



# Testing the Serially Mediating Role of Consumer, Perceived Product and Brand Innovativeness in Services<sup>1</sup>

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<b>Tüketici, algılanan ürün ve marka yenilikçiliğinin seri aracılık rolünün hizmetlerde test edilmesi</b>	<b>Testing the serially mediating role of consumer, perceived product and brand innovativeness in services</b>
<b>Öz</b> Çalışmanın amacı tüketici, algılanan ürün ve marka yenilikçiliğinin, ürün türü (mal ve hizmet) ile tüketici davranışları (markaya yönelik tutum, satın alma niyeti ve daha fazla ödeme isteği) arasındaki ilişkideki seri aracılık rolünü araştırmaktır. Bu doğrultuda geliştirilen iki senaryo anket sorularıyla birlikte katılımcılara yönlendirilmiştir. Hipotezler SPSS process makrosu Model 6 ile test edilmiştir. Bulgular, araştırmaya konu yenilikçilik türlerinin seri aracılık etkisinin, tüketicilerin markaya yönelik tutumunu ve satın alma niyetini hizmetler için mallara kıyasla daha fazla artırdığını ortaya koymuştur.	<b>Abstract</b> The purpose of the study is to investigate the serially mediating role of consumer, perceived product and brand innovativeness between product type (goods vs services) and consumer responses which are brand attitude, purchase intention and willingness to pay more. Two scenarios were developed and directed to participants together with survey questions. The hypotheses were tested with Model 6 of the process macro in SPSS. The findings revealed that the serial mediation of innovativeness types is effective for services increasing consumers' brand attitude and purchase intention.
<b>Anahtar Kelimeler:</b> Tüketici Yenilikçiliği, Algılanan Ürün Yenilikçiliği, Marka Yenilikçiliği, Seri Aracılık Etkisi	<b>Keywords:</b> Consumer Innovativeness, Perceived Product Innovativeness, Brand Innovativeness, Serial Mediation Analysis
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## 1. Introduction

Innovation has been the focus of research from diverse disciplines for nearly half a century, yet the underlying capability of companies in producing innovation and the co-occurrence of corporate and personal characteristics in this process has not attracted similar attention. Innovation acts as a major driver of economic growth, which urges companies to innovate to keep their competitive power (Brexendorf et al., 2015; Pauwels et al., 2004). On the other hand, how consumers evaluate the innovativeness of the product and the brand, together with their self-perception of innovativeness is a neglected issue to be considered (Hetet et al., 2020a).

Companies invest on innovation and its publicity millions of dollars every year. Perception of their efforts positively impacts their brand image, which increases the necessity to be an innovative firm. The mutually dependant nature of brand and innovation management yields positive consumer reactions which are explained by the brand-innovation virtuous cycle, where brands provide a strategic focus for innovations, leading to the introduction and adoption of innovations with the support of brands, which result in the more favourable perception of brands and the cycle again turns to a strategic focus and guidance for innovations (Brexendorf et al., 2015). In this cycle, consumer perceptions of brand and product innovativeness affect how the brand is perceived. Consumers are more prone to embrace new products of the brands that they consider as innovative (Henard & Dacin, 2010).

Innovativeness is defined as the ability or tendency of an individual (Midgley & Dowling, 1978), an organisation (Boisvert & Ashill, 2011) or a society (Nasierowski & Arcelus, 2012) to generate and adopt new ideas, products or processes; the underlying capability leading to innovation. This can be innovativeness of the consumer, which is “the degree to which an individual makes innovation decisions independently of the communicated experience of others” (Midgley & Dowling, 1978), of the product, which is defined from consumers’ perspective as relative novelty of the new product and the degree that the new product is perceived as useful by the consumers (Shams et al., 2020), or the innovativeness of the brand, which is “the extent to which consumers perceive brands as being able to provide new and useful solutions to their needs” (Eisingerich & Rubera, 2010).

Innovation has been researched from a social and natural sciences perspective in a multitude of studies. Despite the long history of innovation research, innovativeness from the consumers perspective is a recent topic with a research history of two decades (Chao & Reid, 2016; Jürgensen & Guesalaga, 2018). Studies have revealed the effect of various innovativeness and innovativeness-related factors on consumer responses such as purchase intention (Shams et al., 2020), brand equity (Yang & Wang, 2024) and attitude (Hwang, Lee & Kim, 2019). Furthermore, innovativeness types enable companies to develop and introduce creative and impactful solutions to consumer needs while adapting to the changing dynamics of the market and competition. Thus, it becomes possible to differentiate through value created, and increase consumer engagement and loyalty. Presenting the relevance of innovativeness types from consumer perspective would enable the developing of more effective marketing strategies, having deeper consumer insights, enhancing branding theories, facilitating competitive strategy models and shaping the research on consumer perception.

Prior research has examined the effect of product type on various consumer responses such as purchase intention, brand attitude, word of mouth or willingness to pay more (Hwang et al., 2019; Shams et al., 2020). Yet, limited attention has been paid to the mechanism explaining these relationships. The role of different innovativeness types in these relationships is one of the underexplored issues. Moreover, though the literature provides the effect of innovativeness types on consumer responses (Eryigit, 2020; Hetet et al., 2020; Zhang et al., 2020), the effect of these mediators within the context of goods vs services, and how they sequentially shape these relationships remain unexplained.

In light of the above explained significance of innovativeness, and the limited number of studies on the role and effects of innovativeness, the current study aims to investigate the nature of the association between innovative products or services and three consumer responses (namely purchase intention, brand attitude and willingness to pay more), and whether consumer, product and brand innovativeness mediate this relationship in a causally connected manner.

