

THE EFFECTS OF PRODUCT QUALITY AND CUSTOMER RELATIONS TOWARDS CUSTOMER SATISFACTION AMONG FOOD CONSUMERS IN NARSINGDI, BANGLADESH WITH DELIVERY SPEED AS A MEDIATOR

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Article history

Received date : 3-8-2026

Revised date : 4-8-2026

Accepted date : 20-9-2026

Published date : 24-9-2026

To cite this document:

Mia, M. A., Hassan, H., Aziz, M. I., & Abdul Rahim Merican, R. M. (2026). The effects of product quality and customer relations towards customer satisfaction among food consumers in Narsingdi, Bangladesh with delivery speed as a mediator. *International Journal of Accounting, Finance and Business (IJAFB)*, 11 (68), 22 - 38.

Abstract: *This paper study examines the effect factor relationships among Product Quality, Customer Relations, Delivery Speed, and Customer Satisfaction in the food-processing industry in Narsingdi District, Bangladesh. Data were collected and obtained with structured questionnaire at 384 respondents among food consumers using a quantitative, cross-sectional survey design. The data gathered were analyse with IBM-AMOS version 18 for path analysis and mediation testing. The findings showed that Customer Relations significantly influences Delivery Speed ($\beta = .54, p < .001$) and Customer Satisfaction ($\beta = .36, p < .001$), while Product Quality ($\beta = .46, p < .001$) also has significant positive effects on both variables each. Delivery Speed positively affects Customer Satisfaction and partially mediates the relationships between Product Quality, Customer Relations, and Customer Satisfaction. The findings highlight the importance of integrating product quality, customer relationships, and timely delivery to improve customer satisfaction.*

Keywords: *Customer Satisfaction, Delivery Speed, Product Quality, Customer Relation, Mediator, Narsingdi Bangladesh*

Introduction

In this era, customer satisfaction is an important outcome for firms as it reflects customers' evaluations of their experiences with products and services and can influence subsequent behavioural responses (Oliver, 1980, 2015). Therefore, in the food processing industry, customer satisfaction is particularly important because consumers evaluate food products based on attributes such as quality, reliability, safety, and consistency (Garvin, 1987; Zeithaml, 1988). However, satisfaction is not determined by product characteristics alone. In which the quality of interactions between firms and customers can also influence customers' perceptions of organisational performance and purchasing experience (Kumar & Reinartz, 2018; Payne & Frow, 2017). At the same time, customer relations represent an important component of this process. Effective customer relations can facilitate communication, responsiveness, and firms' ability to understand and respond to customer needs (Kumar & Reinartz, 2018; Payne & Frow, 2017). Product quality, meanwhile, remains a fundamental determinant of customers' perceptions and evaluations because customers generally expect products to perform consistently and meet their expectations (Garvin, 1987; Zeithaml, 1988). Previous research has therefore provided substantial support for the relationship between customer-oriented practices, product quality, and customer satisfaction (Kumar & Reinartz, 2018; Konuk, 2019).

However, the relationship between these factors and customer satisfaction may also depend on the organisation's ability to deliver products efficiently. Delivery performance has long been recognised as an important component of logistics service quality and customer service (Mentzer et al., 2001). In particular, delivery speed can influence customers' perceptions of organisational responsiveness and reliability. When products are delivered within the expected timeframe, customers may perceive that the organisation has fulfilled its commitments, whereas delivery delays may negatively affect the overall customer experience (Ramanathan, 2010; Vakulenko et al., 2019).

Recent research further demonstrates the importance of logistics and delivery performance in shaping customer evaluations. For example, studies of logistics service quality have found that operational, information, personal contact, and related service-quality dimensions can contribute to customer satisfaction (Lin et al., 2023; Gupta et al., 2022). Research in food delivery contexts has similarly shown that service-quality attributes are associated with customer satisfaction and subsequent behavioural intentions (Wu et al., 2024). These findings suggest that customer satisfaction should not be considered solely from a product perspective but should also account for the operational processes by which products are delivered to customers.

Despite this evidence, an important gap remains concerning the role of delivery speed as a mediator. Existing studies have predominantly examined customer relations, product quality, and logistics performance as direct antecedents of customer satisfaction. Comparatively little attention has been given to whether delivery speed explains how customer relations and product quality translate into customer satisfaction. The present study addresses this gap by examining delivery speed as an intervening mechanism rather than treating it merely as an operational performance indicator.

The contextual setting also warrants attention. Much of the existing evidence concerning logistics service quality and delivery performance has been generated in e-commerce, logistics, and developed-market settings (Vakulenko et al., 2019; Lin et al., 2023). Evidence on the interrelationships among customer relations, product quality, delivery speed, and customer

satisfaction in the food processing industry in developing countries remains comparatively limited. This contextual gap is particularly relevant to Bangladesh, where the food processing sector represents an important part of the broader manufacturing and commercial environment. Narsingdi District provides a relevant setting for examining these relationships. The district has experienced increasing industrial and commercial development, including activities associated with manufacturing and food processing (Bangladesh Bureau of Statistics [BBS], 2023). Nevertheless, empirical evidence concerning how customer relations and product quality influence customer satisfaction through delivery performance among food consumers in Narsingdi remains limited.

