An Application of Financial IT Programs to Support Customer Relations

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Abstract: The aim of the paper was to present research on the status for the use of financial information systems and CRM systems or ERP modules for customer relationship management to support customer relations, and in particular to identify the status of the use of these systems depending on the type of an enterprise in the Podkarpackie province (voivodeship). At the same time, the study examined whether the customer relationship management system was coupled with the enterprise's financial and accounting system in terms of importing customer information, and the sources of obtaining customer information were identified. On the basis of the research conducted, it should be stated that the CRM class system was functioning in almost 31% of the enterprises under the survey. As a result of the analysis of contingency tables and verification of statistical significance of the relationships studied, and using the chi-square independence test, it was confirmed that the type of enterprise differentiated the entities in terms of the use of CRM systems (or the relevant ERP modules for customer relationship management) in supporting customer relations. At the same time, the study showed that the use of customer relationship management systems was related to the indication of the desired sources of customer information. The research filled a gap in knowledge about the use of customer relationship management systems in enterprises in the Podkarpackie province.

Keywords: accounting & finance system, CRM, customer relations.

1. Introduction

The theory and practice of customer relationship management revolves around the concept of CRM (*Customer Relationships Management*), understood as a comprehensive strategy involving the acquisition of specific customers, their retention and cooperation to create a value for the customer, and thus for the company (Foltean, Trif, & Tuleu, 2019, p. 563; Kale, 2016, pp. 109-111; Parvatiyar & Sheth, 2002,

p. 5). The strategy understood in this way makes it necessary to integrate different functions in the organization, i.e. sales, customer service, marketing, in order to achieve effectiveness in delivering value to the customer (Łada, 2011, p. 60).

The concept of CRM, extremely relevant in times of the rapid development of markets, thanks to the revolutionary progress of information technology, has influenced the interest in software to support customer relationships (Kulkarni, Mokadam, & Devadkar, 2022, pp. 165-168). Its purpose is to collect, store and analyse customer data in order to help the company identify and reach customers, increase sales, plan and execute marketing campaigns (Lendel & Kubina, 2008, p. 1; Reinartz, Krafft, & Hoyer, 2004), and consequently increase company value.

Research shows that the customer is the main generator of the company's value (Caputa, 2015, pp. 257-315; Dobiegała-Korona, 2011, pp. 521-522; Gupta, Lehmann, & Stuart, 2004, pp. 7-18; Seybold, Marshak, & Lewis, 2001), therefore the information obtained about the customer is extremely valuable for the company in order to determine customer value (Kubacka, 2020, pp. 34-46). CRM information systems (or ERP modules supporting customer relationship management) can be their source, therefore the aim of this paper was to identify the status of the use of customer relationship management information systems in medium and large enterprises located in the Podkarpackie province. These systems can support customer cost accounting by also containing non-financial information (Buk & Wiercioch, 2021, pp. 4112-4119; Lew, 2016, pp. 113-122; Lew, Pacana, & Kulpa, 2017; pp. 124-129). There can also be a feedback relationship between these systems when the customer relationship management system acquires data from the customer cost account.

2. Literature review

CRM adoption in the Asia Pacific is 75.9%, 85.7% in Europe, and 83.6% in America (Kimble, 2021). In Europe in 2021, the business software market, including sub-segments ERP and CRM, was expected to reach about $23.95 billion. (*Statista – Technology Market Outlook,* 2021). Specifically, revenue in the ERP segment is projected to reach about $10.9 billion, while that of the CRM segment is expected to amount to $13.7.

The new generation of customer management information systems is characterised by its broad applicability beyond marketing and sales (Li, Huang, & Song, 2019, pp. 392-393; Itani, Kalra, & Riley, 2022, pp. 1-19). In the literature there is a formulation that describes CRM systems as "enterprise level solutions" (Burnett, 2002, p. 280) encompassing all functions necessary to generate information, reports, and client-server interaction. Research also shows the positive impact of using customer relationship management systems that are based on artificial intelligence on B2B relationship satisfaction and business performance (Chatterjee, Chaudhuri, & Vrontis, 2022, pp. 437-450; Guerola-Navarro, Oltra-Badenes, Gil-Gomez, & Gil-Gomez, 2020, pp. 2669-2691; Guerola-Navarro, Oltra-Badenes, Gil-Gomez, & Fernández,

