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EFEKTI IT I STRATEGIJA OTVORENIH INOVACIJA NA INOVACIONE I FINANSIJSKE PERFORMANSE U BANKARSTVU

Rezime

Ovaj rad se bavi efektima IT i strategija otvorenih inovacija na inovacione i finansijske performanse u bankarskom sektoru Srbije, koristeći metodu studije slučaja koja se zasniva na kvalitativnim i kvantitativnim podacima. Rezultati istraživanja ukazuju na potrebu uvođenja koncepta otvorenih inovacija u bankarskom sektoru, odnosno na adekvatno inkorporiranje eksternog znanja u inovacione procese pomoću odgovarajućih tehnologija. Zaposleni i uspostavljeni partnerski odnosi sa značajnim stejkholderima predstavljaju dva najznačajnija izvora za stvaranje i komercijalizaciju radikalnih inovacija, dok korisnici bankarskih usluga i ostali izvori prikupljanja znanja omogućavaju generisanje različitih znanja i ideja, te stvaranja inkrementalnih inovacija koje su u primarnoj funkciji zadovoljstva korisnika bankarskih usluga, unapređenja postojećih procesa i poboljšanja kvaliteta usluga. U cilju maksimalnog iskorišćenja potencijala iz modela otvorenih inovacija, u zaključnom delu su izvedene preporuke za menadžere u bankarskom sektoru. Istraživanje može doprineti menadžerima u finansijskim uslugama, bankarskom sektoru, IT sektora i menadžmentu inovacija.

Ključne reči: IT strategija, strategija otvorenih inovacija, radikalne inovacije, inkrementalne inovacije, inovacione performanse, finansijske performanse, bankarski sektor, menadžment inovacija

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THE EFFECTS OF IT AND OPEN INNOVATION STRATEGIES ON INNOVATION AND FINANCIAL PERFORMANCES IN THE BANKING SECTOR

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Summary

This paper deals with the effects IT and open innovation strategies have on innovation and financial performances in the Serbian banking sector, using the case study method based on qualitative and quantitative data. The research results point to the need for introducing the concept of open innovation in the banking sector i.e. to adequately incorporate external knowledge in innovation processes using appropriate technologies. Employees and established partnerships with key stakeholders are the two most significant sources for the generation and commercialization of radical innovations, while customers and other sources of knowledge acquisition allow the generation of various knowledge and ideas, and the creation of incremental innovations with the primary purpose of satisfying the end users of banking services, improving existing processes and service quality. To maximize utilization of resources from the open innovation model, the concluding paragraph contains recommendations for managers in the banking sector. The study may be useful for managers in the financial services, banking, IT sector and innovation management.

Keywords: IT strategy, open innovation strategy, radical innovation, incremental innovation, innovation performances, financial performances, banking sector, innovation management

JEL: O31, O33, G21

Uvod i ciljevi

Bankarski sektor prolazi kroz period značajnih strukturnih promena, kao rezultat kombinovanih spoljašnjih i unutrašnjih snaga koje podjednako predstavljaju mogućnosti i pretnje za banke. Globalna finansijska i ekonomska kriza, izraženi regulatorni pritisci, nestabilno poslovno okruženje, brz tehnološki razvoj, političke i demografske promene, sofisticiran rast potreba potrošača, intenzivna konkurencija i razvoj ekonomije zasnovane na znanju, uslovljavaju da se bankarski sektor brže, efikasnije i efektivnije prilagodi svim promenama. Po viđenju eksperata, tehnološke inovacije i klijenti će postaviti "nova pravila igre" u bankarskom sektoru (Ćukić, 2013), koja će značajno uticati na banke, a posebno na one u kojima je izraženo tradicionalno bankarsko poslovanje. Da bi banke održale konkurentnost, rast i razvoj, te kontinuirano stvarale superiornu vrednost za korisnike bankarskih usluga i akcionare, menadžment banaka mora da razume ove trendove, redefiniše postojeće strategije poslovanja (Fasnacht, 2009; Huo i Hong, 2013; Tornjanski i saradnici, 2014) i razvije nove modele za prikupljanje znanja, bez odlaganja.