Against this background, this study examines the effects of product quality and customer relations on customer satisfaction among food consumers, with delivery speed as a mediator, in Narsingdi, Bangladesh. Specifically, the study investigates the relationships among customer relations, product quality, and delivery speed, as well as the relationship between delivery speed and customer satisfaction, and examines the mediating effects of delivery speed on the relationships among customer relations, product quality, and customer satisfaction.

The study is guided by Expectation-Confirmation Theory (ECT), which proposes that customer satisfaction is influenced by the extent to which perceived performance confirms or disconfirms prior expectations (Oliver, 1980, 2015). In the present study, customer relations and product quality are important aspects of the customer experience. At the same time, delivery speed is an observable aspect of organisational performance through which customer expectations may be met. Timely delivery may therefore strengthen customers' perceptions that organisational commitments have been fulfilled, contributing to higher satisfaction.

The study consequently provides an integrated examination of product quality, customer relations, delivery speed, and customer satisfaction within the food processing industry. By testing delivery speed as a mediator, the study seeks to provide empirical evidence on whether operational delivery performance helps explain the relationship between organisational practices and customer satisfaction. This perspective extends the application of ECT by considering how organisational and operational factors may interact to shape customers' evaluations.

Literature Reviews

Product Quality and Delivery Speed

Product quality refers to the extent to which a product meets customers' expectations and required standards (Garvin, 1987; Zeithaml, 1988). In the food processing industry, product quality is particularly important because consumers expect products to be safe, consistent, reliable, and suitable for consumption. Maintaining product quality also requires effective production and operational processes, which can influence the organisation's ability to fulfil customer orders efficiently.

A relationship between product quality and delivery speed can be explained from an operational perspective. Firms that maintain consistent product quality are more likely to have stable production processes, fewer product defects, less rework, and fewer disruptions in fulfilling orders. Efficient production processes can consequently facilitate smoother order fulfilment and distribution activities. In contrast, quality problems may require reprocessing, replacement, or

additional inspection, potentially delaying the delivery process (Garvin, 1987; Christopher, 2016).

This relationship is particularly relevant in the food processing industry because production and distribution activities are closely connected. A firm may have a high-quality product, but delays in preparing or delivering it can diminish the overall value of the customer experience. Recent research in food delivery also confirms that product quality remains an important factor in consumers' evaluations of food-delivery services. For example, Wu et al. (2024) found that maintaining food quality was positively associated with customer satisfaction in their study of food-delivery service quality.

Therefore, product quality is expected to be positively associated with delivery speed. Based on this argument, the following hypothesis is proposed:

H1: Product quality has a significant positive effect on delivery speed.

Customer Relations and Delivery Speed

Customer relations refer to the organisation's efforts to establish and maintain effective interactions with customers. Effective customer relations involve communication, responsiveness, understanding customer needs, and maintaining relationships throughout the purchasing process (Payne & Frow, 2017; Kumar & Reinartz, 2018). Customer relations may influence delivery speed because effective communication between customers and firms can improve the coordination of orders and delivery requirements. When firms maintain good communication with customers, information concerning product availability, order quantities, delivery requirements, and expected delivery times can be communicated more effectively. This can reduce misunderstandings and facilitate more efficient order processing.

The logistics literature similarly recognises communication, responsiveness, and personal contact as important aspects of service performance. Empirical evidence has shown that different dimensions of logistics service quality can contribute to customer satisfaction, including operational and personal-contact dimensions (Lin et al., 2023). Thus, customer relations may extend beyond relationship-building activities and contribute to the operational coordination required to fulfil customer orders. In the context of food processing, this relationship is particularly important because customers may require timely product delivery and accurate communication about order status. Effective customer relations can help firms understand customer requirements and respond to delivery needs more efficiently. Consequently, stronger customer relations are expected to be associated with better delivery performance.

Therefore, the statement of the hypothesis can be derived:

H2: Customer relations have a significant positive effect on delivery speed.

Delivery Speed and Customer Satisfaction

Delivery speed is the extent to which products are delivered within the time customers expect. It is an important component of logistics and service performance because customers evaluate not only what they receive but also how efficiently the organisation fulfils its commitments (Mentzer et al., 2001).

