TEME, Vol. XLVIII, Nº 4, October – December 2024, pp. 1033–1048

Original research paper https://doi.org/10.22190/TEME231019059M
Received: October 19, 2023 UDC 339:620.2: 366.622(497.113)
Revised: July 30, 2024
Accepted: September 5, 2024

THE INFLUENCE OF RELATIONS WITH CUSTOMERS ON PRODUCT INNOVATIONS ON THE TERRITORY OF AP VOJVODINA

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Abstract

This research aims to determine how relations with customers affect the innovative activity of companies in AP Vojvodina, Serbia. Innovative activity means working on product innovations. Long-term partnership with customers, customer involvement in new product development and technology used in customer relations were used to analyse customer relations. The empirical research is based on a questionnaire, distributed to a sample of 31 companies in AP Vojvodina. Model creation and statistical analysis were done within the software package for statistical data analysis Smart PLS 4. The results showed that the development of long-term relationships with customers and the application of modern technology in relationships have a positive effect on product innovation. On the other hand, the influence of customer involvement in the development of a new product was not statistically significant when it comes to product innovation.

Key words: relationship marketing, product innovation, long-term partnership, customer involvement.

УТИЦАЈ ОДНОСА СА ПОТРОШАЧИМА НА ИНОВАЦИЈЕ ПРОИЗВОДА НА ТЕРИТОРИЈИ АП ВОЈВОДИНЕ

Апстракт

Ово истраживање има за циљ да утврди како односи са потрошачима утичу на иновативну активност компанија у Србији на подручју АП Војводине. Под иновативном активношћу се подразумева допринос иновацији производа. За анализу односа са купцима је коришћено дугорочно партнерство са потрошачима, укључивање потрошача у развој новог производа и технологија која се користи у односима са потрошачима. Емпиријско истраживање је засновано на упитнику,

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који је обухватио узорак од 31 компаније на подручју АП Војводине. Креирање модела и статистичка анализа су одрађене у оквиру софтверског пакета за статистичку анализу података Smart PLS 4. Резултати су показали да развијање дугорочних односа са потрошачима и примена савремене технологије у односима позитивно утичу на иновације производа. Са друге стране, утицај укључивања потрошача у развој новог производа се није показао као статистички значајан када су у питању иновације производа.

Кључне речи: маркетинг односа, иновације производа, дугорочно партнерство, укључивање купаца.

INTRODUCTION

Technological advances in the areas of the Internet, infrastructure, and databases have enabled managers to largely build and develop relationships with consumers. The high intensity of competition leads companies to maintain strong ties with their customers. Information is obtained from customers to help them offer the best products. CRM is an important tool that enables the collection of information about customer expectations based on which new products are developed, and the innovative performance of the company is improved (Herman *et al.*, 2020). Faems et al. (2005) confirmed that collaboration fosters innovative capabilities. Effective use of CRM tools can contribute to the identification of new business opportunities and the improvement of the innovation process. The importance of CRM as an instrument that has the potential for innovation development is also confirmed by Gil-Gomez et al. (2020). A deeper insight into this relationship can be gained by looking at the dimensions of CRM and their relationship with different types of innovation. This is evidenced by many works that examined and observed these relationships, especially when it comes to process innovations (Hollebeek *et al.*, 2019; Valmohammadi, 2017), service innovations (Tsou & Chen, 2019), marketing innovations (Mehrabi *et al.*, 2019) and administrative innovation (Khosravi & Nilashi, 2018). Based on the evident lack of research on the impact of CRM on product innovation (Guerola-Navarro *et al.*, 2021), we aim to fill the identified gap in the available literature with this research. Therefore, the goal was to determine how the activities that determine relationships with consumers influence product innovation. The structure of the work is as follows. First, a review of the literature in this area was carried out. In particular, the focus was on examining whether long-term partnerships, customer involvement in new product development, and technologies used for customer relations have an impact on product innovation. The data collection process, research sample and statistical analysis are presented within the Methodology section of the paper. After that, the results, discussion and concluding remarks of the paper are presented.