Bankarsko poslovanje je u velikoj meri zasnovano na informaciono-komunikacionim tehnologijama (u daljem tekstu: IKT) (Broadbent i Weill, 1993). Njihova uloga i značaj su veoma promenjeni poslednjih decenija. Pojava novih tehnologija u osnovi menja čitavu privredu a posebno bankarski sektor, stvarajući podjednako nove mogućnosti i pretnje. Oblasti internet i mobilnog bankarstva, društvenih mreža, te *cloud computing-a* i *big data*, se veoma brzo razvijaju što implicira promenu u načinu bankarskog poslovanja (GFT, 2014). Tradicionalna *back office* uloga IKT-a je pomeren na stratešku ulogu, s potencijalom da istovremeno podrži postojeće i oblikuje nove poslovne strategije. Kako se uloga IKT-a menjala, tako se razvio koncept strateške usklađenosti koji omogućava kompanijama bržu i lakšu realizaciju poslovnih strategija pomoću IKT-a (Henderson i Venkatraman, 1993).

Tradicionalno, inovacije su se stvarale u okviru organizacije. Međutim, kako je znanje danas široko rasprostranjeno i veoma pristupačno (Chesbrough, 2003a), razvoj IKT-a je omogućio kompanijama da se ideje prikupljaju

i van organizacije, odnosno doprineo je da organizacione granice budu veoma porozne, tako da se znanje lako može preneti iz organizacije i uneti u organizaciju. Dakle, promene su rezultirale u potrebi kompanija da imaju kako unutrašnje, tako i spoljašnje izvore znanja da bi bile konkurentne na tržištu (Whelan i saradnici, 2010; Cui i saradnici, 2015), te je pitanje procesa otvorenih inovacija postalo važno za istraživače (Dahlander i Gann, 2010; Van De Vrande i saradnici, 2010; Huizingh, 2011), a uloga IKT-a postala od vitalnog značaja za razvoj otvorenih inovacija (Cui i saradnici, 2015).

Postojeća istraživanja su pokazala da kompanije imaju višestruke prednosti od otvorenih inovacija, odnosno od inkorporiranja spoljašnjeg znanja u inovacione procese, kao i od korišćenja raznovrsnih izvora za prikupljanje novih ideja (Cassiman i Veugelers, 2006; Laursen i Salter, 2006; Fasnacht, 2009; Faems i saradnici, 2009). Međutim, iako IKT predstavlja važan resurs za organizacije koji omogućava prodor ka eksternom okruženju, te obezbeđuje uslove za efikasnu i efektivnu primenu otvorenih inovacija (Cui i saradnici, 2012), u dosadašnjem naučnoistraživačkom fondu ne postoji dovoljno istraživanja o ovim pojavama, odnosno o tome kako informaciono-komunikacione tehnologije doprinose performansama otvorenih inovacija u bankarstvu.

Imajući to u vidu, ovaj rad ima za cilj da produbi i proširi naučni fond o usklađenosti IT i strategija otvorenih inovacija, te da prikaže značaj ovih pojava koje predstavljaju ključ uspešnosti poslovanja i potencijal za generisanje novih izvora prihoda u bankarskom sektoru. Konačno, rad ima za cilj da istraži efekte IT i strategija otvorenih inovacija na inovacione i finansijske performanse u kontekstu rasta prihoda i smanjenja troškova poslovanja pomoću studije slučaja.

Pregled literature

Koncept strateške usklađenosti

Strateška usklađenost je viđena kao sinhronizacija poslovnih strategija i informaciono-komunikacionih tehnologija (Henderson i Cockburn, 1994; Tallon i Pinsonneault, 2011; Cui i saradnici, 2015). Prema Mekawy i saradnici (2009), strateška usklađenost predstavlja proces

Introduction and Objectives

The banking sector is undergoing significant structural changes as a result of the combined external and internal forces that represent both opportunities and threats for banks. The global financial and economic crisis, conspicuous regulatory pressures, unstable business environment, rapid technological development, political and demographic changes, growth of sophisticated customer needs, intense competition and the development of knowledge-based economy, trigger the banking sector to adapt to the changes faster, more efficiently and more effectively. According to experts, technological innovation and customers will set the "new rules of the game" in the banking sector (Ćukić, 2013), which will have a significant impact on banks, especially those with a strong traditional banking business model. To maintain the bank's competitiveness, growth and development, and continuously create superior value for customers and shareholders of banking services, bank managements need to understand these trends, reshape the existing business strategy (Fasnacht, 2009; Huo and Hong, 2013; Tornjanski et al., 2014), and develop new models for acquiring knowledge, without delay.

