

Improving Customer Relationship Management Through Business Intelligence

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Abstract. This paper examines empirically the role of business intelligence (BI) in customer relationship management (CRM). Drawing on relevant literature on BI and CRM, the research model for the current investigation proposes that BI approaches of an organisation and its competition influence organisational business strategy which in turn impacts its customer strategy. The model is tested empirically using survey data of 165 respondents from 73 different private and state owned businesses operating in a transitional economy of East Europe. Empirical evidence confirms a key role of BI in CRM through its impact on organisational business and customer strategies development. Such findings make two important contributions. For research, they provide an improved understanding of the factors and processes involved in realising benefits from BI. For practice, they show managers how BI can be leveraged to achieve performance gains through competitive actions. Further research is recommended to confirm and extend the current investigation.

Keywords: Business intelligence (BI); customer relationship management (CRM); business strategy; customer strategy; survey; transitional economy; East Europe.

1. Introduction

Modern organisations function in a business environment that is characterised by unprecedented complexity, uncertainty and fast pace of change. Some of the crucial developments that initiated such transformation include globalisation, knowledge-intensive economy and rapid technological advancement. These developments have brought new challenges for both individuals and organisations. One's ability to adjust to the new perspective, and

comprehend and react swiftly to environmental changes has become critical for success (Liang, 2012).

Recent literature suggests that one of the most important differentiating factors among organisations operating in highly competitive customer markets is their ability to make effective decisions to address their customers' preferences and priorities (Bose, 2009). Therefore, organisations from all around the world are increasingly looking for advanced technologies and systems that can help them to successfully meet these goals.

Business intelligence (BI) is generally considered by scholars to have the potential to contribute to effective business decisions and to help organisations improve performance and create competitive advantage (Liebowitz, 2006). BI may be especially beneficial to companies with a strong customer focus. In highly competitive markets, companies are forced to seek new ways to attract and retain the most profitable customers. Some businesses promote loyalty through financial and service incentives, others seek brand and service differentiation. Both approaches place high importance on the quality of customer relationships.

Marsella *et al.* (2005) give a number of examples of how BI can help business leaders to optimise their customer relationships. These include: monitoring customer satisfaction and loyalty and diagnosing the causes of changes; improving marketing campaigns and attracting new customers; maximising the value of sales to existing

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customers and minimising customer loss; credit risk scoring; and value modelling and analysis. Also, the promise of BI is significant in the areas of fraud detection, identity theft and tax evasion.

It is evident from the above that BI has gained considerable attention in recent years. The literature has described various applications of BI and speculated on how they might contribute to performance gains and competitive advantage. However, a clearly articulated theoretically grounded model of the factors and processes involved in realising the potential performance gains from BI is not available in the literature (Sharma *et al.*, 2010).

Given that BI has the potential to deliver significant benefits, it is not surprising that researchers and practitioners alike are increasingly searching for a better understanding of the phenomenon and how it can be leveraged for performance gains and competitive advantage.

Therefore, the purpose of this paper is to address the issue by focusing on the role of BI in the customer relationship management (CRM) strategy formulation. More specifically, the study aims to examine how BI approaches of an organisation and its market competitors affect the organisation's CRM strategy development in terms of its business and customer strategy components. By identifying key factors and processes involved in BI enabled CRM, the study is expected to fill (to some extent) the existing gap in our current understanding of BI as an important knowledge management (KM) related phenomenon.

The paper is structured as follows. After this introductory section, the paper reviews the literature on BI and CRM. Drawing on the review, the paper then proposes a research model for understanding the role of BI in CRM. This is followed by sections on research methodology, results and discussion of main findings. The paper concludes with current contributions and future directions.

