



SOCIAL EXPECTATIONS ON DEVELOPMENT OF API RFID IN SLOVAKIA

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Abstract: The main objective of the work is the assessment of social expectations on the development of API RFID in Slovakia. The method used for the research was public opinion poll and the results were analyzed by descriptive statistical methods. The generated outcomes showed remarkable trends in social opinions on the development of API RFID in Slovakia. The presented results could be useful for enterprises' managers and decision makers in public administration during the process of designing of strategic plans for API RFID development in Slovakia.

Keywords: social expectations, RFID technology, API RFID, innovations

Introduction

The process of competitive rivalry among enterprises triggers intensive technological development. The resulting achievements in high-tech solutions are leading to constant increase in efficiency of enterprises and many other organizations. The broad scale of technological improvements relates to every field of the present life and causes complexity in the decision making by managers (Jankowska-Miśkiewicz & Chudy-Laskowska, 2015). RFID is an example of technology that can guarantee considerable development of automated processes (Strojny, 2015). The constant development of RFID resulted in creation of more advanced solutions, called as autonomous semi-passive transponder RFID (aka. API RFID) (Jankowski-Miśkiewicz, Węglarski, Pitera, Kawalec, & Lichoń, 2016). This innovation can increase the positive effects of RFID application, however the social expectations on this technology is not examined sufficiently yet. This problem is an argument to ask a question on social knowledge and expectations referred to the development of API RFID. The main objective of the work is the assessment of trends in social expectations on development of API RFID in Slovakia. The research hypothesis stated: there are remarkable trends in social opinions on API RFID.

The method used in the research were public opinion poll, in the form of direct questionnaire distributed among the students from one selected university in Kosice. The 22 respondents have been selected by the convenient nomination method. Outcomes of the research became the subject of descriptive statistical analysis which gave information for concluding on the trends in social opinions on API RFID.

The idea of RFID

Competition is a phenomenon which determines the operations in companies (Wyrwa & Ziółkowski, 2015). The efforts of the R&D sector are oriented to find instruments that increase the advantage of contemporary enterprises. One of such instruments is the radio frequency identification (RFID). This technology is applied for identification of material or non-material objects. RFID is combined mostly with different systems and used typically for anti-collision purposes in such fields as: commerce, industry, medicine and science (Giroday, 2003). The function for identification of moving parts and elements within interrogation zone (the place where the RFID tag can communicate with external environment by read/write device using its antenna) creates the 'internet of things' (Piotr Jankowski-Miśkiewicz, Kalita,



& Pawłowicz, 2008). This makes the production and service processes are more automated than before. Therefore, the RFID technology is able to significantly improve the efficiency in organizational management (Ziółkowski, Jankowska-Mihułowicz, Laskowska, & Piecuch, 2016) and reduce the general costs. The measurable outcomes after implementation of this technology are worldwide reported by numerous organizations, as for example: Agricultural Bank of China, Speedy Services in Great Britain, McCarran International Airport in USA or Jade Jewellery in Saudi Arabia (Ziółkowski, Jankowska-Mihułowicz, Laskowska, & Piecuch, 2016).

The evolution of this technology resulted in creation of autonomous semi-passive transponders (known as API RFID), which combined with RFID systems improve the versatility of identification. The innovativeness of autonomous semi-passive RFID transponders consists in „possibility to recover energy from environment and use it as power supply, as well as to have various sensors and to permanently record measurement parameters“ (Piotr Jankowski-Mihułowicz, Kalita, Skoczylas, & Węglarski, 2013).

Various studies on RFID stipulate both positive as well as potentially negative impact of RFID, thus for effective management it is important to know all possible effects of this technology.

When preparing the strategic plans, the commercial and governmental bodies need to know the social opinions and expectations on new technologies. The people opinions can be important indicator of market maturity, what determines the way of strategic planning. The researches on social experiences with computers showed that when social expectations of this systems grew, then their fear of using them decreased (Augusto, Callaghan, Cook, Kameas, & Satoh, 2013). In the next part of the paper, there were presented the results of assessment of API RFID technology acceptance.