## **2. Theoretical Background and Hypothesis Development**

Innovation efforts have long been a significant driver of success in competitive advantage in the production of both goods and services. Besides the similarities that the production of both goods and services harbour in innovativeness, they have differences in terms of nature, process and outcome of innovation. Both the innovation in goods and services are customer-centric, feature technological integration, and require organisational learning and acknowledgment of internal competencies. On the other side, goods and services differ in some aspects of innovation which requires further understanding of the intervening factors in the process shaping consumer attitudes and behaviour towards goods and services. Services are intangible, which makes their innovation dependant on human interaction (Zeithaml et al., 1985), foregrounding the role of co-creation and involvement in service innovation process. Adaptation and adaptability of services to different contexts and real-time dependency are other major differences in innovation in services (den Hertog et al., 2010; Michel et al., 2008). Whereas goods rely on automation and mechanisation, services require skills and interactions of employees, which affects the success of innovations made on services (Bowen & Ford, 2002). Literature also assumes that branding is more important for services when compared with the goods as it is difficult for consumers to evaluate services (Krishnan & Hartline, 2001). How the results of innovation efforts are measured is another issue that goods and services differ, where variables like customer satisfaction, loyalty and engagement are harder to measure for the effects of innovations in services (Cainelli et al., 2006). Hence, it would generate meaningful insights to test how innovativeness perceptions differ between goods and services for consumers.

### **2.1. Signalling Theory**

From the perspective of evolutionary psychology, the first issue in marketing is to ensure the believability of an advertisement, brand, or other marketing tools to convince audience members to turn into actual consumers. Examining different pathways of reliability signals would provide a framework for determining opportunities to increase consumers' perceptions of signal reliability. This approach would provide room to use signals for affecting consumer psychology. Signalling theory investigates the communication of information sent from the sender to the receiver. A signal is any physical or behavioural characteristic of an individual that has evolved to influence the behaviour of others (Smith & Harper, 2003). These signals

transmit information about the characteristics of the sender (Zahavi, 1975). The fundamental principles of signalling theory are to understand how signals could be designed effectively and efficiently, and how signal reliability could be ensured. The theory was originally developed to describe the information asymmetry between a business and its employees within the discipline of economics. Later, it was applied to marketing, where a brand communicates information on intangible attributes, such as innovativeness (Henard & Dacin, 2010).

Signaling theory states that signallers (e.g., a brand) convey information with the purpose of manipulating unobservable characteristics (e.g., product quality) through signals (Shams et al., 2015). The perception of the brand can serve as a signal of the attributes of the product/service. Therefore, from a consumer's perspective, innovativeness can positively influence consumers' evaluation of a product/service and turn into positive behavioural responses.

Signaling theory is also used to explain the effect of innovativeness types from the consumer's perspective (Spence, 1974). The promotion of product and brand innovation would serve as a signal to potentially influence innovative consumers' behaviour (Stock, 2011). Moreover, customers cannot obtain full information about new products and services at the early stage. In this context, relevant information provided by the product or the brand could serve as a clue for customers who are unfamiliar with a product (Pappu & Qvester, 2016).

## **2.2. Consumer Innovativeness**

Innovation efforts mostly focus on how the product is designed and marketed, and which organisational or product characteristics affect its adoption, yet the perspective of the consumer is mostly ignored (Bartels & Reinders, 2011). However, the failed innovations are mostly the ones overlooking how consumers' feel and think. Consumer innovativeness is an important trait that shapes consumers' adoption of innovations and their behavioural outcomes. It is acknowledged as the propensity to purchase new products more frequently and quickly when compared with other people. Midgley & Dowling (1978) define consumer innovativeness as "the degree to which an individual makes innovation decisions independently of the communicated experience of others" (pg. 235). For Hirschman (1980) consumer innovativeness refers to "the propensities of consumers to adopt novel products, whether they are ideas, goods, or services".

Research on the topic distinguished two main types of consumer innovativeness: innate innovativeness and domain-specific innovativeness. Innate innovativeness is acknowledged as "the predisposition to buy new and different products and brands rather than remain with previous choices and consumption patterns" (Steenkamp et al., 1999). It is an innate tendency (Clark & Goldsmith, 2006; Hirschman, 1980) shared by all members of a society (Midgley & Dowling, 1978). The construct is also named open-processing innovativeness, global innovativeness and dispositional innovativeness (Bartels & Reinders, 2011). Domain-specific innovativeness, on the other hand, emerged as a criticism of this perspective and is defined as "the tendency to learn about and adopt innovations within a specific domain of interest and, therefore, taps a deeper construct of innovativeness more specific to an area of interest" (Citrin et al., 2000). Authors supporting this perspective suggest that innovativeness of a consumer varies across product categories (Goldsmith et al., 1995; Klink & Athaide, 2010). Bartels & Reinders (2011) incorporated a third dimension, namely innovativeness as actualised behaviour, which represents behaviour such as a trial, purchase, ownership and

usage. This trait is triggered by motivational, hedonic, cognitive and social factors (Hwang, Kim, et al., 2019), cultural factors (Steenkamp et al., 1999), and country characteristics (Tellis et al., 2009).

Innovativeness trait of a consumer acts as a trigger for an inclination to assess the innovative aspects of a product more carefully and evaluate it as an innovative product. This positive tendency leads to positive attitudinal and behavioural outcomes (Citrin et al., 2000; Park et al., 2007; Reisenwitz et al., 2007). Previous studies also mostly focused on consumer traits shaping the innovativeness aspect of a consumer and neglected brand responses and behavioural outcomes (Eryigit, 2020). It is, thus, worth wondering if the product type, whether it is a good or a service, affects consumer responses through the mediating role of consumer innovativeness.