Banking operations are largely based on information and communication technologies (hereinafter: ICT) (Broadbent and Weill, 1993). Their role and importance have been greatly changed in the recent decades. The emergence of new technologies has fundamentally changed the entire economy, especially the banking sector, creating both new opportunities and threats. The areas of Internet and mobile banking, social networking, cloud computing and big data, are rapidly evolving, thus implying a change in the way the banking business operates (GFT, 2014). The traditional back-office role of ICT has shifted towards the strategic role, with the potential to simultaneously support existing and develop new business strategies. With the change of the ICT role, the concept of strategic alignment has been developed; allowing companies faster and easier implementation of business strategies using ICT (Henderson and Venkatraman, 1993).

Traditionally, innovations have been generated within organizations. However, given

that knowledge is now widespread and very affordable (Chesbrough, 2003a), development of ICT has enabled companies to collect ideas outside these organizations as well, i.e. it has made organizational borders very porous, so that the knowledge can easily be transferred from and into the organization. Thus, certain changes have occurred in respect of companies' necessity to have both internal and external sources of knowledge in order to be competitive at the market (Whelan et al., 2010; Cui et al., 2015), making the issue of open innovation processes important to researchers (Dahlander and Gann, 2010; Van De Vrande et al., 2010; Huizingh, 2011), and the role of ICT has become vital to open innovation development (Cui et al., 2015).

Existing studies have shown that companies have multiple advantages from open innovations i.e. from incorporating external knowledge into innovation processes, as well as from the use of a variety of sources to gather new ideas (Cassiman and Veugelers, 2006; Laursen and Salter, 2006; Fasnacht, 2009; Faems et al., 2009). However, although ICT is an important resource for organizations which allows their entry to the external environment and facilitates efficient and effective use of open innovation (Cui et al., 2012), there has been little research on these phenomena in the current scientific research fund, i.e. on how information and communication technologies contribute to performances of open innovation in the banking industry.

With that in mind, this paper aims to deepen and broaden the scientific fund on alignment of IT and open innovation strategies, and to show the importance of these phenomena as the key factors to business success and potential for generating new sources of revenue in the banking sector. Finally, the paper aims to investigate the effects that IT and open innovation strategies have on innovation and financial performances in the context of revenue growth and operating costs reduction, by using a case study.

Literature Overview

Strategic Alignment Concept

Strategic alignment is seen as a synchronization of business strategies and ICT (Henderson and Cockburn, 1994; Tallon and

u kome su informacione tehnologije i poslovne jedinice u međusobnoj harmoniji kako bi se ostvarili postavljeni poslovni ciljevi i poboljšale performanse poslovanja. Strateška usklađenost se može definisati i kao odgovarajuća i pravovremena primena informacionih tehnologija u skladu sa poslovnim ciljevima, strategijama i potrebama (Luftman i saradnici, 1999). Neki autori smatraju da se strateška usklađenost može objasniti i kao povezanost između IT i poslovnih jedinica na strateškom nivou, odnosno kao stepen do kog IT planovi, ciljevi i misija podržavaju i podržani su od poslovnih planova, ciljeva i misije (Chan i Reich, 2007; Tan i Gallupe, 2006). Cumps i saradnici (2009) dodatno obrazlažu da strateška usklađenost obuhvata sklad i fuziju IKT i poslovnih strategija.

Pored stavova autora da strateška usklađenost omogućava kompanijama bržu i lakšu realizaciju poslovnih strategija pomoću IKT-a, odnosno da se pomoću strateške usklađenosti mogu poboljšati performanse organizacije (Delery i Doty, 1996; Mekawy i saradnici, 2009), neki autori argumentuju da međusobno razumevanje između rukovodioca IT-a i poslovnih jedinica omogućava efektivnu alokaciju resursa u cilju pravovremenog odgovora na sve pretnje i mogućnosti iz spoljašnjeg okruženja (Gibson i Birkinshaw, 2004; Tallon i Pinsonneault, 2011; Cui i saradnici, 2015).

U kontekstu inovacija, pomoću usklađenih poslovnih i IT strategija, te naprednih informaciono-komunikacionih tehnologija kompanije su u mogućnosti da aktivno uključuju eksterne stejkholdere u inovacione procese (Nambisan, 2002).