2. Literature Review

2.1. Business intelligence (BI)

There is no generally agreed definition of the term "business intelligence" or "BI" at present. Literature uses the term in two very different ways. Some authors refer to BI as the "analytical knowledge" that can be delivered to users in reports or dashboards. In this way, the term is used either as a non-domain specific "business intelligence" or with a specified subject domain such as "market intelligence", "financial intelligence", "supply chain intelligence" and the like. Other authors use the term BI to denote diverse tools and technologies that enable storage of large amounts of data, or discovery of new knowledge and patterns from

these data. When it comes to knowledge management (KM), BI can be treated either as a type of knowledge (stock) or as a type of technology/tool (enabler). The focus of this study is on the latter.

Under pressure to improve productivity, quality, and speed, managers have embraced various tools for quality management, benchmarking and reengineering. BI is regarded as one of the latest and most powerful decision makers' tools (Davenport and Harris, 2007). In this study, BI refers to a broad category of applications and technologies of gathering, storing, accessing and analysing large amounts of data (Wang and Wang, 2008). Three essential components of BI include data warehousing, multidimensional analytical tools, such as online analytical processing (OLAP) and data mining applications (Kroenke, 2012; Laudon and Laudon, 2012). In KM, BI is often equated with codification strategy, concerned with explicit knowledge provided in electronic data stores (Herschel and Jones, 2005). As a system, BI is also sometimes used interchangeably with decision support systems or their extension (Turban *et al.*, 2008).

The central theme of BI is the utilisation of massive amounts of captured internal and external data towards improving the strategic decision making process and thus helping organisations meet their strategic goals (Yeoh and Koronios, 2010). The key infrastructure for most enterprise BI systems is a data warehouse, a subject-oriented, integrated, time-variant and non-volatile collection of data. The availability of large data warehouses and powerful tools for visualisation and analysis has ignited widespread interest in BI usage for organisational performance gains. In addition, the literature on data mining and knowledge discovery investigated the potential of this knowledge to develop new value-creating strategies.

However, past experiences with various types of information systems (IS) implementations indicate that expected benefits do not always follow from the acquisition and use of these systems (Sauer, 1993). A recent literature review stresses the key role of organisational factors in obtaining gains from advanced technologies such as BI (Sharma *et al.*, 2010). A socio-technical perspective of KM further reinforces the importance of non-technical mechanisms such as organisational culture, leadership and measurement for successful KM implementations (Handzic, 2011). These aspects are not addressed by the current investigation, as this study takes the perspective of BI as a technology-orientated codification KM approach.

Finally, the proponents of the contingency view of KM recognise a series of task, environment and person-related characteristics as contextual factors that affect the

suitability of alternative KM solutions for organisational goals (Hansen *et al.*, 1999; Snowden, 2002; Becerra-Fernandez *et al.*, 2004). Competitive intensity of the market represents an important environment-related contingency factor. According to Porter (2008) model there are five forces that determine competitive intensity of the market. These forces include: bargaining power of suppliers, bargaining power of customers, threat of substitute products or services, threat of new entrants, and competitive rivalry among established businesses within an industry. It is claimed that these forces affect a firm's ability to serve its customers and make a profit. A change in any of the forces normally requires a company to reassess its business strategy. So, technology enabled actions of the competitors such as their BI approaches are expected to affect organisational competitive responses. Porter (2008) argues that the essence of the sustainable business strategy is "choosing a unique and valuable position rooted in systems of activities that are difficult to match". In order to gain a competitive advantage over rivals, organisations need to devise a strategy that will serve the customer needs better or differently.

In summary, past literature makes speculations on how BI might help organisations to improve their decisions and address their customers' preferences and priorities. However, according to Sharma *et al.* (2010) there is still no well articulated model of the factors and processes involved in improving customer relationships through BI. This paper aims to fill this gap to some extent by providing selected empirical evidence and shed some light on the role of BI in CRM.

In particular, the scope of the present investigation is limited to two BI factors: (i) BI approaches of the organisations under study and (ii) BI approaches of these organisations' competitors. The first factor represents technology-orientated KM practices applied by the studied organisations. The second one represents the contextual contingency factors of the studied market. It is expected that patterns associated with competitors' BI actions will affect organisations' competitive responses (Sambamurthy and Zmud, 2012).