THEORETHICAL BACKGROUND

Companies cannot avoid the changes that occur in the field of technology and markets (Miletić, *et al.*, 2021). Existing products become obsolete, and are replaced by new or improved ones. The survival and prosperity of companies can be ensured by product innovation (Lee & Hsieh, 2010; Matić *et al.*, 2023). Product innovation involves the development of new products and innovative features for existing products (Guerola-Navarro *et al.*, 2020; Krivokuća *et al.*, 2021). They can arise from unexpected sources and directions of research. Relying on different sources of innovation, with an emphasis on external sources, enables a company to have better innovative performance (Ivanov *et al.*, 2019). This approach to innovation is known as the concept of open innovation. This implies a process in which new sources of technology and innovation are sought outside the organisation (Leković et. al., 2022). It refers to a situation in which organisations or individuals share knowledge, skills, and resources that are useful for innovation. Different companies apply different levels of openness, and one of the key sources are customers. The customer knows best what their unfulfilled needs are, what they want from a product, and how that product can be improved. Companies build strong relationships with customers to get information from them that helps them offer the best products (Oly Ndubisi, 2004; Nuševa, *et al.*, 2024). To ensure this, it is necessary to have technical infrastructure, and developed technical capabilities, integration capabilities and competencies that include business knowledge relevant to a specific market (Shepherd & Ahmed, 2000). CRM is one of the most important technological solutions necessary for establishing effective channels and methods for information management (Guerola-Navarro *et al.*, 2020). A CRM approach allows companies to collect, analyse and use information about customers to personalize their products according to their needs and preferences. Using CRM helps the company to know what the customer expects and demands, and to create an emotional connection, based on which they will achieve a close business relationship and two-way communication (Herman *et al.*, 2021). In this way, companies can receive questions, comments and suggestions from customers, which helps them improve their products (Ernst *et al.*, 2011). For companies to improve their information flows from customers and spread an innovative culture, different mechanisms of cooperation with customers need to be developed (Massingham, 2019). Therefore, below, we focus on the following CRM mechanisms (Migdadi, 2021; Lin *et al.*, 2010): long-term partnership with customers, customer involvement in new product development, and application of technology used in customer relations.

Long-term Partnership with Customers

In the last few decades, the importance of cooperation with business partners has been emphasised. Without customers, there is no profit. Therefore, it is important to retain customers by developing long-term relationships with them. Long-term partnership implies repeated communication between the customer and the company, which generates strong psychological, physical and emotional ties between organisations, which ensure innovative performance (Xu *et al.*, 2023). It is a business relationship that involves two-way communication and is based on trust and commitment (Mathrani & Edwards, 2020). Collecting and considering customer suggestions is one approach to establishing long-term relationships. Ways used to get suggestions that can serve as sources of innovation are observation of consumers over a long period of time, interviews, conducting focus groups, and working with leading users, online communities and other Internet channels that allow for review collection (Zhang *et al.*, 2021). In addition, Saniuk et al. (2020) conclude that customising products according to customer requirements can strengthen cooperation and increase the sustainability of consumption. Customisation often leads to incremental innovation. Customers benefit from long-term partnerships, because they receive exclusive purchase conditions by participating in loyalty programs (Hwang & Choi, 2020). Creating long-term partnerships will ensure customer retention and loyalty. Long-term relationships give companies a certain amount of security and, thus, the freedom to invest in specific equipment, new products and risky ventures (Jack and Raturi, 2002). In this way, a greater probability for the development of innovative products is ensured. Through long-term partnerships, organisations adopt new models of behaviour, learn new skills, and change the organisational form, which can create preconditions for the creation of innovations (Maheshwari *et al.*, 2006). Based on the previous findings, the first hypothesis (H1) was defined: *long-term partnership has a positive and statistically significant effect on product innovation.*

Involving Customers in New Product Development

The importance of the role of customers in the development of new products is obvious when talking about product innovation. Customer information is input for new product development (Chang & Taylor, 2016). Involving customers in new product development activities ensures the direct integration of customers into innovation processes, which allows the company to reduce problems during new product development, and to reduce financial and reputational risks associated with new product failures (Morgan *et al.*, 2024). Customers are there to identify problems and make suggestions for new solutions (Marić *et al.*, 2024). Periodic business reviews with consumers improve knowledge sharing (Noordhoff *et al.*,

2011). New product development should result in a new offering that customers will find attractive. Creating such a combination of resources requires knowledge of customer problems and desires. This can be made possible by making customers actors in this process. In this way, they let the company know what superior value they are interested in. The company should base its product modifications on the information and wishes expressed by customers, which represents a safer path for innovation. Involving customers in new product development is important, as product modifications must be made continuously (Biggemann *et al.*, 2013). It is not a simple job and is often done in multiple iterations (Coviello & Joseph, 2012). It is the company's marketing that should conduct market research and ensure that the customer's voice is heard in the new product development process. The outcome of the new product development process with customers largely depends on organisational practices and roles in the company, which are in key positions of creating value for the customer (La Rocca *et al.*, 2015). The second hypothesis (H2) is defined as follows: *customer involvement in new product development has a positive and statistically significant effect on product innovation*.