Timely delivery can contribute to customer satisfaction by indicating organisational responsiveness and reliability. When customers receive products within the expected timeframe, their experience is more likely to be consistent with their prior expectations. Conversely, delivery delays can create dissatisfaction even when the product itself is of satisfactory quality. This argument is consistent with Expectation-Confirmation Theory, which proposes that satisfaction results from the comparison between expectations and perceived performance (Oliver, 1980, 2015). Delivery speed is one observable aspect of organisational performance that customers can use to evaluate whether the organisation has fulfilled its commitments. Recent evidence from food-delivery research also demonstrates the importance of operational and service-quality factors in determining satisfaction. Wu et al. (2024), for example, found that several food-delivery service-quality dimensions significantly improved customer satisfaction. Similarly, recent research on online food delivery has continued to examine delivery-related service attributes alongside food quality and other service factors as determinants of customer satisfaction. Accordingly, the hypothesis can be as follows:

H3: Delivery speed has a significant positive effect on customer satisfaction.

Product Quality and Customer Satisfaction

Product quality is a fundamental factor consumers consider when evaluating their satisfaction with a product. In the food industry, quality can include characteristics such as consistency, safety, freshness, reliability, and conformity with expected standards (Garvin, 1987; Zeithaml, 1988). When the quality of a food product meets or exceeds customers' expectations, customers are more likely to perceive that the purchase has provided the expected benefits. This positive evaluation can contribute to satisfaction (Oliver, 1980, 2015). Conversely, poor or inconsistent product quality can result in dissatisfaction, complaints, and negative evaluations. Empirical studies in food-related contexts continue to support the importance of product quality. Recent research on online food delivery found that food quality was among the key factors associated with customer satisfaction. At the same time, another 2024 study of food-delivery services identified product quality as a key determinant of consumer evaluations.

Thus, the statement hypothesis is associated with,

H4: Product quality has a significant positive effect on customer satisfaction.

Customer Relations and Customer Satisfaction

Customer relations can also influence satisfaction, as customers evaluate not only the product they receive but also how the organisation treats them. Effective customer relations involve responsiveness, communication, assistance, and efforts to understand and address customer needs (Payne & Frow, 2017; Kumar & Reinartz, 2018). From the perspective of Expectation-Confirmation Theory, positive interactions with an organisation can contribute to favourable perceptions of organisational performance. When customers perceive that a firm responds to their needs and maintains effective communication, their experience may be more consistent with or exceed their expectations, resulting in higher satisfaction (Oliver, 1980, 2015). Previous research on logistics service quality supports this argument. Lin et al. (2023) found that personal contact and other logistics service-quality dimensions positively contributed to satisfaction with logistics services. More broadly, recent food-delivery research indicates that service-related attributes remain important in explaining customer satisfaction. Therefore, based on the above discussion, the statement of hypothesis is:

H5: Customer relations have a significant positive effect on customer satisfaction.

The Mediating Role of Delivery Speed

The previous hypotheses establish the direct relationships among the four constructs. However, the central argument of this study is that product quality and customer relations may influence customer satisfaction, in part, through delivery speed. Product quality can contribute to efficient order fulfilment through stable production processes and reduced operational disruptions. Similarly, effective customer relations can facilitate communication and coordination between firms and customers. These factors may improve delivery performance, which in turn can enhance customer satisfaction. This provides a basis for considering delivery speed as a mediating variable rather than simply another predictor of satisfaction. From the perspective of Expectation-Confirmation Theory, customers form expectations concerning the product and their interactions with the organisation. Delivery speed provides an observable performance outcome through which customers can assess whether those expectations have been fulfilled. Timely delivery can therefore strengthen the positive effects of product quality and customer relations on satisfaction. Accordingly, the two mediation hypotheses are:

H6: Delivery speed significantly mediates the relationship between product quality and customer satisfaction.

H7: Delivery speed significantly mediates the relationship between customer relations and customer satisfaction.

Methodology

Research Design

This study employed a quantitative research design to examine the relationships among product quality, customer relations, delivery speed, and customer satisfaction among food consumers in Narsingdi, Bangladesh. Quantitative research is appropriate when a study seeks to operationalise concepts into measurable variables, collect numerical data, and test hypothesised relationships using statistical procedures (Creswell & Creswell, 2018; Sekaran & Bougie, 2016). It is particularly suitable for studies involving predefined constructs and theoretically derived hypotheses that can be examined through empirical data (Hair et al., 2019). The study adopted a cross-sectional approach, with data collected from consumers of food processing products in the study area. A cross-sectional design involves collecting data from a population or sample at a particular point in time and is commonly used to examine the prevalence of characteristics and relationships among variables (Creswell & Creswell, 2018; Saunders et al., 2019).

Unit of Analysis

The unit of analysis of the study was the individual food consumer, drawing on their own experience and perceptions of product quality, customer relations, delivery speed, and customer satisfaction. The unit of analysis refers to the entity about which conclusions are drawn and determines the level at which observations are collected and analysed (Sekaran & Bougie, 2016; Saunders et al., 2019). In consumer research, the individual customer is commonly treated as the unit of analysis, with perceptions, attitudes, and satisfaction measured through self-administered questionnaires (Hair et al., 2019).

