair, J. F., & Ringle, C. M. (2021). Prediction: Coveted, yet forsaken? Introducing a cross-validated predictive ability test in partial least squares path modeling. *Decision Sciences*, 52(2), 362–392. <https://doi.org/10.1111/dec.12445>
- Lin, X., Bruhn, A., & William, J. (2019). Extending financial literacy to insurance literacy: A survey approach. *Accounting & Finance*, 59(S1), 685–713. <https://doi.org/10.1111/acfi.12353>
- Low, H., & Pistaferri, L. (2020). Disability insurance: Theoretical trade-offs and empirical evidence. *Fiscal Studies*, 41(1), 129–164. <https://doi.org/10.1111/1475-5890.12215>
- Mai, T. H., Nguyen, T. C., Vu, L. L., Bui, V. H., Nguyen, T. T. C., & Do, D. T. (2020). A study on behaviors of purchasing life insurance in Vietnam. *Management Science Letters*, 10, 1693–1700. <https://doi.org/10.5267/j.msl.2020.1.011>
- Mamun, A. A., Rahman, M. K., Munikrishnan, U. T., & Permarupan, P. Y. (2021). Predicting the intention and purchase of health insurance among Malaysian working adults. *SAGE Open*, 11(4), 21582440211061373. <https://doi.org/10.1177/21582440211061373>
- Masud, M. M., Ahsan, M. R., Ismail, N. A., & Rana, M. S. (2021). The underlying drivers of household purchase behaviour of life insurance. *Society and Business Review*, 16(3), 442–458. <https://doi.org/10.1108/SBR-08-2020-0103>
- Nam, Y., Olsen, E., Loibl, C., & Scharff, R. (2025). Life insurance product type, financial knowledge, and financial adequacy. *Financial Planning Review*, 8(1), e70000. <https://doi.org/10.1002/cfp2.70000>
- OECD (2022). Disability, work and inclusion: Mainstreaming in all policies and practices. OECD. <https://doi.org/10.1787/1eaa5e9c-en>
- Omar, O. E., & Owusu-Frimpong, N. (2007). Life insurance in Nigeria: An application of the theory of reasoned action to consumers' attitudes and purchase intention. *The Service Industries Journal*, 27(7), 963–976. <https://doi.org/10.1080/02642060701570891>
- Patton, M. Q. (2015). *Qualitative research & evaluation methods: Integrating theory and practice* (4th ed.). SAGE.
- Pitthan, F., & De Witte, K. (2021). Puzzles of insurance demand and its biases: A survey on the role of behavioural biases and financial literacy on insurance demand. *Journal of Behavioral and Experimental Finance*, 30, 100471. <https://doi.org/10.1016/j.jbef.2021.100471>
- Podsakoff, P. M., & Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. *Journal of Management*, 12(4), 531–544. <https://doi.org/10.1177/014920638601200408>
- Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, 63(1), 539–569. <https://doi.org/10.1146/annurev-psych-120710-100452>
- Rahimi, S., & Khatooni, M. (2024). Saturation in qualitative research: An evolutionary concept analysis. *International Journal of Nursing Studies Advances*, 6, 100174. <https://doi.org/10.1016/j.ijnsa.2024.100174>
- Ringle, C. M., & Sarstedt, M. (2016). Gain more insight from your PLS-SEM results: The importance-performance map analysis. *Industrial Management & Data Systems*, 116(9), 1865–1886. <https://doi.org/10.1108/IMDS-10-2015-0449>
- Ringle, C. M., Wende, S., & Becker, J.-M. (2024). *SmartPLS 4*. <https://www.smartpls.com> (accessed May 30, 2026).

- Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., Burroughs, H., & Jinks, C. (2018). Saturation in qualitative research: Exploring its conceptualization and operationalization. *Quality & Quantity*, 52(4), 1893–1907. <https://doi.org/10.1007/s11135-017-0574-8>
- Scholl, T., & Jeske, K.-J. (2024). Analyse der Einflussfaktoren auf die Risikowahrnehmung und die Kaufentscheidung im Kontext einer Berufsunfähigkeitsversicherung. *Zeitschrift für die gesamte Versicherungswissenschaft*, 113(2), 181–226. <https://doi.org/10.3790/zverswiss.2024.1443301>
- Scott, J. K., & Finke, M. S. (2013). The demand for disability insurance. *Financial Services Review*, 22(1), 1–12.
- Seibold, A., Seitz, S., & Siegloch, S. (2025). Privatizing disability insurance. *Econometrica*, 93(5), 1697–1737. <https://doi.org/10.3982/ECTA22113>
- Seitz, S. (2025). Estimating the moral hazard cost of private disability insurance and its welfare consequences (SSRN Scholarly Paper No. 4323015). Social Science Research Network. <https://doi.org/10.2139/ssrn.4323015>
- Sharma, P. N., Liengard, B. D., Hair, J. F., Sarstedt, M., & Ringle, C. M. (2023). Predictive model assessment and selection in composite-based modeling using PLS-SEM: Extensions and guidelines for using CVPAT. *European Journal of Marketing*, 57(6), 1662–1677. <https://doi.org/10.1108/EJM-08-2020-0636>
- Sheeran, P. (2002). Intention-behavior relations: A conceptual and empirical review. *European Review of Social Psychology*, 12(1), 1–36. <https://doi.org/10.1080/14792772143000003>
- Sinnewe, E., & Nicholson, G. (2023). Healthy financial habits in young adults: An exploratory study of the relationship between subjective financial literacy, engagement with finances, and financial decision-making. *Journal of Consumer Affairs*, 57(1), 564–592. <https://doi.org/10.1111/joca.12512>
- Soika, S. (2018). Moral hazard and advantageous selection in private disability insurance. *The Geneva Papers on Risk and Insurance - Issues and Practice*, 43(1), 97–125. <https://doi.org/10.1057/s41288-017-0055-2>
- Streukens, S., Leroi-Werelds, S., & Willems, K. (2017). Dealing with nonlinearity in importance-performance map analysis (IPMA): An integrative framework in a PLS-SEM context. In H. Latan & R. Noonan (Eds.), *Partial Least Squares Path Modeling* (pp. 367–403). Springer International Publishing. [https://doi.org/10.1007/978-3-319-64069-3\\_17](https://doi.org/10.1007/978-3-319-64069-3_17)
- Tan, K.-L., Leong, C.-M., & Richter, N. F. (2025). Navigating trust in mobile payments: Using necessary condition analysis to identify must-have factors for user acceptance. *International Journal of Human-Computer Interaction*, 41(5), 3325–3339. <https://doi.org/10.1080/10447318.2024.2338319>
- Tanpoco, M., Katalbas, R. E. I., Roxas, R. R. P., An, J., & Orlina, J. Z. (2022). The moderating role of financial literacy on the effects of subjective norms, product involvement, and perceived behavioral control on investment intention of young investors from a mobile wallet app in the Philippines. *International Journal of Multidisciplinary: Applied Business and Education Research*, 3(8), 1477–1490. <https://doi.org/10.11594/ijmaber.03.08.10>
- Van der Valk, W., Sumo, R., Dul, J., & Schroeder, R. G. (2016). When are contracts and trust necessary for innovation in buyer-supplier relationships? A necessary condition analysis. *Journal of Purchasing and Supply Management*, 22(4), 266–277. <https://doi.org/10.1016/j.pursup.2016.06.005>
- VERBI Software (2024). MAXQDA 24. maxqda.com (accessed May 30, 2026).
- Von Soest, C. (2023). Why do we speak to experts? Reviving the strength of the expert interview method. *Perspectives on Politics*, 21(1), 277–287. <https://doi.org/10.1017/S1537592722001116>

Weedige, S. S., & Ouyang, H. (2019). Consumers' insurance literacy: Literature review, conceptual definition, and approach for a measurement instrument. *European Journal of Business and Management*. <https://doi.org/10.7176/EJBM/11-26-05>

Weedige, S. S., Ouyang, H., Gao, Y., & Liu, Y. (2019). Decision making in personal insurance: Impact of insurance literacy. *Sustainability*, 11(23), 6795. <https://doi.org/10.3390/su11236795>

Willis Towers Watson (2022). *WTW Studie Lebensversicherung 2021*. Willis Towers Watson.