Technology for Customer Relations

New technologies open big doors and make space for company innovation. As they bring opportunities for innovation in other functional areas, they are also significant for innovation in the sphere of marketing. Modern marketing is, in practice, entirely based on new technologies. They play an important role in the implementation of CRM to provide customer service and achieve customer loyalty (Ng & Zulkifli, 2012). Its use is reflected in the collection of data about users and their needs (Parry *et al.*, 2016; Mašić *et al.*, 2022). CRM integration leads to a better organisation of employees, because they engage in new ways of working. Their procedures are automated, and more space is freed up for creative work (Stefanov *et al.*, 2023). Call centres are akin to the first technological bridge of communication between the company and the user (Marco, 2020). They always provide access to authorised personnel, which can significantly contribute to increased loyalty. In addition, they are a very important source of feedback from users, which can be used for innovation. Companies aiming to create customer value are increasingly turning to sales force automation (SFA). Their purpose is reflected in the transfer of information about product configurations, prices, and delivery, which affects a more effective sales dialogue with the customer and often leads to new ideas (Mahlamäki *et al.*, 2020). The enormous amount of information that becomes available with new technologies requires accurate and precise processing of data that must be readily available when needed. Databases are used to store data in CRM, which store information about customers, their preferences and the history of interactions. Data mining is the process of

analysing large amounts of data to identify patterns, trends, and useful information that can help inform decisions and improve customer relationship management strategies. Marketing information systems (MIS) are becoming an important segment of organisations that fulfil this purpose and serve to manage relationships with external parties. MIS helps in analysing customer behaviour data, which CRM uses to adjust its strategies and provide innovative products (Rosalinda & Ali, 2023). Web-based customer interaction has made it possible for employees to feel much more comfortable when collecting and processing data, receiving inquiries and orders, and sharing the latest information. Technology has also made it possible to measure the contribution of CRM to the organisation. This is done using CRM performance evaluation systems within which KPIs are defined. Some of the key KPIs in CRM may include customer retention rate, conversion rate of leads to actual customers, average response time to customer inquiries, and the number of new customers acquired through marketing activities (Ledro *et al.*, 2022). CRM provides a knowledge base that is used to develop and support new products. It is up to the company to create the trust of its users who share information with them through cooperation. It should guarantee that all resources, including technology, are used in such a way that customers have confidence in them. The application of new technologies can lead to new discoveries, and change the logic governing the industry, which can cause changes in customer preferences and lifestyles (Payne *et al.*, 2008). This makes additional room for innovation. The third hypothesis (H3) is based on the previous analysis: *the application of technology in customer relations has a positive and statistically significant effect on product innovation*.

METHODOLOGY

The paper analyses the impact of relations with consumers on product innovation. The work methodology consists of several steps. It included defining relevant constructs and establishing their relationship. After that, a questionnaire was created and distributed. For research purposes, a questionnaire was used, based on the questionnaire created by Lin et al. (2010). The questions are based on a Likert scale, ranging between 1 and 5. The three dimensions of the relationship with consumers were extracted from the questionnaire. These are *long-term partnerships with customers*, *customer involvement in new product development* and *technology used in customer relations*. The last segment of the questionnaire refers to product innovation, as a dependent variable. The indicators that were measured are grouped according to the forms of cooperation with customers, and presented in Table 1.

Table 1. Indicators

Long-term partnership	*Customer involving*
L1 Client suggestions	C1 New product development activities
L2 Customized products	C2 Periodic review of business with customers
L3 Loyality programs	C3 Product modification
L4 Two-way communication	C4 Market consideration
L5 Care about customer success	

Technology	*Product innovation*
T1 Call centers for suggestions and complaints	PD1 Launching new products
	PD2 Expanding the number of products lines
T2 Uses SFA	PD3 Obtaining patents
T3 Uses MIS	PD4 Expands new market
T4 CRM performance evaluation systems	PD5 Launch of products adapted to market needs
T5 Web-based customer interactions	
T6 Data warehouse and data mining	

Source: Author's analysis

The research was conducted on a sample of 31 companies, and the questionnaire was filled out by their general managers in electronic form via Google questionnaire. The database was formed based on a sample of companies based in the territory of AP Vojvodina in the Republic of Serbia – start-ups that are tenants of business incubators, companies that have gone through the process of business incubation, and companies that are mentors in business incubators. Table 2 presents a sample of the research. We can conclude that there is a balance when it comes to the number of employees and the age of the company in the observed sample. The situation is similar with the business sector. It is important to point out that most of the companies in the sample deal with logistics.