H1: Consumer innovativeness acts as a mediator between product type and consumer responses which are purchase intention, brand attitude and willingness to pay more such that for services consumer innovativeness leads to more positive brand attitude (H1a), higher purchase intention (H1b), and higher willingness to pay more (H1c).

### **2.3. Consumer Perceived Product Innovativeness**

Product innovativeness is a crucial concept in innovation literature and indicates the novelty degree of a product (Zhang et al., 2016). It has a key role in positioning a product or service before it is launched (Calantone et al., 2006). The meta-analysis testing the correlation between product innovativeness and new product performance revealed positive and significant results (Szymanski et al., 2007), indicating the vitality of product innovativeness for a firm. Product innovation is also positively associated with financial performance (Sorescu & Spanjol, 2008). It is mostly addressed from the perspective of the firm providing the innovative product, however, it should be acknowledged that consumers play an important role in deciding and selecting the product among its alternatives (Boisvert & Khan, 2022), thus having a determining role.

Previous research revealed that product innovativeness would not bring success if consumers could not easily understand the novelty of the product (Boisvert & Khan, 2022). Thus, perceived product innovativeness emerges as a significant variable which is defined as “the degree to which a product viewed by consumers possesses new and unique attributes as compared with other homogenous products, to describe consumers’ perception of the innovation” (Zhang et al., 2020). Previous studies mostly revolved around the three main issues which are conceptualization of the construct, its effect on various outcomes and its possible drivers (Shams et al., 2020). The research of Boisvert and Khan (2022), on the other hand, grouped the antecedents of perceived product innovativeness into four categories novelty of the product, effectiveness of the product, usage friendliness and product aesthetics. Still, findings of all studies are limited to certain variables tested together with perceived product innovativeness.

Consumers' perceptions of product innovativeness influence their attitude and behaviour (Alexander et al., 2008; Fu & Elliott, 2013; Schreier et al., 2012), attitude toward the brand (Hubert et al., 2017; Shams et al., 2020), and willingness to pay more (Fu & Elliott, 2013; Zhang et al., 2020). The product type is assumed to act as a determinant of this effect, where previous studies reveal that when services are perceived as innovative, consumers' purchase intention display a significant increase as this is a less expected situation when compared with perceived innovativeness of a good where innovation is acknowledged to be expected and less novel (Berry et al., 2006). Hence, the variability in the effect of perceived product innovativeness on consumer responses between goods and services is worth researching, which leads to the second hypothesis of the research:

H2: Perceived product innovativeness acts as a mediator between product type and consumer responses which are purchase intention, brand attitude and willingness to pay more such that for services perceived product innovativeness leads to a more positive brand attitude (H2a), higher purchase intention (H2b), and higher willingness to pay more (H2c).

#### **2.4. Consumer Perceived Brand Innovativeness**

The concept of brand innovativeness has garnered increasing attention in the marketing literature, as it holds significant implications for understanding consumer behavior and informing strategic brand management decisions. Innovativeness has been examined at various levels, including the product, firm, and more recently, the brand level (Bartels & Reinders, 2011). Traditionally, innovativeness has been studied from the firm's perspective, focusing on a company's capability to develop and introduce new products and services. However, the concept of consumer perceived brand innovativeness has emerged as a distinct and critical construct, as it captures the extent to which consumers perceive a brand as innovative.

It is highly possible that consumers would regard a brand as innovative if its new and innovative efforts affect the market (Kunz et al., 2011). The concept of brand innovativeness has recently been listed among innovativeness literature, where the first attempt to conceptualize it was proposed by Quellet (2006) as the perception of consumers regarding the interest in and support of a brand of novel ideas, innovation, experiments and creative processes. Eisingerich and Rubera (2010) made a similar definition stating that brand innovativeness is "the extent to which consumers perceive brands as being able to provide new and useful solutions to their needs". It refers to long-term brand perception embracing subjective evaluations of consumers. Brand innovativeness presents products, services and brands that satisfy consumer needs, leading to transformation of the business into a form that increases its sustainable competitive advantage (Nguyen et al., 2016).

Brand innovativeness generates excitement and increases brand loyalty, acts as a signal to consumers besides increases their tolerance towards mishaps (Lin et al., 2019). It also affects their adoption of a product. Previous research findings indicate that brand innovativeness positively affects brand attitude (Boisvert & Ashill, 2011), brand loyalty (Kunz et al., 2011), brand commitment (Eisingerich & Rubera, 2010b), brand love (Malik & Malik, 2019), brand trust (Srivastava et al., 2016) and ensures stability of buyer – seller relationship (Falkenreck & Wagner, 2011).

Product performance arising from the innovativeness of a product is influential, yet it is suggested that for most brands, an additional purpose of developing new products is to give signals about the innovativeness of a brand (Aaker, 2007). Hence, brand innovativeness

focusing on consumer needs would arise positive consumer attitudes and behaviour, including intensified consumer experience (Coelho et al., 2020; Yang & Wang, 2024). The perception of brand innovativeness can be reinforced by the launch of new, innovative products, which improves brand attitudes (Boisvert & Ashill, 2011; Hetet et al., 2020).