Study Area

The study was conducted in Narsingdi District, Bangladesh, covering consumers from the district's food processing market. The geographical scope was limited to Narsingdi because empirical evidence concerning the relationships among the study variables within this local food-processing context remains limited. Delimiting the geographical scope of a study enables the researcher to establish a clearly defined population, manage data collection, and interpret the findings within the relevant contextual boundaries (Creswell & Creswell, 2018; Saunders et al., 2019). The selection of a specific geographical setting should be justified based on the research problem, the characteristics of the target population, and the identified empirical or contextual gap (Sekaran & Bougie, 2016).

Population and Sample

This study used a total of 384 valid responses obtained for the analysis, with a reported response rate of 56.31%. The respondents represented consumers from different areas of Narsingdi District, including Narsingdi Sadar, Palash, Shibpur, Raipura, Belabo, and Monohardi. Sample size is an important consideration in quantitative research because it affects the precision of estimates, statistical power, and the stability of multivariate analyses (Hair et al., 2019; Kline, 2023). In structural equation modelling, sample-size adequacy should be considered in relation to model complexity, the number of estimated parameters, data characteristics, and the estimation method rather than relying exclusively on a single numerical rule (Wolf et al., 2013; Kline, 2023). Response rate is also relevant because low or uneven participation may introduce non-response bias, particularly when respondents and non-respondents differ systematically in characteristics relevant to the study (Saunders et al., 2019).

Research Instrument

The study employed a structured questionnaire using a five-point Likert scale to measure respondents' perceptions of the four constructs. Structured questionnaires are widely used in quantitative research because they facilitate the standardised collection of information from a relatively large number of respondents (Sekaran & Bougie, 2016; Saunders et al., 2019). Likert-type scales are commonly used to measure attitudes, perceptions, and other psychological or behavioural constructs through ordered response categories (Likert, 1932; DeVellis & Thorpe, 2021). A five-point response format provides respondents with a defined range of agreement or disagreement and is frequently applied in consumer and marketing research (Joshi et al., 2015; Saunders et al., 2019). The measurement model consisted of 22 observed indicators representing product quality, customer relations, delivery speed, and customer satisfaction. In SEM, observed indicators are the measurable questionnaire items used to represent theoretically defined latent constructs (Kline, 2023; Hair et al., 2019).

Pilot Test

Prior to the main data collection, a pilot test with 30 respondents was conducted to assess the questionnaire's reliability and clarity. Pilot testing is an important preliminary stage in instrument development because it enables researchers to identify ambiguous wording, assess the suitability of response options, and detect potential problems in the data-collection procedure before the main survey (Connelly, 2008; Saunders et al., 2019). The findings report that all constructs achieved Cronbach's alpha values above the commonly accepted threshold of 0.70 and that no measurement items were removed during the pilot stage (Nunnally & Bernstein, 1994; Hair et al., 2019).

Data Analysis Technique

The measurement model was assessed through confirmatory factor analysis (CFA), followed by structural equation modelling. CFA is a theory-driven multivariate technique used to test whether observed indicators adequately represent their hypothesised latent constructs (Kline, 2023; Hair et al., 2019). In covariance-based structural equation modelling (CB-SEM), assessment of the measurement model is an important preliminary step because the validity and reliability of the constructs must be established before interpreting the structural relationships (Anderson & Gerbing, 1988; Hair et al., 2019). The data were analysed using AMOS with maximum likelihood estimation. AMOS is a software application commonly used to estimate and evaluate structural equation models involving observed and latent variables (Byrne, 2016). Maximum likelihood estimation is one of the most widely used estimation methods in CB-SEM because it provides parameter estimates and model-fit statistics under specified distributional assumptions (Kline, 2023; Byrne, 2016). The appropriateness of maximum likelihood estimation depends on considerations such as sample size, multivariate normality, missing data, and the measurement properties of the variables (Hair et al., 2019; Kline, 2023). The selection of CB-SEM is consistent with study objectives that emphasise theory testing, model evaluation, and the assessment of hypothesised causal structures rather than solely prediction (Hair et al., 2019; Kline, 2023).

Results

Respondent Profile

The study has obtained 384 valid responses from food consumers in Narsingdi District, Bangladesh. The respondents represented different demographic and consumption characteristics, providing variation in gender, age, occupation, income, purchasing frequency, and purchasing channels. The findings indicated that 54.2% of respondents were male and 45.8% were female. The largest age group was 21–30 years (37.0%), followed by respondents aged 31–40 years (27.1%). In terms of occupation, 35.4% of respondents were business owners or self-employed, while the largest reported income category was BDT 10,000–20,000 per month (29.2%). Regarding purchasing behaviour, 40.6% reported monthly purchases, while packaged snacks represented the largest product category at 33.3%. Retail stores were the main purchasing channel, accounting for 42.2% of respondents. The respondents were drawn from several areas of Narsingdi District, including Narsingdi Sadar, Palash, Shibpur, Raipura, Belabo, and Monohardi. This distribution provided representation across the geographical scope of the study.