2021). The concept of social CRM is also gaining recognition (Kim & Wang, 2018, pp. 40-50). Trainor (2012, p. 321) defines social CRM as "the integration of traditional customer-facing activities with emergent social media applications to engage customers in collaborative conversations and enhance customer-relationships." The capabilities of social CRM extend the traditional CRM by integrating social functions and processes that arise from company-customer or customer--customer interactions (Greenberg, 2010). Social CRM represents a challenge as well as an opportunity for today's enterprises in terms of acquiring customer information and cooperating with customers, which goes beyond traditional CRM. It captures, aggregates and enables the analysis of data from social media, which is an integral part of the customer's life (Lamrhari, Ghazi, Oubrich, & Faker, 2022).

Burnett (2002, p. 280) presents the components of a typical CRM software. When analysing CRM information systems, attention should be paid to the benefits and drawbacks of their implementation in a company. Many positive effects resulting from proper system implementation are presented in the literature (Buchwald & Guzewski, 2014, pp. 245-247; Burnett, 2002, p. 283; Chen & Popovich, 2003, p. 677; Soliman, 2011, pp. 168-170). Among those, first of all, is the acquisition of knowledge about customers during data collection and an analysis, which are the basis for taking appropriate actions affecting the value of the enterprise (Khodakarami & Khan, 2014, p. 28). Research by Haislip and Richardson (2017, pp. 16-29) showed that CRM systems have a positive impact on business processes and improved operational performance to a greater extent than enterprises that do not implement CRM systems.

Many authors also mention the imperfections of CRM systems, in particular (Farhan, Abed, & Ellatif, 2018, pp. 402-403; Gronwald, 2017, pp. 115-117; Kale, 2004, pp. 42-46; Kotler & Keller, 2016, p. 664; Perez-Vega, Hopkinson, Singhal, & Mariani, 2022, pp. 6-7):

- failures of CRM implementations (Krigsman, 2009),
- low productivity improvements (Raman, Wittmann, & Rauseo, 2006, pp. 39-53),
- loss generation, lack of improvement in company performance. Gartner found that this was the case for about 70% of CRM projects (Reinhartz, Krafft, & Hoyer, 2004, pp. 293-305),
- high expenditure of time and money on systems (Foss, Stone, & Ekinci, 2008, pp. 68-78) resulting from building and maintaining a database (Kotler, & Keller, 2016, p. 664),
- negative employee attitudes towards the use of data,
- lack of willingness to establish a customer relationship with the company,
- a wrong definition of the purpose of their implementation,
- the use of inadequate measurement techniques – the expectation of an increase in customer value in the long term forces a reorientation of the indicators used in the evaluation of the company activities,
- necessity to reorganise the structure of the enterprise,
- lack of rationale for introducing an IT system to manage customer relations:

a) if the product is bought occasionally (e.g. a piano),

b) customers have low loyalty to the enterprise or the brand,

c) unit sales are low (e.g. lollipops),

d) the cost of data collection is too high,

e) there is no direct contact between the retailer and the final customer.

Enterprise resource planning (ERP), on the other hand, is a computer-based information system for enterprise integration and it integrates data from all functional areas of an enterprise to support management processes (Kłos & Patalas, 2008, p. 52; Kumar & Gupta, 2012, p. 986).

ERP implementation is a huge investment challenge for an enterprise (Chen, 2001; Chopra, Sawant, Kodi, & Terkar, 2022). As reported by Mittelstädt et al. (2015, p. 450) and Anaya and Qutaishat (2022, p. 860), these costs are mostly justified since the information processed in these systems has a direct impact on the success of the enterprise (productivity, quality, customer satisfaction, fulfillment of industry-specific requirements for documentation and traceability of business processes). Nevertheless, some authors show that the speed of decisions based on information generated from an ERP system decreases with increasing data volume and task complexity (Mittelstädt, Brauner, Blum, & Ziefle, 2015, p. 450). Other studies suggest that the most important benefits associated with ERP systems come from the reliable collection and aggregation of data in them and time savings (Antoniadis, Tsiakiris, & Tsopogloy, 2015, pp. 299-307). Based on their research, the authors found that cost reduction is not the main benefit of adopting ERP systems. In addition, these systems do not always function as expected by their users (Bürkland & Zachariassen, 2014, pp. 409-410), and the reasons for failure are various (Coşkun, Gezici, Aydos, Tarhan, & Garousi, 2022).