2.2. Customer relationship management (CRM)

CRM is the most recent model developed to help in managing a company's interactions with customers. It has attracted a great deal of interest from both academics and executives over the past couple of years. Despite this, defining CRM remains similarly problematic as defining BI. Presently, there is no single accepted definition of the term.

In the academic community, the term is often used interchangeably with "relationship marketing" (Parvatiyar and Sheth, 2001). It is also commonly used in the context of technology solutions for "information-enabled relationship marketing" (Ryals and Payne, 2001). More generally, definitions of CRM differ from narrow technological and tactical to broad strategic and organisational (Coltman *et al.*, 2010; Saldanha and Krishnan, 2011).

Payne and Frow (2005) provide an extensive overview of existing views and definitions of CRM. Then they define CRM as a comprehensive strategy and process of acquiring, retaining, and partnering with selective customers to create superior value for the company and the customer. In such a process-based strategy view, they identify five generic processes of CRM: strategy development process, value creation process, multichannel integration process, information management process and performance assessment process. The focus of this study is on the process of CRM strategy development.

According to Payne and Frow (2005), the process of CRM strategy development requires a dual focus on the organisation's business strategy and its customer strategy. The success of CRM is affected by how well the two interrelate. Business strategy comes first. It involves a detailed analysis of business and the articulation of a company's vision as it related to CRM and its competitive environment. The development of an appropriate customer strategy requires its alignment and integration with a business strategy. Typically, it involves examining the existing and potential customer base. It also involves decisions about segmentation approaches and channels.

Technology enabled competitive actions may take many different forms depending on the type of customers they serve (Sambamurthy and Zmud, 2012). For example, organisations pursuing customers who seek low cost and convenience may adopt an operational excellency as their value discipline. For customers seeking tailor-made products and services organisations may adopt customer intimacy value. For customers that seek new and stylish products and services, organisations may adopt product leadership strategy. Generally, customers are willing to pay a premium for effective tailoring and style.

In summary, several scholars have noted that CRM brings together people, technology and organisational capabilities to ensure connectivity between the company, its customers and collaborating firms (Coltman *et al.*, 2010). They also expressed concerns regarding the lack of empirical work on a specific capability or a combination of capabilities that deliver most business value. This study addresses this lack partly by empirically examining the role of BI capabilities in the CRM strategy development process.

Specifically, the current investigation examines two inter-related components of the BI enabled CRM strategy development process: (i) business strategy and (ii) customer strategy. This process is considered the most important of five core CRM processes, as it defines the overall objectives and parameters for the organisation’s CRM activities. It also shapes the other four key CRM processes (value creation, channels integration, information management and performance assessment).

2.3. Research model

Drawing on insights obtained from BI and CRM literature, the following research model is proposed and presented in Fig. 1. The proposed model depicts the following four interrelated variables: (i) organisation’s BI, (ii) competitors’ BI, (iii) organisation’s business strategy and (iv) organisation’s customer strategy.

The inclusion of the organisation’s BI variable in the proposed model is consistent with the general management theory. This theory argues that BI systems enable “evidence-based management” in business (Pfeffer and Sutton, 2006). More specifically, BI systems support decision making by structuring, storage and use of large amounts of high quality data in data warehouses. Reporting, dashboard and online analytical processing technologies and sophisticated statistical tools facilitate decision makers’ interpretation of organisational data and enhance their decision-making capabilities. BI can provide benefits in CRM by enabling an improved strategy development process and thus, organisational performance and competitive advantage.

The competitors’ BI variable is partly based on Porter (2008) work on competition, and partly on the contingency view of KM (Hansen et al., 1999; Snowden, 2002; Bercerra-Fernandez et al., 2004). In the five forces model, competitive rivalry within the industry is one of the major forces

that determine the competitive intensity of the market. From the contingency theory perspective, the competitive market represents an important contextual factor in KM.