Similar to consumer innovativeness and perceived product innovativeness, consumer evaluations of brand innovativeness may vary with the type of the product due to the idiosyncratic nature of services. Previous studies revealed differences between goods and services in terms of customer satisfaction (Stock, 2011), innovation process (Ettlie & Rosenthal, 2011) or brand image (Lin & Zhou, 2022). Accordingly, it is considered necessary to analyse whether this difference exists for consumer responses, through the mediating role of brand innovativeness leading to the third hypothesis of the study:

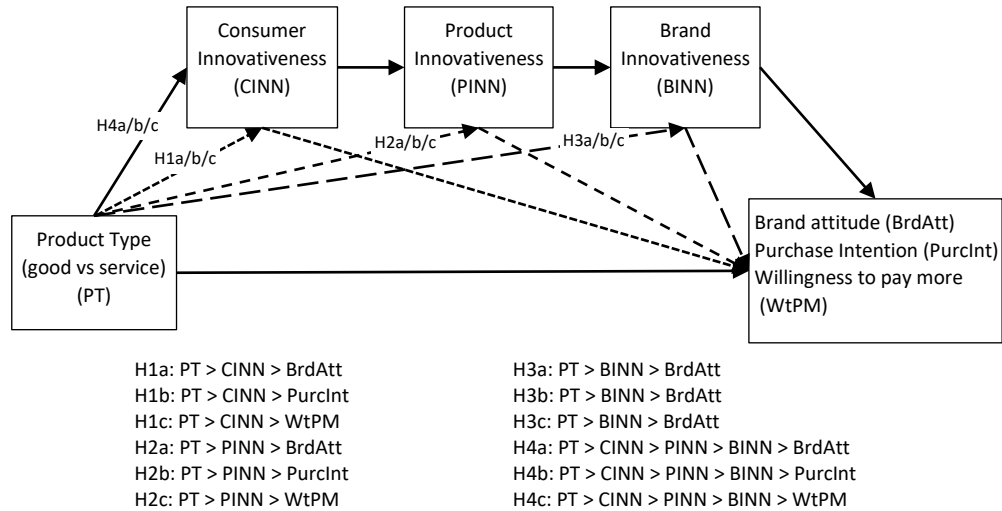
H3: Perceived product innovativeness acts as a mediator between product type and consumer responses which are purchase intention, brand attitude and willingness to pay more such that for services perceived product innovativeness leads to more positive brand attitude (H3a), higher purchase intention (H3b), and higher willingness to pay more (H3c).

Having established a relationship between product type (goods vs services) and consumer responses (purchase intention, brand attitude, willingness to pay more) through separate mediator roles of consumer innovativeness, perceived product innovativeness and perceived brand innovativeness, we seek to expand our knowledge by an assumed serial mediation process. Specifically, a sequential process is predicted where for services, consumer innovativeness leads to higher perceived product innovativeness, which in turn leads to higher perceived brand innovativeness and subsequently, greater purchase intention, brand attitude and willingness to pay more. To state formally:

H4: Consumer innovativeness, perceived product innovativeness and perceived brand innovativeness serially mediate the relationship between product type (goods vs services) and consumer responses which are purchase intention, brand attitude and willingness to pay more, such that for services, consumer innovativeness leads to higher perceived product innovativeness, which turns into higher brand innovativeness which in turn results in higher brand attitude (H4a), higher purchase intention (H4b) and higher willingness to pay more (H4c).

Figure 1 below presents a brief and overall display of the research model with the hypothesis expressed within.

Figure 1. Research Model



### 3. Methodology

#### 3.1. Study Design, Participants and Measurement Instrument

A cross-sectional study was designed and a web-based questionnaire survey was prepared in order to test the hypothesis of the study. The study employed a model with a multicategorical independent variable (goods vs services) and three dependant variables which are purchase intention, brand attitude and willingness to pay more. Three variables acting as mediators between product type and the dependant variables are consumer innovativeness, perceived product innovativeness and brand innovativeness. Two scenarios were developed where either an innovative good (television) or an innovative service (online retail) is presented to the participants. In determining the good and service to be used in the scenarios, the criteria used was to choose a product that does not require product expertise, that is used widely among consumers and that allows developing innovative features. Thus, tv and online retail were selected. The innovative features of the products were determined through pre-tests for each product with 50 participants, where they were asked to rate the features according to their innovativeness (1-not innovative at all, 5 -highly innovative). The highest ranked five features were included in the scenarios. The scenarios did not include much detail except for innovative features. There were not any brand names used to prevent any prejudice to emerge towards the brand. Before disseminating the survey form, a pilot test was carried out to eliminate possible errors in wording, arrangement of questions and clarity. No significant corrections were made to the survey form.

Before starting the research, ethical committee permission was taken from the relevant authority. The sample of the research was determined as consumers over the age of 18. As neither of the products required a specific consumer group, convenience sampling method was employed. Still, participants were asked about their experience regarding online retail shopping and about features of a television. As there were not any participants who stated that s/he does not have any idea about online retailing or television, we did not need to



exclude any of the participants from the research. The online questionnaire began with a short explanation of the research purpose and scope of the survey. And a consent question on survey participation was included before the respondents could read the scenario. Following this phase, participants first read the scenario on either an innovative good or an innovative service, and then replied to survey questions of mediating and dependant variables, followed by the second part of the survey measuring demographics. Participants were randomly assigned to one of the two conditions. Convenience sampling method was employed with 102 participants.

The mean age of the participants was 28,5 varying between 20 and 42. There was an almost balanced gender distribution, where 56% of the participants were female, 65% were single, nearly 80% had a university or higher degree.