Method of research

In order to scrutinize the social acceptance of API RFID technology in Slovakia, the research process was divided into two parts. The first one related to the introductory presentation of the idea of API RFID. In the second phase, the respondents were asked the questions by survey questionnaire. The presentation of RFID technology was based on the results of research project supported by the Polish National Centre for Research and Development (NCBR) under Grant No. PBS1/A3/3/2012 titled “Synthesis of autonomous semi-passive transponder dedicated to operation in anticollision dynamic RFID systems”.

The method of public opinion poll was applied for researching the social expectations. The group of 22 respondents (generally in the age 20-25 years old), from one selected university in Kosice, have been examined by the direct, anonymous questionnaire. The sampling was made by the convenient nomination method. Outcomes of the research became the subject of descriptive statistical analysis which gave the basis to formulate conclusions on trends in social opinions on API RFID.

Research results

The realized study revealed that the social knowledge on API RFID is rather low, what is quite natural because of the early development stage of this technology.

Main source of social knowledge on the RFID are *media* and *work place*, because 18% of respondents achieved often or very often the information on RFID from media and similarly form in work places. In opinion of 62% of respondents, the information on RFID was presented very rarely or rarely at their *university*.



In case of the main benefits resulting from the implementation of API RFID, the majority of respondents (55%) identified positive effects (mainly *easier life*). In 5% of responses, there was expressed some fear about the *total control over people and products* after the implementation of RFID.

When scrutinizing the present impact of selected factors on development of API RFID in Slovakia, all respondents stated that *technical issues* are not an obstacle for API RFID implementation. The majority of respondents attributed positive impact on RFID implementation to the following factors: *environmental issues* (76%), *financial issues* (70%), *the knowledge accessibility on the API RFID* (65%), *terrorism and safety needs* (80%), *the accessibility of qualified teams in ICT sector* (90%). In 57% of responses *legal regulations* were assessed as an obstacle for API RFID development. The value of statistical mode (relating to frequency of responses) gives also interesting information on the social assessment of impact power, that is attributed to every single factor. In case of *legal regulations* the most frequent score was weak negative (-1). In the group of other factors (which were scored mostly as supportive for API RFID development), the impact power was assessed mainly as:

- Weak positive (*technical issues*),
- Middle positive (*environmental issues, financial issues, the knowledge accessibility on the API RFID and the accessibility of qualified teams in ICT sector*),
- Strong positive (*terrorism and safety needs*).

When assessing the level of interest in API RFID development (by the weighted arithmetic mean), the respondents attributed the most important role to *scientific organizations* and *business organizations*.

The presented results show that majority of respondents is not aware yet of technological functionalities and potential related to API RFID.

Conclusion

According to the aim of this paper the social expectations on development of API RFID in Slovakia were assessed. The results of analysis allow to accept the hypothesis that there are remarkable trends in social opinions on API RFID. The research realized by means of the questionnaire of survey, in the group of 22 respondents, showed that there is remarkable social trend in attributing positive impact to API RFID development. It can be concluded, that the presented technology is not a case of social anxiety. The analysis revealed, that the knowledge on the API RFID should be wider disseminated, especially at universities. According to the respondents the *terrorism and safety needs* have the strongest positive impact on API RFID dissemination.

When assessing the fields, where the API RFID implementation could be most helpful, the majority of respondents stated that it is the sector of *scientific organizations* and *business organizations*.

The presented results give very general overview of social expectation on the API RFID. The future studies in this field ought embrace much larger and more differentiated groups of respondents as well as introduce more advanced research methods (as e.g. Delphi), but also address broader area, including the whole country or single regions of Slovakia. It could be also worth scrutinizing the social opinions on API RFID in different countries.



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