CRM information systems (or the corresponding ERP modules for customer relationship management), are designed to provide information about customers, improve customer service, and thus improve enterprise performance (Nwankpa, 2015, p. 336). An interesting evaluation of ERP systems for small and medium-sized enterprises in Poland was conducted by Ziemba and Gago (2022, pp. 3384-3392). Comparing five ERP systems using the Analytic Hierarchy Process (AHP) method, they showed that Symfonia ERP software has the highest global usability, followed by MS Dynamics in second place and INSOF in third place. However, there is a lack of studies analysing the status of the use of CRM systems or ERP modules that support customer relationship management in Poland. Therefore, an attempt was made to verify this status in the Podkarpackie province due to the possibility of obtaining questionnaires from a large number of respondents.

Based on the literature review and the research gaps identified, the following hypotheses were formulated:

H1: The type of enterprise is differentiated by having a CRM/ERP system to support customer relationship management regarding the Podkapackie province.

H2: Having CRM systems or ERP modules to support customer relationship management determines the desired sources of customer information.

3. Data and methodology

The problem of the study and the choice of research methods involved the use of questionnaires as the basic research technique.

In order to verify the research hypotheses formulated, the data obtained by means of the survey were analysed. The choice of statistical methods was determined primarily by the nature of the examined statistical features.

Appropriate statistical tests were applied to assess the statistical significance of the relationship between the selected features. Since the comparisons concerned features of a nominal nature, the method applied was to create contingency tables and to verify the statistical significance of the relationships examined by means of the chi-square independence test. The data sheet was analysed using the STATISTICA^{TM} program.

The target group of the study were the enterprises employing more than 49 employees, and located in Podkarpackie voivodeship (province). A complete database of the entities was obtained from the Statistical Informatics Centre. As of 31 October 2019, it included 601 statistical units. The criterion for selection of the target group was dictated by the fact that no previous research on this group was identified in the analysed scope.

The actual research (after previously conducting two pilot studies on a group of 15 respondents) was carried out between March and October 2020. Finally, the research sample amounted to N = 181.

The structure of the research sample taking into account its differentiating criteria is presented in Table 1.

Table 1. Structure of the enterprises surveyed

Differentiating criteria	N*	% of enterprises
Type of activity		
production	79	43.7
services	48	26.5
trade	12	6.6
multi-branch	42	23.2
Size of the enterprise		
medium (50-249 employees)	142	78.5
large (more than 249 employees)	39	21.5
Level of annual sales revenue [million PLN]		
≤ 10	45	24.9
(10-25]	36	19.9
(25-50]	42	23.2
(50-100]	27	14.9
>100	31	17.1

* N – quantities.

Source: author's own research.

It should be noted that the most numerous group comprised enterprises engaged in production, which constitute almost 44% of those surveyed. Service enterprises were the second largest group, and accounted for more than a quarter of the entities (26.5%). Businesses with a diversified nature of activity, covering at least two types of activity, constituted an almost equally numerous group. They were classified for the needs of further analyses as multi-branch enterprises (23.2%). The least numerous group was represented by trade enterprises (6.6%).

In the surveyed sample, 78.5% were medium-sized enterprises employing 50-249 employees; 28.5% were large companies with more than 249 employees. At the same time, most of the respondents were from enterprises with revenues below 10 million PLN (24.9%).

4. Results of the tests

The research concluded that fewer than one in three enterprises use a CRM information system or ERP modules for customer management (30.4%). Table 2 summarises the respondents' answers.

Table 2. The use of information systems for customer management

The use of CRM information systems or ERP modules for customer management	N*	% response
Yes	55	30.4
No but in the next 2-3 years have no plans to implement such a system	98	54.1
No but within the next 2-3 years there is an intention to implement such a system	28	15.5

* N – quantities.

Source: author's own research.

The research showed that more than half of the companies did not intend to implement a customer management system within 2-3 years (54.1%). Only 15.5% of the respondents declared such an intention. By conducting the analysis, the relationship between the use of a CRM information system or relevant ERP modules for customer management and the type of enterprise was confirmed.