Data Screening

Before SEM analysis, the dataset was screened for missing data, outliers, and normality. Missing values were minimal, ranging from 0% to 1.0% across the four constructs. Little's MCAR test was not statistically significant ($\chi^2 = 182.45$, $df = 176$, $p = .318$), indicating that the missing-data pattern was consistent with data being missing completely at random. Both univariate and multivariate outliers were assessed before proceeding with the SEM analysis.

Measurement Model

The measurement model demonstrated satisfactory reliability and validity. Standardised factor loadings ranged from .77 to .85 across the four constructs.

Table Error! No text of specified style in document.:1 Measurement Indicator

Construct	Factor Loading	Composite Reliability	AVE
Product Quality	.77–.81	.905	.614
Customer Relations	.81–.85	.931	.692
Delivery Speed	.79–.82	.900	.643
Customer Satisfaction	.81–.83	.914	.679

Table 4.1 above showed that all composite reliability values exceeded .90, while AVE values were above .50, providing evidence of satisfactory internal consistency and convergent validity (Fornell & Larcker, 1981; Hair et al., 2019). The square roots of AVE were .784 for Product Quality, .832 for Customer Relations, .802 for Delivery Speed, and .824 for Customer Satisfaction. These values exceeded the corresponding inter-construct correlations, supporting discriminant validity (Fornell & Larcker, 1981; Hair et al., 2019).

Structural Model

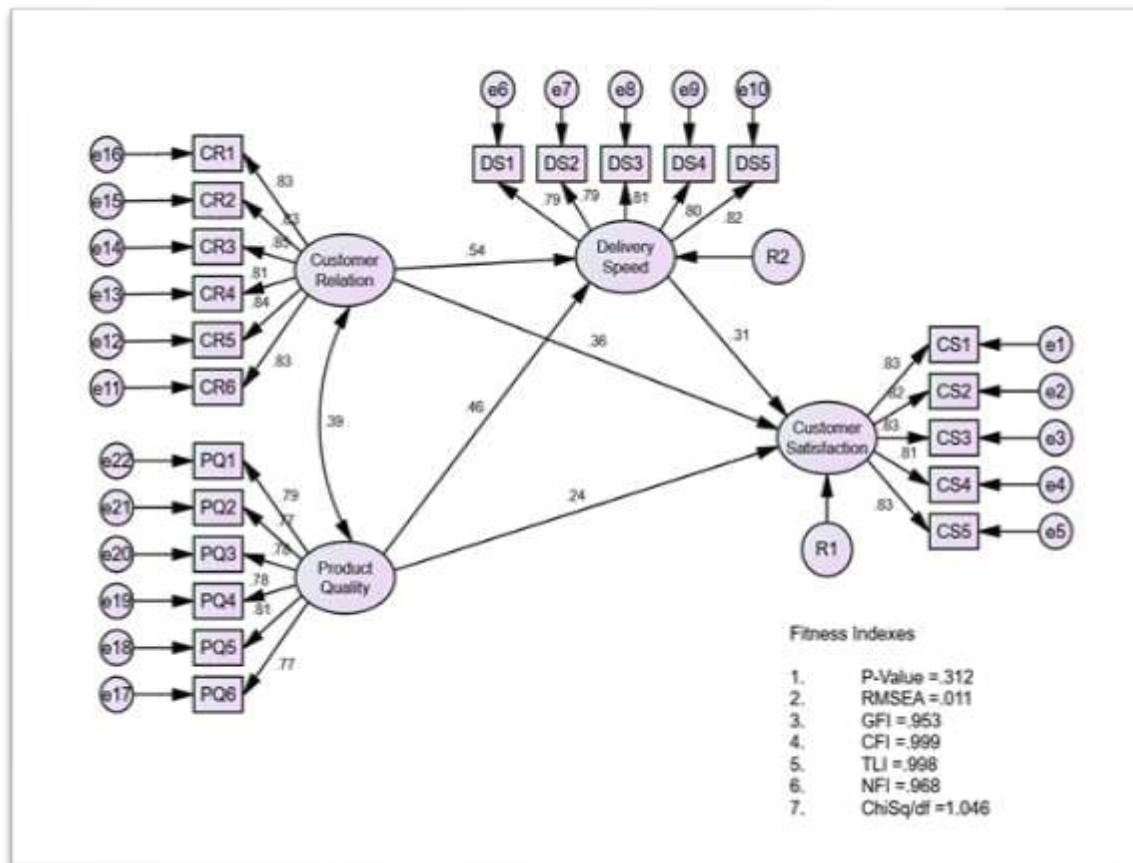


Figure 1 Standardize Structural Model (AMOS Output)

The structural model demonstrated a very good fit to the observed data. The model produced $\chi^2 = 213.357$ with 204 degrees of freedom, giving a χ^2/df ratio of 1.046. The incremental fit indices were also high (CFI = .999, TLI = .998, NFI = .968, GFI = .953), while RMSEA = .011. These results indicate that the proposed structural model provided a good representation of the data (Hu & Bentler, 1999; Kline, 2023).