Furthermore, the model adopts two CRM strategy variables from Payne and Frow (2005). They distinguish between an organisation’s business strategy and an organisation’s customer strategy components of CRM. The business strategy focuses on a review and articulation of a company’s vision as it relates to CRM. It also involves a review of the industry and competitive environment. Most importantly, the business strategy determines how the customer strategy should be developed and how it should evolve over time. The customer strategy focuses primarily on examining the existing and potential customer base. Besides, it involves identifying the most appropriate forms of segmentation, as well as segment granularity. As part of this process, organisations also need to consider the most suitable channel (e.g. the Internet). Literature suggests that the overall CRM success depends on how well these two strategies are aligned and integrated.

With respect to relationships, the model proposes three plausible associations among model variables. First of all, the model recognises that an organisation’s BI plays an important role in achieving strategic goals in CRM by allowing organisations to get valuable insights into their operations and customers. Typically, these insights are obtained through the mining and analysis of data residing in organisational repositories. In this way, BI enables organisations to develop dynamic capabilities and apply well-informed business strategies (Sharma et al., 2010). Prior research also indicates that the implementation of BI helps organisations achieve superior performance (Yu et al., 2004).

Next, the model suggests that competitors’ BI approaches also impact an organisation’s business strategy. Porter (2008) argues that external competition shapes competitive strategies by pushing organisations to think beyond operational effectiveness and play by a new set of rules. Accordingly, the model predicts that more intense pressure from competitors’ BI approaches will force organisations to adopt more competitive business strategies.

Finally, the model proposes that an organisation’s business strategy directly affects its customer strategy. Organisations can undertake a variety of competitive strategies to accomplish their customer relationship goals. Generally, well-informed competitive strategies that focus on customers for products, markets or channels result in performance gains and create competitive advantage (Sharma et al., 2010). The proposed model anticipates that more goal-orientated business strategies will ultimately lead to superior customer strategies.



Fig. 1. Proposed research model.

3. Research Method

3.1. Research design

A cross-sectional survey was selected as the most suitable method for carrying out the empirical test of the proposed relationships among model variables (Glock, 1967). The test was conducted in a natural setting, among employed decision makers who were required to assess the real situation in their organisations and markets.

Questions were designed to capture the respondents' perceptions of their organisation's and their competitors' BI approaches, as well as their opinions about their organisation's business strategy and customer strategy. The relevant items used to measure the research variables included in the model are listed in Table 1. In replying to the questionnaire, the respondents rated their agreement with each given statement relative to negative and positive end-points of a 5-point Likert scale.

3.2. Independent and dependent variables

Two independent variables were: the organisation's BI and the competitors' BI. They were evaluated in the following way — the organisation's BI was measured in terms of discovery, leverage, innovation and essence. It was operationalised by four items, BI1–BI4 as shown in Table 1. Similarly, competitors' BI was evaluated in terms of their analytical capabilities, tools, usage and finance. The variable was measured by an average rating score of items EC1–EC4 presented in Table 1.

Two dependent variables were: the organisation's business strategy and the organisation's customer strategy. Business strategy was evaluated in terms of the organisation's choices of competitiveness, goal alignment, new ways and strong financial performance. It was measured by an average rating score of items BS1–BS4 given in Table 1. Customer strategy was evaluated in terms of the company's customer relationships ability, valuation, targeting

Table 1. Descriptive statistics for research variables.