The scales used in measuring each construct were adapted from previous research; consumer innovativeness (Goldsmith & Hofacker, 1991), perceived product innovativeness (Shams et al., 2020), brand innovativeness (Coelho et al., 2020), purchase intention (Wong & Haque, 2021), brand attitude (Hetet et al., 2020a), willingness to pay more (Hubert et al., 2017). All items were measured using 7-points Likert scale, ranging from "1=strongly disagree, 7=strongly agree".

The data collected was prepared and analysed using SPSS. Preliminary tests and exploratory factor analysis (EFA) was performed first, followed by confirmatory factor analysis (CFA) and reliability analysis. Later, mediation and serial mediation analysis were made using Model 6 in SPSS (Hayes, 2013).

## **3.2. Results**

### **3.2.1. Measurement Model**

Although the scales were adapted from previous studies, exploratory factor analysis was conducted for construct identification. Preliminary tests revealed that data distributed normally, with skewness and kurtosis values below 3, and before processing to the analysis, missing values were replaced to the mean. EFA that was performed separately to test the factor structure revealed that factor loadings of all items ranged from .778 to .985 and each item was properly loaded to the relevant factor. However, for the consumer innovativeness scale, one item loaded into two factors with very close factor loadings. After excluding this item from the list and repeating EFA, two items again formed a separate factor with high factor loadings. However, the rule of thumb suggests that a factor should have at least three variables. In line with this approach, the items were excluded from the analysis and the test was repeated for the two items. Yet, none of the loaded onto the main factor, which resulted in eliminating those two items. Consumer Innovativeness scale composed of three items in the following tests.

Following EFA, model evaluation for convergent validity was performed through calculating composite reliability (CR) and average variance extracted (AVE). Table 1 presents the findings of EFA and CFA where all factor loadings were higher than 0.70, CR values were higher than 0.70 and AVE values exceed 0.50 (Hair et al., 2018). For internal reliability, Cronbach's alpha values were calculated for all scales, and each one is found to be higher than the threshold level of 0.70 (Pesämaa et al., 2021).

Table 1. EFA Results, AVE, CR and Reliability Values

Construct	Item	Factor Loading	AVE	CR	Cronbach's alpha
BINN	1. ... is an innovative brand in its own industry.	.893	.870	.964	.950
	2. ... challenges the current/prevalent ideas in the market.	.941			
	3. ... brings innovative ideas to its market.	.942			
	4. ... is an innovative brand.	.955			
PINN	For me this product is:	.908	.798	.959	.944
	1. predictable-uncommon				
	2. usual – unusual	.778			
	3. simple - unique	.928			
	4. ordinary - original	.932			
	5. useful-useless	.905			
CINN	6. appropriate-inappropriate	.899	.769	.909	.845
	2. If I hear that a new .... has arrived to a local shop, I would consider buying it.	.902			
	4. I would think of buying a new ... even if I have not heard it before.	.907			
BrdAtt	6. I know more about ... than other people do.	.819	.933	.976	.964
	1. My feelings about .... is very positive/very negative	.957			
	2. I love ....	.955			
PurcInt	3. .... is attractive.	.985	.897	.972	.962
	1.I am willing to (buy this television / buy from this online retailer) when shopping (for a new television / ...).	.929			
	2. I intend (to use this website / to buy this television) for my next purchase.	.941			
	3. It is likely that I will repurchase (from this website / this television) in the near future.	.969			
WtPM	4. When I need to make (shopping from an online retailer / a television purchase), this (website / television) is my first choice.	.949	.926	.974	.960
	1. I am willing to pay more for the brand [in the scenario] compared to similar products of other brands.	.947			
	2. I would pay more for [the product /service in the scenario].	.978			
	3. [Branded product /service in the scenario] is worth paying more	.962			

Note: BINN: Brand innovativeness, PINN: Perceived product innovativeness, CINN: Consumer innovativeness, BrdAtt: Brand attitude, PurcInt: Purchase intention, WtPM: Willingness to pay more

Source: Authors' own elaboration

### 3.2.2. Hypothesis testing

To test the study hypothesis, Model 6 of the process macro in SPSS was employed as suggested by Hayes (2013). Table 2 and Table 3 present the results of hypothesis tests, providing standardized estimates, standard errors with lower and upper confidence intervals which were derived from bootstrap 5000 resamples. Bootstrap resampling was used as it does not make any assumption of normality and also it can be applied confidently to small

sample sizes (Preacher & Hayes, 2004). The relationships are deemed significant when the confidence intervals do not pass from zero (Hayes, 2018).

The results of hypothesis tests revealed significant direct effect of product type on purchase intention ( $\beta = -.6530$ ,  $SE = .1810$ , 95% CI = [-1.0121, -.2938]) and willingness to pay more ( $\beta = -.9536$ ,  $SE = .2399$ , 95% CI = [-1.4297, -.4774]), but not on brand attitude ( $\beta = -.1386$ ,  $SE = .0993$ , 95% CI = [-.3356, .0584]). In the next step, separate roles of mediators were tested and the results indicated the mediating role of consumer innovativeness between product type and willingness to pay more where innovativeness of a consumer leads to an increase in willingness to pay more for services ( $\beta = .2681$ ,  $SE = .1456$ , 95% CI = [.0244, .5827]). Perceived product innovativeness as a mediator was found significant for brand attitude ( $\beta = .6098$ ,  $SE = .1914$ , 95% CI = [.2536, 1.0020]) and willingness to pay more ( $\beta = .56531$ ,  $SE = .2503$ , 95% CI = [.1512, 1.1238]). The third mediator, brand innovativeness, was not found to have a significant role as a mediator between product type and the three consumer responses.