Hypothesis Testing

The structural model showed positive and statistically significant relationships among the study variables. Customer Relations had the strongest effect on Delivery Speed, followed by Product Quality. For Customer Satisfaction, Customer Relations had the strongest direct effect, followed by Delivery Speed and Product Quality.

Table Error! No text of specified style in document.:2 Hypotheses Testing

Hypothesis	Relationship	Standardised β	p-value	Decision
H1	Customer Relations $\rightarrow$ Delivery Speed	.54	< .001	Supported
H2	Product Quality $\rightarrow$ Delivery Speed	.46	< .001	Supported
H3	Delivery Speed $\rightarrow$ Customer Satisfaction	.31	< .001	Supported
H4	Product Quality $\rightarrow$ Customer Satisfaction	.24	< .001	Supported
H5	Customer Relations $\rightarrow$ Customer Satisfaction	.36	< .001	Supported

The results indicate that Customer Relations was the strongest predictor of Delivery Speed ($\beta = .54$). Product Quality also had a positive effect on Delivery Speed ($\beta = .46$). Delivery Speed subsequently had a positive effect on Customer Satisfaction ($\beta = .31$). Both Product Quality ($\beta = .24$) and Customer Relations ($\beta = .36$) also demonstrated significant direct effects on Customer Satisfaction (Hair et al., 2019; Kline, 2023). In general, the model of the study has explained 6.7% of the variance in Delivery Speed ($R^2 = .067$) and 11.9% of the variance in Customer Satisfaction ($R^2 = .119$) (Hair et al., 2019; Kline, 2023).

Mediation Analysis

In this study, structural equation modelling, indirect effects are estimated by examining the product of the relevant path coefficients, while total effects represent the combined direct and indirect effects (Kline, 2023; Hayes, 2022). For Product Quality $\rightarrow$ Delivery Speed $\rightarrow$ Customer Satisfaction path, the direct effect was $\beta = .243$, while the estimated indirect effect was approximately $\beta = .143$. The resulting total effect was approximately $\beta = .386$. Because the direct and indirect effects were both positive, the findings indicate partial mediation (Baron & Kenny, 1986; Hayes, 2022). Partial mediation occurs when an independent variable maintains a direct relationship with the dependent variable while also influencing the dependent variable indirectly through a mediator (Baron & Kenny, 1986; Hair et al., 2019). Meanwhile, for Customer Relations $\rightarrow$ Delivery Speed $\rightarrow$ Customer Satisfaction path, the direct effect was $\beta = .356$, while the estimated indirect effect was approximately $\beta = .169$. The total effect was approximately $\beta = .525$, again indicating partial mediation (Baron & Kenny, 1986; Hayes, 2022). The positive indirect effect suggests that Customer Relations is associated with Customer Satisfaction through Delivery Speed, while the remaining direct effect indicates that the relationship is not fully explained by the mediator (Hayes, 2022; Kline, 2023). Thus, Delivery Speed provides an additional pathway through which both Product Quality and Customer Relations are associated with Customer Satisfaction.

Overall, the results provide support for the proposed structural model. All five direct relationships were positive and statistically significant, and the two mediation relationships were also supported. Customer Relations emerged as the strongest predictor in the model,

particularly in its relationship with Delivery Speed and Customer Satisfaction (Hair et al., 2019; Kline, 2023). The interpretation of these findings is consistent with the use of structural equation modelling to evaluate hypothesised direct and indirect relationships among latent constructs (Byrne, 2016; Kline, 2023).

Discussion

The findings show that Customer Relations has a significant positive effect on Delivery Speed ($\beta = .54, p < .001$). This was the strongest relationship involving Delivery Speed. The result suggests that stronger customer relations may support faster and more reliable delivery. Clear communication, prompt responses, and accurate information about orders and delivery arrangements can improve coordination between firms and customers (Kumar & Reinartz, 2018; Payne & Frow, 2017). Therefore, customer relations should not be viewed only as a relationship-building activity, as it may also support operational efficiency and timely delivery. Product Quality also has a significant positive effect on Delivery Speed ($\beta = .46, p < .001$). This finding suggests that consistent product quality may reflect well-controlled production and fulfilment processes. When production processes are properly managed, firms may experience fewer defects, rework, returns, and disruptions that could delay delivery (Garvin, 1987; Christopher, 2016). Thus, product quality and delivery performance may be connected through the efficiency and consistency of organisational processes.

