THE ROLE OF INFORMATION TECHNOLOGY IN PROCESS CHANGE AND THE IMPACT ON CUSTOMER SATISFACTION: A STUDY OF SLOVENIAN TRANSPORT FIRMS

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Abstract

Customer satisfaction is an important element of competitive quality and while, IT is becoming more and more powerful facilitator of process change, which impacts customer satisfaction it is essential not to neglect its importance. Hence, adoption of any kind of IT applications especially in the business sector should be carefully revised by firms. This includes study before, between and particularly after implementation. In this paper we, are therefore presenting the structure of a research which will clarify of how adoption of GPS as a form of use of IT, through process change affects customer satisfaction.

Key words: Information technology, Customer Satisfaction, Global Positioning System, Process Change

Theoretical foundation and research question

The fundamental role of information technology (IT) in process change has been mentioned many times in the past (Devaraj and Kohli, 2000). For example, authors developed that use of IT and electronic integration of business processes within the firm can deliver significant competitive advantages and cost savings (Krishnan et al., 1999). Furthermore, successful deployment of IT assets leads to IT impacts such as redesigned processes, improved decision making, and improved coordination within the firm (Forgione and Kohli, 1996).

The investments of new sophisticated IT technologies, such as the Internet, Global Positioning System (GPS), Electronic Data Interchange (EDI) and ERP have fundamentally
changed, and continue to change, how firms interact with their customers (Burke, 2002). Therefore firms need to consider which investment will contribute effectively to their business outcomes/benefits, and determine whether money should be spent in these results. According to the literature review, we can summarise these benefits in the following categories: (1) productivity; (2) financial variables; (3) efficiency; (4) quality variables; (5) relationship development; (6) competitiveness and (7) customer satisfaction.

Nevertheless, existent theoretical literature has reviewed deeply about impact of IT on customer satisfaction through the process change; there is lack of consensual agreement of how use of IT in process change affects customer satisfaction on business-to-business (B2B) markets. Moreover in the previous researches authors, from the customer point of view, oriented mainly towards exploration of old IT technologies such as IT systems in manufacturing while new technologies, like GPS have not been widely explored.

The paucity of the literature on this issue has provoked an important following research question: how does use of information technology through process change affects customer satisfaction? As a form of new advanced IT we are studying of how adoption of GPS affect customer satisfaction throughout changes in transport process. For all these reasons, the main objectives of this research are: firstly, to identify which are the changed process factors in transport process that occur after adoption of GPS; secondly, to describe how implementation of GPS change these factors, and finally to show how and which of these factors have an influence on customer satisfaction.

**Importance of this research**

The output of this research will add new theories to the existing literature in addition to the role of IT in process change. IT has witnessed tremendous literature outburst in the past decades due to its importance for firms in fast changing global environment. Nevertheless,
there is still lack of knowledge regarding affect of IT technologies on customer satisfaction, especially on B2B markets. The identification of process changes caused by IT that affects customer satisfaction will enrich existing literature on this issue and add organisational understanding of this topic. Furthermore, GPS as a form of new IT technology will broaden understanding of how can firm with technology investments influences on customer satisfaction.

**Methodology**

**Exploratory research methodology**

The brief review of theoretical literature and research methodologies reflected a dearth of empirically based literature on the explanation how does use of IT in process change affect customer satisfaction. The paucity of literature in this field is to what Kuhn (1962) refer to as the preparadigm or pre-scientific period-a, period when no theoretical or empirical studies have been carried out and a period when theoretical issues are clouded and unclear. With other words research questions aims to investigate territory in which little or no knowledge exists. In the situations where no ideas or groundbreaking theories to fill existing knowledge gaps in literature exists, exploratory research methodology is the most appropriate to fill these gaps. This is the major reason why exploratory methodology has been proposed in this research. Other reasons why exploratory research methodology is suitable in this research are discussed as follows: (1) it clarifies ideas on the variables under investigation in this research; (2) it enables the understanding of the nature of the problem of this research; (3) it will help the analysis of problem definition; (4) it will be useful in the generation of theoretical framework and theory building and (5) it enables to establish propositions to explore within the research.
**Research design**

In this research two phase research design is proposed using semi-structured interview and research survey which denotes that quantitative phase should be followed after qualitative phase. For this study it is essential to start research process with qualitative method. Usefulness of qualitative methods to facilitate quantitative research has been proved before (Deery et al., 2002). Qualitative methods may be used to provide important contextual information that supplements findings from a quantitative study (Glazer, 1991). Furthermore qualitative data allow researcher to gain the access to the general perspectives of research topic following with quantitative data which enable researchers to explore specific issues inside of the topic.