Table 2. Research sample

Number of employees		Age of the company		Sector	
<50	58%	<20	52%	Transport, storage	19%
>50	42%	>20	48%	Personal service activities with consumers	3%
				Professional services	13%
				Agriculture, forestry, fishing	6%
				Production	6%
				Retail, hotels, restaurants	13%
				IT	13%
				Mining, construction	13%
				Financial mediation, real estate business	6%
				Wholesales	6%

Source: Author's analysis

The established model was analysed using SmartPLS 4 software for statistical data analysis. Figure 1 presents the set model.

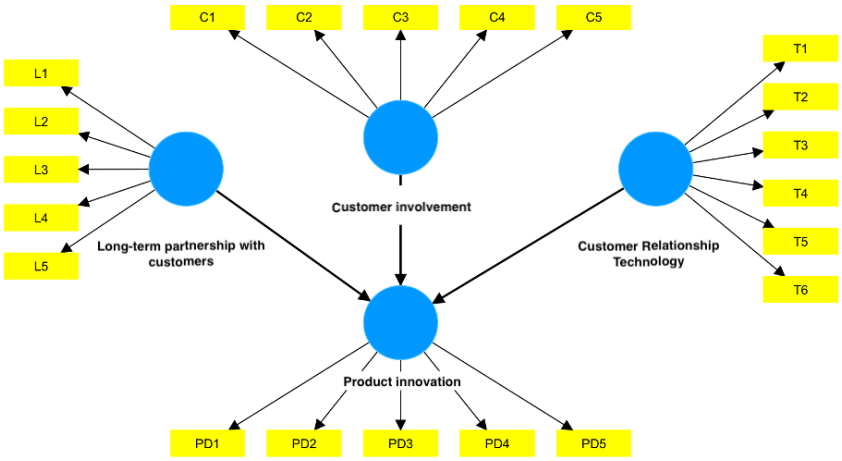

Figure 1. Conceptual model
Source: Author's analysis

RESULTS

When evaluating reflective constructs, the reliability of individual indicators, internal consistency, convergent validity and divergent validity are analysed. The values of the charge indicator are not higher than 0.7 for statements L3, L4, S3, PD3 and PD5. Since these are reflective constructs, the stated findings can be excluded from further testing. Table 3 presents an evaluation of the findings retained in the model.

Repeated testing yielded results in which internal consistency was met for all reflective constructs with composite reliability values greater than 0.7. Internal consistency and convergent validity were satisfied for all reflective constructs. The AVE value is greater than 0.5, and the composite reliability value is greater than 0.7 for all constructs. The condition of divergent validity was satisfied by establishing the Heterotrait-monotrait ratio (HTMT) criterion, which is presented in Table 4.

A bootstrapping procedure with 5000 subsamples was used to examine the path coefficient. As Table 5 shows, the path coefficients are positive for all constructs, but they are statistically significant with $p<0.05$ for long-term partnership and technology. VIF values of less than 3 indicate that there were no collinearity problems.

Table 3. Evaluation of reflective constructs

Constructs	Outer loadings	AVE	Cronbach' alpha
Product innovation		0.713	0.826
PD1	0.877		
PD2	0.789		
PD3	0.865		
Long-term partnership with customers		0.781	0.861
L1	0.906		
L2	0.901		
L5	0.842		
Involving customers in new product development		0.686	0.910
C1	0.790		
C2	0.786		
C3	0.881		
C4	0.784		
Customer Relationship Technology		0.659	0.827
T1	0.739		
T2	0.829		
T3	0.833		
T4	0.909		
T5	0.829		
T6	0.821		

Source: Author's analysis

Table 4. Divergent validity - Heterotrait-monotrait ratio (HTMT) criterion

	Long-term partnership	Product innovation	Technology	Customer involvement
Long-term partnership				
Product innovation	0.512			
Technology	0.178	0.462		
Customer involvement	0.723	0.380	0.212	