The results of the study further indicate that Delivery Speed has a significant positive effect on Customer Satisfaction ($\beta = .31, p < .001$). This means that customers are more likely to be satisfied when their orders arrive within the expected time. Based on that, timely delivery can confirm customers' expectations and strengthen their perceptions of service reliability (Oliver, 1980, 2015). Therefore, having a good-quality product may not be sufficient if customers experience slow or unreliable delivery. Delivery speed forms an important part of the overall value experienced by customers (Mentzer et al., 2001). Product Quality also demonstrates a significant positive effect on Customer Satisfaction ($\beta = .24, p < .001$). This result indicates that customers are more satisfied when products meet their expectations for quality, reliability, safety, and performance (Garvin, 1987; Zeithaml, 1988). However, the result showed relatively smaller coefficients, suggesting that product quality alone may not fully explain customer satisfaction. Customers may evaluate both the quality of the product they receive and the way the organisation delivers it. Customer Relations has a significant positive effect on Customer Satisfaction ($\beta = .36, p < .001$). This finding suggests that effective communication, responsiveness, and customer support can improve customers' overall experience. Customers may develop more positive evaluations when firms respond to their needs, provide assistance, and manage their expectations effectively (Kumar & Reinartz, 2018; Payne & Frow, 2017). The higher coefficient relative to Product Quality also suggests that customer-oriented practices play an important role in shaping satisfaction in the context examined.

The mediation results show that Delivery Speed partially mediates the relationships between Product Quality and Customer Satisfaction, and between Customer Relations and Customer Satisfaction. For Product Quality, the direct effect on Customer Satisfaction was $\beta = .243$, while the indirect effect through Delivery Speed was approximately $\beta = .143$, producing a total effect of approximately $\beta = .386$. For Customer Relations, the direct effect was $\beta = .356$, while the indirect effect through Delivery Speed was approximately $\beta = .169$, producing a total effect of approximately $\beta = .525$. These findings indicate that Product Quality and Customer Relations have influenced Customer Satisfaction through both direct and indirect pathways. This has indicated that Product Quality can improve satisfaction directly through the quality of the

product received and indirectly by supporting better delivery performance. Similarly, Customer Relations can improve satisfaction directly through positive customer interactions and indirectly through improved delivery coordination. Therefore, Delivery Speed functions as an important intervening mechanism through which product-related and relationship-related factors contribute to customer satisfaction (Baron & Kenny, 1986; Hayes, 2022).

Overall, the findings suggest that all the combined effects of Product Quality, Customer Relations, and Delivery Speed influence Customer Satisfaction. Customer Relations appears to be particularly important because it has the strongest effect on Delivery Speed and the strongest direct effect on Customer Satisfaction. The results, therefore, imply that firms should improve product quality, maintain effective customer relationships, and provide timely delivery simultaneously, rather than focusing on a single factor.

Theoretical Implications

The findings provide several theoretical implications for understanding customer satisfaction in the food processing industry. In particular, the study contributes to the application of Expectation-Confirmation Theory (ECT) by demonstrating that Delivery Speed can function as an intervening mechanism through which Product Quality and Customer Relations influence Customer Satisfaction. ECT posits that customer satisfaction is influenced by customers' evaluations of product or service performance relative to their expectations (Oliver, 1980, 2015). The significant relationship between Delivery Speed and Customer Satisfaction ($\beta = .31$, $p < .001$) indicates that timely delivery is an important part of customers' consumption experience. This suggests that satisfaction is influenced not only by the quality of the product the customer receives but also by the relationship established with the suppliers. However, also determined by the speed and manner of the product's delivery to the customer. Therefore, the findings support the application of ECT in a food-processing context where customer satisfaction depends on both product-related and process-related performance.

Furthermore, the study framework was established by integrating Product Quality and Customer Relations into a single construct of customer satisfaction. The findings show that Product Quality has a significant positive effect on Customer Satisfaction ($\beta = .24$, $p < .001$), while Customer Relations has a stronger positive effect ($\beta = .36$, $p < .001$). This suggests that customer satisfaction is multidimensional, as customers evaluate both what they receive, represented by Product Quality, and how the organisation interacts with them, represented by Customer Relations. This interpretation is consistent with the literature emphasising the importance of relationship management and service performance in shaping customer evaluations (Kumar & Reinartz, 2018; Payne & Frow, 2017).

The most important theoretical contribution concerns the mediating role of Delivery Speed. The results show that Delivery Speed partially mediates the relationships between Product Quality and Customer Satisfaction, and between Customer Relations and Customer Satisfaction. In Product Quality, the estimated indirect effect through Delivery Speed is approximately .143, compared with a direct effect of .243, resulting in a total effect of approximately .386. Similarly, Customer Relations has an indirect effect of approximately .169 through Delivery Speed, in addition to a direct effect of .356, producing a total effect of approximately .525. Therefore, the study findings indicate partial mediation rather than full mediation for this study. Delivery Speed does not replace the direct contribution of Product Quality or Customer Relations; instead, it provides an additional pathway through which these factors influence Customer Satisfaction. Therefore, Delivery Speed can be viewed not only as an operational outcome but

also as a mechanism linking product-related and relationship-related factors with customer satisfaction (Baron & Kenny, 1986; Hayes, 2022).