The results of the verification of the research hypothesis formulated in the study, along with the structure of the respondents' answers, are presented in Table 3.

The detailed analysis of the research results allows for the adoption of hypothesis H1 according to which the type of enterprise differentiates the owning of a CRM/ERP system for customer relationship management. The largest number of trade enterprises have a system or modules for customer management (41.7%) and manufacturing (31.7%). At the same time, the fewest respondents of multi-industry

enterprises (28.6%) and service companies declare having such a system (27.0%). Two-thirds of them stated that they have no intention of implementing such a system (64.3% and 66.7%, respectively). Trade companies are the most flexible in terms of introducing a CRM system or relevant ERP modules, with one in four declaring such an intention (25.0%), similarly to manufacturing companies (24.0%). The least interest in implementing a system for customer management was verified in service companies (6.3%) and multi-branch companies (7.1%).

Table 3. The use of customer management information systems according to the type of enterprise. Results of the chi-square independence test

Independent variable	The use of CRM information systems or ERP modules for customer management		
	yes	no and has no intention of implementing the system	no but there is an intention to implement the system within 2-3 years
Type of enterprise ($p = 0.0264$)			
Production	31.7%*	44.3%	24.0%
Commercial	41.7%	33.3%	25.0%
Services	27.0%	66.7%	6.3%
Multi-branch	28.6%	64.3%	7.1%

* The intensity of the shading is intended to facilitate a visual analysis of the structure of the response.

Source: author's own research.

Deepening the analysis of the use of CRM systems or ERP modules for customer management, an important question is whether CRM systems or ERP modules for customer relationship management acquire data from the financial and accounting system, or whether these systems are coupled with each other. The structure of the respondents' answers to this question is presented in Table 4.

Table 4. The use of CRM system or ERP modules for customer relationship management for customer transaction data from financial and accounting system

Does the customer relationship management system for customer transaction information use data from the financial and accounting system?	N*	% response
Yes	41	74.5
No	5	9.1
Do not know	9	16.4

* N – quantities.

Source: author's own research.

Almost three-quarters of the respondents stated that the company's customer management system uses data from the financial and accounting system (74.5%). This is positive information as it indicates the possibility of adapting the financial and accounting system in such a way as to obtain relevant customer information directly from this system, whereas 16.4% of the respondents have no knowledge of this subject.

The sources of obtaining customer information are presented in Table 5.

Table 5. Sources of customer information

Sources of customer information	N*	% response
Financial and accounting system	140	77.3
CRM system or ERP modules for customer relationship management	25	13.8
Other sources (mainly data collected in Excel sheets)	16	8.9

* N – quantities.

Source: author's own research.

The research showed that more than three-quarters of the respondents declared that they obtained customer information from the financial and accounting system (77.3%), while less than 14% from a CRM system or ERP modules for customer relationship management (13.8%).

In the context of the issues analysed on the use of CRM systems (or ERP modules for customer relationship management), the results regarding the desired sources of customer information are interesting (see Table 6).

Table 6. The desired sources of customer information

The desired sources of customer information	N*	% response
Financial and accounting system	107	59.1
CRM system or relevant ERP modules	69	38.1
Other sources	5	2.8

* N – quantities.

Source: author's own research.

The analysis of the structure of the answers presented in Table 6 concerning the desired sources of information about customers indicates that almost 60% expect to obtain such information from the financial and accounting system, while almost 40% of the respondents indicate in this respect the CRM system (or appropriate ERP modules for customer relationship management).

The analyses carried out gave rise to the verification of a relation between the use or not of the CRM system (or ERP modules for managing customer relations) and the indication of the desired sources of customer information. The chi-square independence test resulted in a test probability at a highly significant level ($p = 0.00002$***)[1]. Thus, hypothesis H2, according to which the use of customer relation management systems determines the indication of the desired sources of customer information, was positively verified. The detailed data are presented in Table 7.