Source: Author's analysis

Table 5. Path coefficient and VIF values

	Path coefficients	Standard deviation	T statistics	P values	VIF
Long-term partnership -> Product innovation	0.454	0.169	2.678	0.007	1.608
Technology -> Product innovation	0.480	0.129	3.716	0.000	1.032
Customer involvement -> Product innovation	0.041	0.177	0.230	0.818	1.648

Source: Author's analysis

The coefficients for PLS-SEM relationships, their level of significance and the R2 value are shown in Figure 2. The R2 value is 0.485. The coefficients representing the relationships between lower-level reflective constructs and product innovation (higher-level reflective construct) are positive and statistically significant with $p<0.01$ for long-term customer partnership (0.454) and technology used in customer relations (0.480). The coefficient is not statistically significant for the construct that indicates the involvement of customers in the development of a new product.

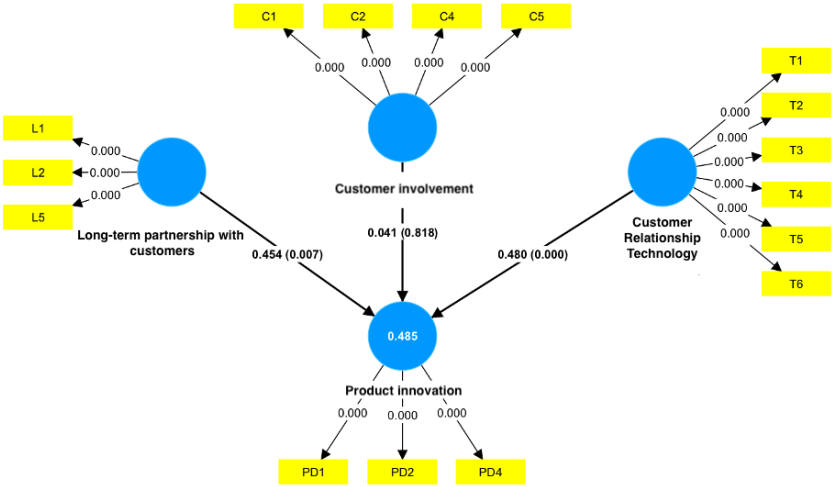

Figure 4. *PLS-SEM Relations*
Source: Author's analysis

DISCUSSION AND CONCLUSION

A firm's long-term survival is determined by its ability to introduce new products to the market. Rapid technological changes, the great influence of competition and the dynamic needs of customers lead to rapid obsolescence of products. For the company's products to remain attractive, they must be adapted to customer preferences. Marketing must therefore be actively involved in the innovation process. This function will best express its potential in the innovation process by creating and maintaining relationships with customers. The paper aims to show the importance of the relational context on product innovation. Therefore, the impact of long-term customer relations, customer involvement in new product development, and technology used in customer relations on product innovation is considered. According to our results, hypothesis H1 was confirmed. Long-term relationships with customers are statistically significant for product innovation, in the sense that building long-term relationships leads to an

increase in the likelihood of creating product innovations. Long-term relationships are based on trust. This means that the flow of information from the buyer to the seller will be well-intentioned and facilitated (Mathrani & Edwards, 2020). Strong connections cause information to be transmitted quickly. This makes it possible to correct the defects and omissions that the products have (Saniuk *et al.* (2020). Consumer retention strategies with various loyalty programs (Hwang & Choi, 2020) and appealing to two-way communication (Mathrani & Edwards, 2020) contribute to creating product innovation. Confirmation that long-term partnerships create prerequisites for innovation was also provided by Maheshwari et al. (2006).

Customer involvement in new product development did not show statistical significance in terms of impact on the likelihood of product innovation. Thus, hypothesis H2 is rejected. At first glance, this is a completely unexpected result. However, a more detailed analysis of the available literature, and the analysis of the area and sample on which the research was conducted lead to the justification of this result. The available literature says that it is necessary to think about the possibilities of including customers in certain development processes, ignoring them and the very characteristics of customers that are needed for cooperation (Coviello & Joseph, 2012). In addition, there is a question related to the activities that customers should perform in the development process (Gruner & Homburg, 2000). Mohr and Sarin (2009) say that, for technology companies, involving customers in development can be complex and ineffective. In the process of providing services, it is much simpler to involve customers and ask for their suggestions and room for innovation (Migdadi, 2021). Situations in which sharing information and displaying processes can threaten the company's operations are also considered (Selnes & Sallis, 2003). Cooperating with one group of customers can cause a company to remain preoccupied with that group while losing sight of winning new customers (Gu *et al.*, 2008). Analysing the area where the research was carried out, few companies work on involving customers in the development of their products. The reasons for this may be the lack of awareness of the importance of involving customers in the development of a new product and the fear of misuse of data that clients would obtain during cooperation. In addition, there will always be those who are vain among them, who think they know what is good for customers and do not want someone else to tell them what to do.