The study further contributes contextual evidence by examining food consumers in Narsingdi District, Bangladesh. Previous studies have commonly examined delivery and logistics service quality in e-commerce, online food delivery, and logistics service environments. For example, Lin et al. (2023) found that logistics service quality dimensions contribute to customer satisfaction, while Wu et al. (2024) highlighted the importance of food-delivery service quality in explaining satisfaction and reuse intention. The present study complements these findings by examining a broader food-processing consumer context in which Product Quality, Customer Relations, and Delivery Speed are considered simultaneously. This suggests that delivery-related performance remains relevant even beyond a purely online food-delivery platform.

Taken together, the findings support an integrated explanation of customer satisfaction in which Product Quality and Customer Relations influence Delivery Speed, which subsequently contributes to Customer Satisfaction. At the same time, Product Quality and Customer Relations also retain direct relationships with satisfaction. The model therefore supports the view that customer satisfaction is shaped by both product performance and relationship performance, with Delivery Speed serving as an important intervening operational mechanism. However, the relatively modest explained variance, at 6.7% for Delivery Speed and 11.9% for Customer Satisfaction, indicates that other factors not included in the model may also contribute to customer satisfaction. This provides a boundary for interpreting the theoretical contribution and suggests opportunities for future research.

Limitations and Future Research

Although this study has provided comprehensive findings on Product Quality, Customer Relations, Delivery Speed, and Customer Satisfaction. There are three main limitations should be acknowledged in this study. First, the study used a cross-sectional design and collected data from consumers at one point in time. Therefore, the findings show relationships between the variables but cannot explain changes over time. The study also focused only on food consumers in Narsingdi District, Bangladesh, which may limit the generalisability of the findings to other regions. Future research can extend to use a longitudinal design and include consumers from other districts to compare different consumer environments.

Second, the study used individual consumers as the unit of analysis. Therefore, the findings reflect customer perceptions rather than actual organisational performance. In addition, the model explained only 6.7% of the variance in Delivery Speed and 11.9% of the variance in Customer Satisfaction, indicating that other factors may influence these variables. Future studies could collect data from firms, distributors, retailers, and logistics providers and include factors such as price, perceived value, food safety, reliability, trust, and complaint handling.

Third, Delivery Speed was found to partially mediate the relationships between Product Quality, Customer Relations, and Customer Satisfaction. Future research could use bootstrapping to provide stronger evidence for the mediation effects. Researchers could also apply robust estimation procedures when data do not meet the assumptions of multivariate normality. Further studies may examine Delivery Speed through reliability, delivery accuracy, flexibility, and information quality, and compare relationships across product categories, consumer groups, and distribution channels.

Overall, this limitation and propose of future study has provide clear scope of the study and gap improvement can be obtained in future studies. By having that it has substantially provide a more comprehensive understanding of the relationships among Product Quality, Customer Relations, Delivery Speed, and Customer Satisfaction. Future research should consider different research designs, geographical areas, data sources, and additional variables to strengthen the findings and improve their generalisability. Such studies may provide deeper insights into how operational and relationship-related factors influence customer satisfaction in the food-processing industry.

Conclusion

In conclusion, the researchers examined the effects of product quality and customer relations on customer satisfaction, with delivery speed as a mediator, among food consumers in Narsingdi, Bangladesh. Using data from 384 respondents and covariance-based structural equation modelling, the study found significant positive relationships among all proposed constructs. Overall, the results of the study clearly demonstrate that customer relations and product quality significantly influence delivery speed. In turn, these factors significantly contribute to customer satisfaction. Product quality and customer relations also have significant direct effects on customer satisfaction. Among the direct relationships, customer relations showed the strongest effect on customer satisfaction ($\beta = .36$), followed by delivery speed ($\beta = .31$) and product quality ($\beta = .24$).

Moreover, the mediation analysis indicates that the delivery speed factor has provided an additional pathway through which product quality and customer relations contribute to customer satisfaction. The indirect effect of product quality through delivery speed was approximately .143, while the indirect effect of customer relations through delivery speed was approximately .169. Because the corresponding direct effects remained positive, the findings indicate partial mediation. Overall, the findings suggest that customer satisfaction in the food-processing context should not be viewed solely as a consequence of product quality. Rather, satisfaction is also shaped by the quality of customer relationships and the effectiveness of delivery performance. Delivery speed serves as a link among what businesses provide, how they interact with customers, and how customers evaluate their overall experience. From the perspective of Expectation-Confirmation Theory, the findings reinforce the importance of perceived performance in shaping customer satisfaction. The study extends the empirical application of ECT by demonstrating how an operational factor that consists of delivery speed can connect product and relational attributes with consumers' satisfaction evaluations.

Finally, the study substantially provides a useful empirical framework for food-processing businesses seeking to improve customer satisfaction in Narsingdi and similar developing-market contexts. At the same time, the model's relatively modest explanatory power suggests that customer satisfaction is influenced by additional factors warranting investigation in future research. Future studies should therefore broaden the model, employ longitudinal or comparative designs, and use more rigorous mediation procedures, such as bootstrapping, to further validate the proposed relationships.

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