Table 2. Mediating role of CINN, PINN and BINN

Model pathways	Effect	Boot SE	LLCI	ULCI	Remark
Product type → CINN → BrdAtt	-.0195	.0320	-.0946	.0354	H1a: Not confirmed
Product type → CINN → Purclnt	-.0027	.0481	-.0971	.1053	H1b: Not confirmed
Product type → CINN → WtPM	.2681	.1456	.0244	.5827	H1c: Confirmed
Product type → PINN → BrdAtt	.6098	.1914	.2536	1.0020	H2a: Confirmed
Product type → PINN → Purclnt	.2723	.2194	-.0789	.7580	H2b: Not confirmed
Product type → PINN → WtPM	.5653	.2503	.1512	1.1238	H2c: Confirmed
Product type → BINN → BrdAtt	.0269	.0379	-.0303	.1184	H3a: Not confirmed
Product type → BINN → Purclnt	.0757	.1161	-.0680	.3798	H3b: Not confirmed
Product type → BINN → WtPM	.0090	.0444	-.0562	.1247	H3c: Not confirmed

Source: Authors' own elaboration

The direct effects indicate that goods affect purchase intention and willingness to pay more positively compared to services. Yet, the findings of indirect effects present contrary results, indicating that the mediating roles of consumer innovativeness, perceived product innovativeness and brand innovativeness change the direction of the relationship on behalf of services. In Table 2, the results of the indirect relationships indicate that the mediating role of CINN between product type and dependent variables was found significant only for willingness to pay more (H1c). Perceived product innovativeness (PINN) acts as a significant mediator between product type and brand attitude (H2a) and willingness to pay more (H2c). The role of brand innovativeness (BINN) as a mediator was not found significant for any of the three dependent variables.

Table 3. Serial mediation analysis

Total effect	Direct effect	Relationship	Indirect effect	Confidence Interval	Conclusion
(Product type → BrdAtt) .8397 (.0003)	(Product type → BrdAtt) - .1386 (.1658)	Product type → CINN → PINN → BINN → BrdAtt	.0365	.0010 .1193	Full mediation
(Product type → Purclnt) .3473 (.1987)	(Product type → Purclnt) - .6530 (.0005)	Product type → CINN → PINN → BINN → Purclnt	.1027	.0038 .2841	Competitive mediation
(Product type → WtPM) .0999 (.7609)	(Product type → WtPM) - .9536 (.0001)	Product type → CINN → PINN → BINN → WtPM	.0122	-.0738 .1249	No serial mediation

Source: Authors' own elaboration

Table 3 presents the test results for serial mediation analysis, indicating that consumer innovativeness, perceived product innovativeness and brand innovativeness serially mediate the relationship between product type and brand attitude (H4a) and purchase intention (H4b), but does not mediate the relationship between product type and willingness to pay more (H4c). Therefore, H4a and H4b were supported and H4c and not supported. A joint assessment of findings suggest that innovativeness types affect brand attitude more positively for services compared to goods, and as the direct effect of product type on brand attitude is insignificant, there is a full mediation. Similarly, innovativeness types affect purchase intention more positively for services compared to goods, and there is a partial competitive mediation as indirect and direct effects are significant but they point opposite directions. Recent research suggest that mediation can be present even if there is not a total effect (O'Rourke & MacKinnon, 2018), as in purchase intention for the current study.

#### 4. Discussion and Conclusion

The main purpose of the study is to reveal the serial mediating role of consumer innovativeness, perceived product innovativeness and brand innovativeness between product type and three consumer responses which are brand attitude, purchase intention and willingness to pay more on the theoretical basis of signalling theory where innovativeness types act as signals for consumer for product type and affect their responses. The results disclose several expected and unexpected findings that enhance our perception of how consumer behaviour varies between goods and services.

The separate analysis of innovativeness types as mediators between product type (goods vs services) and consumer responses indicated that while brand innovativeness does not have a statistically significant mediating role, consumer innovativeness shapes only willingness to pay more for services, and perceived product innovativeness affects brand attitude and willingness to pay more on behalf of services. The significant effect of consumer innovativeness pro-services can be attributed to intangible and experiential nature of services which aligns with the novelty-seeking behaviour of consumers. Previous studies tested this variable with different antecedents and consequences, yet, to the best of the authors' knowledge, product type has not been used as an antecedent (Bartels and Reinders, 2011; Eryigit, 2020). Thus, the finding is a contribution to the existing literature. On the other hand, insignificant mediating role of consumer innovativeness between product type and consumer responses (namely brand attitude and purchase intention) could be ascribed to the fact that while consumers are willing to pay more for innovative services when they also describe

themselves as innovative, this approach does not necessarily turn into stronger brand attitude or a higher likelihood to buy.

The findings of the study revealed the significant mediator role of perceived product innovativeness for brand attitude and willingness to pay more in favour of services. The literature provides research on the significant mediating role of perceived product innovativeness between different antecedents and consumer responses (Fu & Elliott, 2013; Zhang et al., 2016; Kim & Kim, 2017) yet, as far as we know, product type has not been one of these antecedent. Thus, the study provides significant insights with regards to the effect of perceived product innovativeness as a mediator. It can be concluded that when services are perceived as innovative, they are more likely to resonate strongly with consumers thanks to their experiential nature, and this fact leaves room for novel experiences. However, the findings of the test indicate that these positive attitudes do not turn into purchase intention when the product is perceived as innovative.