Figure 1: Sequential Mixed Method Design
Two-phase design process is explained through Sequential Mixed Method Design adopted by Tashakkori and Teddlie (2003) (see Figure 1). The distinguishing attribute of the sequential mixed design is that second phase of the study emerges as a result of, or in response to, the findings of the first phase. This design involves one type of question (exploratory or confirmatory), two types of data (qualitative and quantitative) that are collected in sequence (with one being dependent on other) and analyzed accordingly and one type of interference at the end.

First stage of the research

The main stages of a semi-structured interview process are the following: (1) formulating an interview; (2) pilot study; (3) revision of interview questions; (4) interview population; (5) interview schedule; (6) interview conduction; (7) transcription; (8) data analysis and (9) explanation of the findings (input in second phase).

Regards to the research question totally 20 people responsible for transport logistics and firms customers will be interviewed to identify process factors that change with adoption of Global Position System (GPS). Depends on the size of the firm interviewee can be either, general managers, logistics managers or transport organisers. Slovenian transport market is very limited; therefore, this sample presents more than 60% of all transport firms that have already implemented GPS systems. Interviews will be conducted according to prior arrangement with selected candidates where time, place, duration and purpose of the interview are scheduled. In this research transcription method will be used to prepare data for further analysis. Content analysis is the chosen method to analyse data for this study. In logistics content analysis is a method for the objective, systematic, quantitative and reliable study of published information (Ellinger et al., 2003), a suitable method for comprehensive literature reviews, instrument for determining key ideas and themes in publications and also for measuring comparative positions and trends in reporting. In order to derive patterns in the presentation and reporting
of information, we will develop coding scheme of qualitative and quantitative information into pre-defined categories. As for the quantitative measure in content analysis, the frequencies will be used which indicate the importance of the subject matter. We will not use data for any further statistical analysis.

The findings of the first phase will generate hypotheses to continue the research in second phase. These hypotheses will establish ground for survey development which is going to be used in second phase.

**Second stage of the research**

The first phase of the study includes data collection, data analysis to identify process factors and its change, influenced by implementation of IT (Global Position Systems). Second phase identifies which and how among recognised process changes actually cause customer satisfaction change; to accomplish this, research survey will be used.

Survey research entails the collection of data on a number of unites and usually at a single stage in time, with a view of collecting systematically a body of quantifiable data in respect of a number of variables which are then examined to discern patterns of association. The survey research process will be carried out in the following stages: (1) linking to the findings from first phase; (2) designing a questionnaire; (3) pilot test; (4) data collection; (5) data analysis and (6) report generation.

Firstly, according to the findings from first stage, the process changes that occur after implementation of GPS will be put forward. In coherence with literature review the development of test survey administration procedures; test procedures for handling non-respondents; missing data and data cleaning; as well as assessment of measurement quality will follow. Here draft of the questionnaire will be tested to measure the cognitive understanding and interpretation.
Final version of the questionnaire will be sent to all Slovenian export firms, which use transport service. Data analysis consists of analysing gathered data and excludes all questionnaires that may be filled in the incorrect way. Structural Equation Modelling (SEM) will be used as core method of analysis to test the latent variables of measurement model. Along with other studies in the literature of customer satisfaction, SEM is appropriate method while it enables measurements of several indicators of construct (Tracey et al., 1999). In coherence with findings from first phase in here final report as well as answer on research question will be developed.

**Conclusion**

The sophistication of new information technologies, such as the internet, GPS, electronic data interchange and others, have fundamentally changed, and continue to change internal firms’ processes and how they interact with their customers. Hence, in this paper we are illustrating the theoretical foundation, importance and methodology of the research which will answer the research question of how does use of IT through process change affects customer satisfaction.

In a research carried out in Slovenian transport firms, GPS will be used as form of IT. We established two phase study where firstly we are generating process changes after adoption of GPS using semi-structured interviews and secondly with survey by the use of SEM we are confirming which factors and how an effect on customer satisfaction have.
References