## APPENDIX

### Appendix 1. Interview Guide

Category	Question
Relevance of private DI in general	<ul style="list-style-type: none"> <li>Why are income protection measures included in financial planning? From your point of view, is this generally important?</li> <li>What are the main reasons consumers have for taking up private disability insurance? What reasons are there against it, or what reservations exist?</li> </ul>
TPB core constructs (foundation) and further salient aspects (extension)	<ul style="list-style-type: none"> <li>Attitude: How do you generally perceive consumers' attitudes toward income protection products?</li> <li>Subjective norm: How important are other people's opinions for your consumers when it comes to financial planning and insurance decision-making?</li> <li>Perceived behavioral control: Based on your experience, do consumers feel confident navigating the insurance purchase process? Do they understand how private disability insurance works (i.e., what is covered and under what conditions)?</li> <li>Further aspects: Based on your experience: Are there any other important reasons that encourage or discourage the purchase of private disability insurance products? For example, consider factors such as age, gender, and financial education.</li> </ul>
Summary and reflection	<ul style="list-style-type: none"> <li>Looking again at the overall factors that promote or hinder the purchase of private disability insurance, what are the three most important factors?</li> </ul>

Note. All questions are translated from German.

### Appendix 2. Items of the Measurement Instrument

Variable	Code	Item	Source
Attitude toward DI (ATDI)	ATDI1	I think it's a good idea to take out private DI.	Masud et al. (2021)
	ATDI2	I think private DI makes sense.	
	ATDI3	I think private DI is important for everyone.	
Purchase intention (PI)	PI1	I will be taking out private DI in the near future or have already done so.	Brahmana et al. (2018), Masud et al. (2021)
	PI2	I will encourage my relatives and friends to take out private DI.	
	PI3	It is unlikely that I will take out private DI in the foreseeable future. (rc)	
Perceived behavioral control (PBC)	PBC1	I know people who can help me take out suitable private DI (e.g., insurance brokers).	Masud et al. (2021)
	PBC2	I don't have any helpful sources for taking out private DI. (rc)	
	PBC3	I have sufficient knowledge to take out suitable private DI.	
	SN1	My parents and family think that private DI is important for me.	

Subjective norm (SN)	SN2	People close to me (e.g., friends, colleagues) are of the opinion that private DI is important.	Fishbein & Ajzen (2010)
Perceived product benefits (PPB)	PPB1	Private DI gives me a feeling of financial security.	Weedige et al. (2019)
	PPB2	Taking out private DI means that I am making financial provision for myself and my family.	
	PPB3	Private DI secures my standard of living if I can no longer practice my profession.	
	PPB4	Private DI reduces the risk of financial losses due to the unpredictability of the future.	
Perceived product risks (PPR)	PPR1	I'm afraid that taking out private DI is not a good investment.	Weedige et al. (2019)
	PPR2	In relation to my monthly income, private DI is a considerable financial burden.	
	PPR3	I am unsure whether I will get the protection I want by taking out private DI.	
	PPR4	I'm afraid that insurers won't pay fairly and quickly if I become disabled.	
Disability insurance knowledge (DIK)	DIK1	Private occupational DI pays out in the event of occupational disability, regardless of how long the policy has been in place. (agree)	own, Weedige et al. (2019)
	DIK2	The public DI pays out if I can no longer work in my trained profession, but can work in other professions. (disagree)	
	DIK3	I am only eligible for public DI if I have been covered by state pension insurance for at least five years. (agree)	
	DIK4	I am eligible for public DI if health reasons limit me to working a maximum of three hours a day. (agree)	
	DIK5	Employees, the self-employed, housewives, househusbands, schoolchildren, and students can take out private DI. (agree)	
	DIK6	"Incapacity to work" and "occupational disability" mean the same thing. (disagree)	
	DIK7	Benefits from private DI offset public DI benefits; that is, state benefits are reduced by private benefits. (disagree)	
	DIK8	Currently, the average benefit of public DI is around 1,000 EUR per month. (agree)	
Purchase behavior (PB)		Do you have private DI at the moment? (yes, no)	own
Perceived individual disability risk (PIDR)		What do you think: How likely is it that you will become occupationally disabled at least once during your working life?	Lermer et al. (2016)

Note. All items are translated from German; rc: reverse coded.