A noteworthy result of the study is the lack of significant effect of brand innovativeness across all three consumer responses. Previous studies revealed the mediating role of this variable in other research contexts (Huaman-Ramirez et al., 2019; Lin & Zhou, 2022), however current study revealed that brand innovativeness does not act as a differentiating factor between goods versus services. The finding implies that while product- and consumer-level indicators play a role in shaping consumer responses, brand-level innovativeness may not be as influential. Although previous research suggest that goods and services differ in terms of the mediating effect of brand innovativeness (Stock, 2011), the non-significant role of this variable in the current study could be because consumers might have prioritized the features of goods or services over brand-level indicators within the study context, especially when tangible benefits are more important for them.

An overall evaluation of the above-explained mediating effects indicates a contrary finding when compared with direct effects of product type on consumer responses. In the direct effect analysis, goods evoked more positive responses from consumers. However, in mediation tests, services benefit more significantly from the influences of consumer and perceived product innovativeness. This indicates an opportunity for services of creating value and differentiating through innovation, which serves as a signal. On the other hand, innovativeness of a brand does not yield comparable returns on investment neither for products nor for services. This finding emphasizes the role of concentrating on product innovations that resonate with consumer expectations and needs.

The final hypothesis of the research is to test the sequential role of innovativeness types on consumer responses. Previous research supported the interplay between innovativeness types (Hubert et al., 2017; Jeong et al., 2017; Zhang et al., 2020), indicating the effect of consumer innovativeness on perceived product innovativeness (Zhang et al., 2020) or perceived product innovativeness on brand innovativeness (Hubert et al., 2017; Shams et al., 2020). However, the effect of these three innovativeness types in unison has not been tested before. The test reveals not only the sequential role of these variables, but also provides another evidence for the affect they have over each other. And the findings of the current research revealed that consumer, product and brand innovativeness serially mediate the effect of product type on consumer responses in favour of services. As the ultimate purpose of the study was to test the serially mediating role of the innovativeness types between product type and consumer responses, the findings have filled this gap, which has not been

tested in the literature before. This finding means that investing in these innovativeness types of services would yield more fruitful results when compared to goods. The findings underscore the role of innovativeness across consumer, product and brand levels to optimize innovation and behavioural response strategies in services. Previous studies tested the role of different innovativeness types on different outcomes (Huaman-Ramirez et al., 2019; Naz et al., 2023; Xu et al., 2024), their mutual relationship (Hubert et al., 2017; Zhang et al., 2020), or their role as a moderator or mediator (Adapa et al., 2020; Hetet et al., 2020a) in various contexts. Yet, to the best of our knowledge, their sequential relationship has not been tested before, which provides valuable insights into the use of these variables in understanding how they are related and in subsequent strategy development. The finding that innovativeness types yield fruitful results when used together compared to the findings of separate mediation tests indicates that for services, strengthening and consolidating the power of innovativeness types would serve as an important tool.

In light of the findings, the study provides theoretical and managerial implications. The study enhances the consumer behaviour literature by analysing the interplay between product type and consumer responses through the mediation of consumer, perceived product and brand innovativeness, integrating multiple dimensions of innovativeness. This finding enriches our understanding of how perceptions of innovativeness act as a mechanism associating product type and consumer outcomes. It also reveals that the innovativeness types would act as potent signals for services. Having the nature of intangibility and being experience-driven, services often rely on perceptual cues to differentiate themselves. Thus, innovativeness types could serve as an effective competitive advantage tool in the contexts where evaluation of a product is subjective, as in services. Furthermore, the study enhances the discussion on the effect of product type on consumer responses. The findings indicate the different pathways that goods and services follow, and the prominent role of innovativeness perceptions in services, compared to goods. The findings of the research provide theoretical explanation on the consumer processing of intangible attributes across product types.

Several managerial inferences could be deduced from the findings of the study. The first one could be listed as targeting innovative consumers, who are more willing to receive novel products. To appeal to this segment, marketing campaigns could focus on innovative attributes of the services through personalized channels of communication and by emphasizing the early adopter role of the consumer. Managers should also focus on perceived product innovativeness and communicate the product-level innovations clearly. While tangible benefits could increase consumers' innovativeness perceptions, service firms could explain the innovations through the service experience journey. The third insight for the managers is that an alignment is required between innovativeness types. Innovative brands could be successful when they are backed by product-level innovations and when they target the correct consumer segment. Therefore, a coherent innovation strategy is required. This approach should be supported by regular assessment of brand-level innovation strategies through monitoring the market and the consumers. Developing brand messages that align with the changing innovativeness perceptions of consumer would ensure efficient translation of strategies into consumer responses.

The findings of the study are subject to limitations of the cross-sectional nature and using certain products in the experiments. Another limitation of the study is its small sample size. However, at least 50 cases for each cell are acknowledged as appropriate for experiments and

also, bootstrap resampling used in process analysis compensates for the small sample sizes (Preacher & Hayes, 2004). And these limitations suggest further research directions. The relationships could be investigated over time to see how they have evolved. Moreover, other variables such as consumer demographics or cultural dimensions could be examined. Future studies could consider using other behavioural responses such as word-of-mouth and loyalty. Also, a comparison of digital and physical goods and services would provide valuable insights.