Variables and items	Mean	Std. Dev.
<i>Organisation's business intelligence</i>		
BI1. My company uses BI tools for knowledge discovery.	3.37	1.26
BI2. Management of my organisation uses BI to leverage our information, business data, such as sales revenue by products and/or departments, or by associated costs and incomes.	3.42	1.15
BI3. My organisation's BI drives our business decision, improves our performance, and leads to innovation.	3.42	1.15
BI4. My company's management realises that BI is essential.	3.53	1.13
average	3.44	1.17
<i>Competitors business intelligence</i>		
EC1. My competitors jump ahead with analytical capability.	2.62	1.08
EC2. The choice of my competitors' analytical tools may affect my company's performance in the market.	2.81	1.10
EC3. My competitors' analytics are successful in financial terms.	2.79	1.07
EC4. My competitors use analytics to evaluate their efforts in terms of improvement of business objectives.	2.95	1.05
average	2.79	1.08
<i>Organisation's business strategy</i>		
BS1. My organisation's management chooses to pursue specific goals on the basis of organisational competitiveness.	3.25	1.14
BS2. Management of my company and shareholders are aligned with our goals.	3.50	1.12
BS3. Our organisational competitiveness is our new way of doing business.	3.20	1.02
BS4. The organisational competitiveness allows my company to have a strong financial performance.	3.24	1.08
average	3.30	1.09
<i>Organisation's customer strategy</i>		
CS1. My company has the ability to initiate, expand, and maintain relationships with our customers.	3.53	1.30
CS2. My company's management optimises customer relationships through valuation.	3.44	1.20
CS3. My company manages customer relationships through "targeting" that will lead us to significant revenue growth.	3.39	1.14
CS4. My organisation uses early warning systems to detect changes in customers' behaviour that indicates service or retention issues.	3.13	1.13
average	3.37	1.19

and warning of changes in customer behaviour. Four items that measured customer strategy are denoted in Table 1 as CS1–CS4.

3.3. Subjects and procedure

The subjects for the current investigation were employees from private and state-owned businesses across a wide range of industry sectors of an Eastern European country. Judgement was used to select a representative sample of businesses through purposive sampling (Singleton *et al.*, 1993).

The survey was voluntary. The questionnaires were distributed to the recipients by email or in person, wherever feasible, in order to lift the low response rate that surveys receive (Fink, 1995). Usable responses were obtained from 165 respondents from 73 different companies.

Two thirds of the respondents (66%) were males and one third (34%) were females. The mean age of the respondents was 40, indicating an experienced sample. About one half of the respondents (45%) were managers and senior administrators, while the other half (52%) were expert professionals (doctors, lawyers, economists etc.). Only a few respondents (3%) held clerical and administrative positions.

The collected responses were encoded, entered into a computer file and analysed using SPSS and AMOS software (Arbuckle, 2007). The sample size of 165 cases was sufficient for the statistical tests of the model. It satisfied a number of recommended conditions, including the minimum of 100 cases and 51 cases plus a number of variables (Kline, 2011; Garson, 2012). The results of the analyses performed are presented in the following section.

4. Results

4.1. Descriptive results

The means and standard deviations for the research variables are presented in Table 1. These results indicate a relatively low level of pressure felt from competitors' BI approaches, as all mean scores for these items are smaller than 3 (out of 5). In contrast, mean scores for an organisation's BI, business strategy and customer strategy are all greater than 3 (out of 5). Such scores indicate the high use of the organisation's BI and superior business strategy and customer strategy.

4.2. Research model test

The research model was tested following recommended SEM analytical procedures (Kline, 2011). Factor analysis was first conducted through Principal Component Analysis

Table 2. Summary results of factor analysis.

Item	Rotated component matrix ^a			
	Component			
	1	2	3	4
BI3	0.903	0.036	0.178	0.174
BI1	0.886	0.019	0.231	0.123
BI2	0.868	0.079	0.233	0.149
BI4	0.808	0.028	0.205	0.221
CS1	0.032	0.916	0.083	0.084
CS2	-0.029	0.847	0.201	0.230
CS3	0.084	0.845	0.206	0.237
CS4	0.069	0.777	0.331	0.212
BS2	0.271	0.228	0.834	0.265
BS1	0.272	0.203	0.818	0.256
BS3	0.258	0.258	0.754	0.339
BS4	0.325	0.396	0.573	0.158
EC3	0.142	0.337	0.236	0.755
EC4	0.282	0.242	0.259	0.732
EC1	0.341	0.165	0.471	0.627
EC2	0.236	0.248	0.531	0.588

Extraction Method: Principal Component Analysis
 Rotation Method: Varimax with Kaiser Normalisation
^aRotation converged in 5 iterations.

using Varimax rotation in SPSS to assess the measurement model. The results are presented in Table 2. A generally recommended rule of thumb is to accept items with loadings of 0.50 or above. The table illustrates that all items except EC2 loaded clearly on their corresponding constructs. Judgement call was made regarding the placing of EC2 based on the item analysis and higher loading value.