The use of technology and its improvement leads to an increase in the probability of product innovation. The results showed that this relationship is positive and statistically significant. This confirms hypothesis H3. These findings are confirmed by Parry et al. (2016), Huang and Chu (2010), and Payne et al. (2008). According to the results, it can be concluded that the companies from the sample felt the effect of the introduction of technology used for customer relations on the innovation of their

own products. Most of the companies in the sample use CRM tools, and over 50% of them have an automated sales process monitoring process. The results showed that a good part of the companies is available to their customers on the Web. In addition, it is noticeable that not enough attention is paid to the storage and use of data obtained from clients, as well as to the evaluation of CRM performance. It is necessary to pay attention to that, because useful reports can be extracted from those sources, which should be adequately interpreted and used for improvements. Technology should not only serve for monitoring, but for decision-making that will ensure additional positive effects on innovation. The contribution of the work is reflected in the increase of literature in the field of marketing and innovation. The paper can serve as a landmark for further research in this area. It provides an overview of the influence of the relational context on product innovation. It highlights critical customer relationship mechanisms that are important to the success of product innovation. Companies can use it when they want to influence their innovation, by implementing or improving those mechanisms. Understanding this relationship can help companies improve their strategies and processes to become more competitive in the market. Additionally, the paper provides guidance for improving business practices related to the use of CRM in order to achieve innovation and better meet customer needs.

This work carries with it certain limitations. Certainly, during research, it is always better to have more respondents, so the work can be criticised for the size of the included sample. The next limitation is that the sample includes companies from different sectors. This can be tricky due to differences in business processes. Thus, it is possible that certain cooperation mechanisms could not be applied in certain sectors. In this work, it probably happened with the involvement of customers in the development of a new product. Due to the nature of their business, some companies cannot involve customers in development, which may have led to this mechanism not being statistically significant. The results would have been different if this analysis had been done separately for each sector. Also, the number of cooperation mechanisms could be taken as a limitation, since the ones included in this research are not the only ones. Sharing information with customers, joint problem solving, and the like could also be considered.

Recommendations for future research refer to the elimination of the limitations of this work. First, it is necessary to increase the sample and perform the analysis according to sectors. The inclusion of other mechanisms that make up the relational context is recommended. In addition, it would be good to look at the impact of customer relations on other types of innovation, and look at the impact of cooperation with consumers on innovations in services, processes, marketing and organisation.

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УТИЦАЈ ОДНОСА СА ПОТРОШАЧИМА НА ИНОВАЦИЈЕ ПРОИЗВОДА НА ТЕРИТОРИЈИ АП ВОЈВОДИНЕ

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Резиме

Рад анализира утицај успостављања односа са потрошачима на иновације производа. Истраживање је одрађено на подручју АП Војводине у Републици Србији, на узорку од 31 компаније. Главни циљ је био утврђивање статистичке значајности утицаја различитих конструкта који чине маркетинг односе на иновације производа. У питању су дугорочно партнерство са купцима, укључивање купаца у развој новог производа и технологија која се користи у односима са купцима.

Дугорочни односи са потрошачима представљају дугорочни пословни однос заснован на поверењу и посвећености пословних партнера. Подразумева дељење информација, дељење ресурса, усклађивање циљева, комуникацију и заједничко стварање знања. На основу резултата је констатовано да дугорочни односи са купцима доводе до повећања вероватноће креирања иновација производа.

Укључивање купаца у развој новог производа подразумева непосредно тражење сугестија и прикупљање информација, приликом развоја. То представља још један додатни инпут у производњи, који треба да допринесе стварању производа који ће бити привлачан за купце. Истраживање је показало да укључивање купаца није статистички значајно за иновације производа.

Технологије које се користе у односима са купцима су ту да унапређују односе. Представљају кључну базу информација о купцима, која може допринети иновативним активностима компаније. Њихова примена често доводи до нових открића. Налази истраживања потврђују утицај технологије на вероватноћу креирања иновација производа. Увођење нових технологија и њихово унапређење доприноси повећању вероватноће развоја нових производа.