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## Extended Summary

## Testing the serially mediating role of consumer, perceived product and brand innovativeness in services

Diverse disciplines have studied innovation for nearly half a century, however the co-occurrence of corporate and personal characteristics in this process has not attracted a similar attention. Innovation is a major driver of economic growth and urges companies to sustain their innovation efforts. Innovativeness is the underlying capability to innovation, which has been researched in multitude of studies. From the consumer's perspective, it is a recent topic despite the long history of innovation research. Besides, consumers' evaluation of product and brand level innovativeness, together with their perception of themselves as innovative consumers is a neglected issue to be considered. In light of this information, and the limited number of research on the role and effects of innovativeness types, the purpose of the study is to investigate the nature of the association between innovative products or services and three consumer responses (namely purchase intention, brand attitude and willingness to pay more), and whether consumer, product and brand innovativeness mediate this relationship in a causally connected manner. Signaling theory is the theoretical framework, which suggests that signallers (e.g., a brand) convey information with the purpose of manipulating unobservable characteristics (e.g., product quality) through signals. The variability in the effect of product type, whether it is a good or a service, affects consumer responses through the mediating role of consumer, product and brand level innovativeness leads to formulating the four hypotheses of the research:

H1: Consumer innovativeness acts as a mediator between product type and behavioural outcomes which are purchase intention, brand attitude and willingness to pay more such that for services consumer innovativeness leads to more positive brand attitude (H1a), higher purchase intention (H1b), and higher willingness to pay more (H1c).

H2: Perceived product innovativeness acts as a mediator between product type and behavioural outcomes which are purchase intention, brand attitude and willingness to pay more such that for services perceived product innovativeness leads to a more positive brand attitude (H2a), higher purchase intention (H2b), and higher willingness to pay more (H2c).

H3: Perceived product innovativeness acts as a mediator between product type and behavioural outcomes which are purchase intention, brand attitude and willingness to pay more such that for services perceived product innovativeness leads to more positive brand attitude (H3a), higher purchase intention (H3b), and higher willingness to pay more (H3c).

H4: Consumer innovativeness, perceived product innovativeness and perceived brand innovativeness serially mediate the relationship between product type (goods vs services) and consumer responses which are purchase intention, brand attitude and willingness to pay more, such that for services, consumer innovativeness leads to higher perceived product innovativeness, which turns into higher brand innovativeness which in turn results in higher brand attitude (H4a), higher purchase intention (H4b) and higher willingness to pay more (H4c).

A cross-sectional study was designed and a web-based questionnaire survey was prepared in order to test the above-explained hypothesis. The study employed a model with a multi-categorical independent variable (goods vs services) and three dependant variables which are brand attitude, purchase intention and willingness to pay more. Three variables acting as mediators between product type and the dependant variables are consumer innovativeness, perceived product innovativeness and brand innovativeness. Two scenarios were developed where either an innovative good (television) or an innovative service (online retail) was presented to the participants. The innovative features of the products were determined through pre-tests for each product.

Participants first read the scenario on either an innovative good or an innovative service, and then replied to survey questions of mediating and dependant variables, followed by the second part of the survey measuring demographics. They were randomly assigned to one of the two conditions. The convenience sampling method was employed with 102 participants. The mean age of the participants 28,5 varying between 20 and 42. There was an almost balanced gender distribution, where 56% of the participants were female, 65% were single, and nearly 80% had a university or higher degree.

EFA that was performed separately to test the factor structure revealed that factor loadings of all items ranged from .778 to .985 and each item was properly loaded to the relevant factor. Following EFA, model evaluation for convergent validity was performed by calculating composite reliability (CR) and average variance extracted (AVE). The findings of EFA and CFA indicate that all factor loadings were higher than 0.70, CR values were higher than 0.70 and AVE values exceeded 0.50.

The results of hypothesis tests revealed significant direct effect of product type on purchase intention ( $\beta = -.6530$ ,  $SE = .1810$ ,  $95\% CI = [-1.0121, -.2938]$ ) and willingness to pay more ( $\beta = -.9536$ ,  $SE = .2399$ ,  $95\% CI = [-1.4297, -.4774]$ ), but not on brand attitude ( $\beta = -.1386$ ,  $SE = .0993$ ,  $95\% CI = [-.3356, .0584]$ ). In the next step, separate roles of mediators were tested and the results indicated the mediating role of consumer innovativeness between product type and willingness to pay more where innovativeness of a consumer leads to an increase in willingness to pay more for services ( $\beta = .2681$ ,  $SE = .1456$ ,  $95\% CI = [.0244, .5827]$ ). Perceived product innovativeness as a mediator was found significant for brand attitude ( $\beta = .6098$ ,  $SE = .1914$ ,  $95\% CI = [.2536, 1.0020]$ ) and willingness to pay more ( $\beta = .56531$ ,  $SE = .2503$ ,  $95\% CI = [.1512, 1.1238]$ ). The third mediator, brand innovativeness, was not found to have a significant role as a mediator between product type and the three consumer responses.

A joint assessment of findings suggests that innovativeness types affect brand attitude more positively for services compared to goods, and as the direct effect of product type on brand attitude is insignificant, there is a full mediation. Similarly, innovativeness types affect purchase intention more positively for services compared to goods, and there is a partial competitive mediation as indirect and direct effects are significant but they point opposite directions. The findings imply that while product- and consumer-level indicators play a role in shaping consumer responses, brand-level innovativeness may not be as influential. It could be because consumers prioritize the features of goods or services over brand-level indicators, especially when tangible benefits are more important to them. And the findings of the current research revealed that consumer, product and brand innovation serially mediate the effect of product type on consumer responses in favour of services, which means that investing in these innovativeness types in services would yield more fruitful results when compared to goods. The findings underscore the role of innovativeness across consumer, product and brand levels to optimize innovation and behavioural response strategies in services.