In addition, composite reliability coefficients (Cronbach's alpha) were calculated for each variable. These values ranged from 0.875 for business strategy to 0.911 for customer strategy, 0.917 for competitors' BI and 0.930 for organisation's BI. In general, a value of 0.70 is the recommended threshold for a reliable construct (Nunnally, 1978). In this study, all calculated Cronbach's alpha values exceed the 0.7 threshold, thus establishing adequate reliability.

Then, the recommended path coefficients analysis was performed to test the structural model relationships in AMOS. The results are depicted graphically in Fig. 2. The figure shows that all path coefficients are significant ($p < 0.001$). Furthermore, path values above 0.5 indicate "large" effects (Cohen, 1988) of organisation's and competitors' BI on organisation's business strategy (0.533 and 0.531 respectively), as well as a very strong effect of organisation's business strategy on its customer strategy (0.881).

The figure also shows a small but significant correlation coefficient between two independent variables ($r = 0.18$,

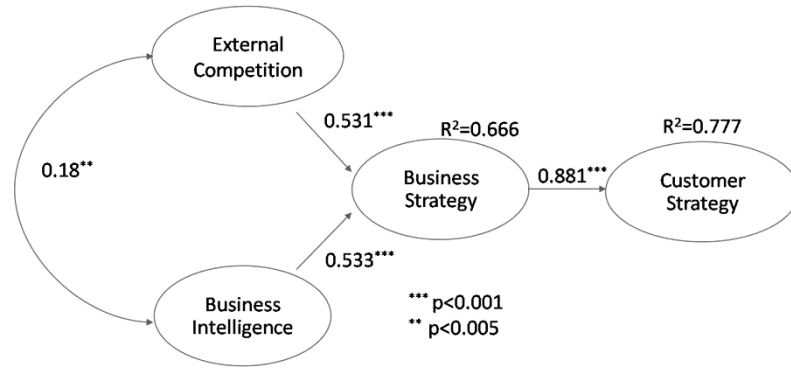


Fig. 2. Standardised path coefficients for the tested model.

Table 3. Summary of fit indices for the tested model.

Index	Method of estimation	Good fit indicators	Results
CMIN/DF	Difference between estimate and sample	Non-significant ratio CMIN//DF ≤ 3	0.221
NFI	Normed fit index (Bentler–Bonett) compares chi square value of model to chi square value of independence model (variables uncorrelated)	> 0.95 and close to 1	0.999
CFI	Comparative fit index (CFI) (Bentler) compares fit of model with alternative models	≥ 0.95 and close to 1	1.000
RMSEA	Root mean square error of approximation measures discrepancy per degree of freedom	< 0.05 at least < 0.100	0.000

$p < 0.005$). This result warrants further investigation of the relationship between these two variables.

Finally, the overall fit of the model to the data was evaluated using a variety of the recommended statistics. The results are summarised in Table 3. Across the set of indices, the proposed model shows evidence of a very good fit to the data in terms of the CMIN/DF, NFI, CFI and RMSEA.

5. Discussion

5.1. Main findings

This study examined empirically selected factors and processes involved in BI enabled CRM. The results of data analyses performed provide full support for the proposed variables and their relationships.

In summary, the study demonstrated that greater use of BI solutions by an organisation and higher pressure felt from its competitors’ BI approaches led to better organisational business strategies and subsequent superior customer strategies. As reported in the previous section, path coefficients corresponding to these relationships were all statistically significant and large.

Such findings are consistent with the theoretical expectations regarding the positive impact of BI on decision making. In particular, they confirm the notion by [Sharma et al. \(2010\)](#) that BI enables decision makers to develop dynamic capabilities to devise better competitive actions and apply them to meet their customer expectations. Dynamic capabilities refer to as an organisation’s processes to integrate, reconfigure, gain and release physical, human and organisational assets to match and even create market change. BI enables the firms to acquire and synthesise knowledge assets and generate new applications from these assets.