Table 7. The use of CRM/ERP systems and desired sources of customer information

Desired sources for obtaining information about customers	The use of CRM system or ERP modules for customer relationship management						
	yes		no, no intention to implement		no, but there are plans for implementation in 2-3 years		total
	N*	%	N*	%	N*	%	N*
Financial and accounting system	26	47.3	73	74.5	8	28.6	107
CRM system or ERP modules for customer relationship management	27	49.1	22	22.4	20	71.4	69
Other	2	3.6	3	3.1	0	0.0	5
Total	55	100	98	100	28	100	181

* N – quantities.

Source: author's own research.

The research showed that out of 55 entities (representing 30.4% of the total surveyed) that have a customer management system (49.1%, i.e. 27 entities), declare that they want to obtain information on customers from this system, while 47.3% (26 entities) prefer a financial and accounting system, despite having a CRM system. The situation is different for companies that do not have a CRM system and do not intend to implement such a system in the near future (98 entities). Fewer than three-quarters of those indicate the financial and accounting system as the desired source of customer information (74.5%), and only one in five would prefer the CRM system (22.4%). The respondents from companies that do not have a customer management system, but plan to implement such a system (28 entities), strongly indicate the CRM system as the preferred customer knowledge base (71.4%), compared to supporters of information from the financial and accounting system (28.6%).

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[1] The result of the chi-square independence test ($p = 0.00002$) was verified using the so-called exact independence test because the counts in some cells of the contingency table were extremely small. However, an almost identical result was obtained ($p = 0.0001$), so that the conclusions drawn from the originally applied test are correct.

5. Conclusion

The results presented allow for the identification of the existing state in the field of an application of customer management support systems (CRM or relevant ERP modules) in the surveyed entities, and sources of obtaining information about them. It was found that almost every third company had a CRM system or ERP modules for customer relationship management, while fewer than half of them use information from this system. The remaining entities indicate the financial and accounting system as the base of customer information. The research also confirmed that the type of enterprise is differentiated by the use of systems that support customer relationship management. The considerations and results of the empirical research carried out in this study set the directions for further theoretical and empirical research. Among the proposed directions of scientific inquiry that constitute the continuation of the research, one should mention:

- identification and empirical verification of the types of data processed by CRM/ERP systems for customer relationships,
- indication of the opportunities to exchange data with customers using CRM/ERP systems,
- identification of the key success factors in the implementation and operation of CRM systems in Polish enterprises using benchmarking (Bokovec, Damij, & Rajkovič, 2015; Xie, Allen, & Ali, 2022),
- indication of the possibilities of using CRM information systems in the field of monitoring aspects connected with non-financial components of customer value.

In conclusion, it is crucial to emphasise the importance of CRM systems for enterprise operations, especially in the context of developing customer relationships. It follows that these systems, their applications and functionalities should become a source of further research.

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Wykorzystanie finansowych programów informatycznych w zakresie wspierania relacji z klientami

Streszczenie: Celem artykułu jest przedstawienie badań dotyczących stanu wykorzystania finansowych systemów informatycznych oraz systemów CRM lub modułów ERP dotyczących zarządzania relacjami z klientami w zakresie wspierania relacji z klientami, w szczególności identyfikacji stanu zastosowania tych systemów w zależności od rodzaju przedsiębiorstwa w województwie podkarpackim. Zbadano też, czy system do zarządzania relacjami z klientami jest sprzężony z systemem finansowo-księgowym przedsiębiorstwa w zakresie importowania informacji o kientach, a także wskazano źródła pozyskiwania informacji o klientach. Z przeprowadzonych badań wynika, że system klasy CRM funkcjonuje w niemal 31% badanych przedsiębiorstw. W efekcie analizy tabel kontyngencji oraz weryfikacji istotności statystycznej badanych związków za pomocą testu niezależności chi-kwadrat potwierdzono, że rodzaj przedsiębiorstwa różnicuje badane podmioty pod względem stosowania systemów CRM (lub odpowiednich modułów ERP do zarządzania relacjami z klientami) w zakresie wspierania relacji z klientami. Równocześnie badania wykazały, że wykorzystywanie systemów do zarządzania relacjami z klientami ma związek ze wskazaniem pożądanych źródeł pozyskiwania informacji o klientach. Badania zapełniły lukę w wiedzy w zakresie wykorzystania systemów do zarządzania relacjami z klientami wśród przedsiębiorstw z województwa podkarpackiego.

Słowa kluczowe: system księgowo-finansowy, CRM, relacje z klientami.