The expected impacts of contextual influences on organisational managerial initiatives were also confirmed. These were demonstrated by a significant regression coefficient for competitors’ BI on organisation’s business strategy. This finding points to rivalry in the market/industry as an important driving force behind organisational business strategy. As such, it is consistent with Porter’s (2008) earlier work on competition. The finding also agrees with several integrated KM frameworks which identify the decision environment as an important contingency factor in KM ([Hansen et al., 1999](#); [Snowden, 2002](#); [Becerra-Fernandez et al., 2004](#)).

Perhaps the most interesting finding of the current study is the empirical confirmation of the dual CRM strategy development process (Payne and Frow, 2005) consisting of organisation's business and customer strategy. The study reveals that BI impacts CRM strategy development process by influencing organisation's business strategy, which in turn affects its customer strategy. This is demonstrated by a significant path coefficient for organisation's business strategy on customer strategy. Such a finding highlights the complexity and importance of strategy development processes in BI success as suggested by prior research (Sharma *et al.*, 2010).

Overall, the organisations under investigation in this study exhibited positive attitudes and willingness to adopt BI solutions even in moderately competitive environments. Consequently, they tended to significantly improve their CRM strategy formulation processes. These findings are encouraging as they provide important and previously lacking empirical support for the theoretical expectations regarding positive BI impacts.

5.2. *Implications, limitations and future directions*

The current findings have important implications for research and practice. For research, they provide an improved understanding of the BI enabled CRM. For practice, they show how BI can be leveraged for better CRM strategy formulation. Most importantly, the current study has revealed the interrelatedness between organisational external and internal, technical and strategic factors in managing customer relationships. In particular, the study identified BI approaches of an organisation and its competitors as a key driving force of its CRM strategy development and confirmed a dual process of CRM formulation via business and customer strategies. These findings imply that organisations need to invest in BI to help their managers make effective strategies in order to achieve superior customer relationships. Organising around intelligence has been recognised as a new vital paradigm for leading, managing and structuring organisations in the 21st century, as they enter the era of knowledge economy (Liang, 2012).

Despite being relevant and interesting, the current findings are limited by the specific research context, subjects and method of investigation. Data were collected in the context of East Europe and may not hold in a different culture. Although they are collected from organisations in diverse industries, the small sample size does not allow investigation of potential differences among industries. Besides, sampling was purposeful rather than random, thus making harder claims of strong causal inferences.

Finally, although the developed measurement model has demonstrated good reliability, there are no agreed measures for assessing the success of BI.

These limitations need to be addressed by future research through application of alternative methods in a variety of different contexts and with larger numbers of different subjects in order to verify and generalise current findings. Researchers also need to come up with common success measures for BI. Future research may also examine some of the propositions from the research agenda developed by Sharma *et al.* (2010). These are only some of the plausible questions from the areas of CRM and BI that are rich in terms of research potential.

6. Conclusions

This paper examined empirically a few selected factors and processes in order to improve the current understanding of the role of BI in CRM. The research model proposed on the basis of prior literature review is fully confirmed by empirical evidence.

The current research contributes two important findings. First, the study provides empirical evidence of a dual process of organisational CRM strategy formulation involving the development of business strategy first, followed by the development of its customer strategy. Second, the study stresses that BI initiatives implemented by an organisation and the pressure felt from its competitors' approaches represent key contributors to the improved processes of the organisation's CRM strategy development.

By identifying two key BI related factors (organisation's and competitors' BI approaches) and two key CRM processes (organisation's business and customer strategies) the study provides a valuable evidence-based guidance to managers on how to leverage BI for greater benefit.

However, the interpretation and application of the current findings need to be carried out with utmost caution due to a series of conceptual, methodological and contextual limitations. These limitations pose challenges and provide opportunities for future research. Several plausible directions are suggested for those who wish to pursue further study of BI in CRM.

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