U prethodnoj literaturi koja se bavila strateškom usklađenošću, dve IT strategije su široko prepoznate kao centralne: a) IT fleksibilnost koja omogućava kompanijama brzu i ekonomičnu primenu informaciono-komunikacionih tehnologija za razmenu znanja sa eksternim izvorima (Terry, 2000; Langdon, 2006; Cui i saradnici, 2015); i b) IT integracija koja predstavlja izgrađenu bilateralnu infrastrukturu između kompanije i eksternih stejkholdera, tako da obe strane (organizacije) ulažu u koordinaciono-intenzivne konfiguracije kako bi se uspostavila čvrsta veza između inovacionih partnera (Byrd i Turner, 2001; Ray i saradnici, 2005; Rai i saradnici, 2006; Jorfi i

Jorfi, 2011; Cui i saradnici, 2015; Charoensuk i saradnici, 2014). Otuda, u ovom radu se polazi od pretpostavke da obe IT strategije mogu efektivno podržati strategije otvorenih inovacija, što dalje doprinosi boljem poslovnom učinku banaka.

Koncept otvorenih inovacija

Koncept otvorenih inovacija je nastao 2003. godine kao posledica promena na tržištu koje su implicirale da tradicionalni pristup inoviranju - zatvoreni model inovacija, više nije održiv (Chesbrough, 2003). Chesbrough definiše otvorene inovacije kao "naizmenično korišćenje svrsishodnih ulaza i izlaza znanja kako bi se ubrzao interni proces inoviranja i povećalo tržište za eksternu upotrebu inovacija" (Chesbrough i saradnici, 2006, p. 1). Takođe, Chesbrough i saradnici (2006, p. 1) objašnjavaju koncept otvorenih inovacija kao "paradigmu, koja uverava firme da mogu i trebaju da koriste eksterne ideje isto kao i interne, a zatim interne i eksterne puteve do tržišta, kako bi unapredile svoju tehnologiju".

Imajući u vidu da intelektualni kapital i tokovi znanja predstavljaju nerazdvojne komponente nove ekonomije, koncept otvorenih inovacija je nedavno definisan i kao distribuiran inovacioni proces koji se zasniva na upravljanju znanjem izvan organizacije koristeći materijalne i nematerijalne mehanizme u skladu sa poslovnim modelom organizacije (Chesbrough i Bogers, 2014).

Koncept otvorenih inovacija je prepoznat kao ključni strateški element za komercijalizaciju inovacija, osnova za smanjenje troškova poslovanja i povećanje profitabilnosti kompanija (Chesbrough, 2003). Neki autori ističu da otvorene inovacije predstavljaju najprikladniji put ka stvaranju superiorne vrednosti za organizaciju i potrošače (Hertog, 2000; Schmitt i saradnici, 2013), budući da se temelji na novom načinu razmišljanja koji podrazumeva otvorenost, fleksibilnost, razmenu intelektualne svojine, ulaganje u globalni temelj znanja i integraciju s klijentima, partnerima, univerzitetima i drugim stejkholderima, u cilju inkorporiranja novih znanja, ideja i resursa iz eksternog okruženja (Chesbrough, 2003a; Laursen i Salter, 2006; Enkel i saradnici, 2009; Tornjanski i saradnici, 2014).

Pinsonneault, 2011; Cui et al., 2015). According to Mekawy et al. (2009), a strategic alignment is a process in which IT and business units are in harmony with one another in order to achieve the set business objectives and improve business performances. The strategic alignment can be defined as the appropriate and timely use of IT in line with business objectives, strategies and needs (Luftman et al., 1999). Some authors are of the opinion that strategic alignment can be explained as a link between IT and business units at the strategic level, i.e. as the extent to which IT plans, objectives and missions support and are supported by business plans, objectives and missions (Chan and Reich, 2007; Tan and Gallupe, 2006). Cumps et al. (2009) further explain that strategic alignment includes alignment and fusion of ICT and business strategies.

In addition to the authors' views that strategic alignment allows companies faster and easier implementation of business strategies using ICT, i.e. that using strategic alignment can improve the performances of an organization (Delery and Doty, 1996; Mekawy et al., 2009), some authors argue that mutual understanding between IT management and business units enables effective allocation of resources in order to timely respond to all threats and opportunities from the external environment (Gibson and Birkinshaw, 2004; Tallon and Pinsonneault, 2011; Cui et al., 2015).

In the context of innovation, using harmonized business and IT strategies, and advanced information and communication technologies, companies are able to actively involve external stakeholders in the innovation processes (Nambisan, 2002).

Among the previous references which dealt with strategic alignment, there are two IT strategies widely recognized as central: a) IT flexibility that allows companies fast and cost-effective use of information and communication technologies for the purpose of sharing knowledge with external sources (Terry, 2000; Langdon, 2006; Cui et al., 2015); and b) IT integration that represents the built bilateral infrastructure between a company and external stakeholders, so that both sides (organizations) invest in coordination-intensive configurations to establish a strong link between innovation partners (Byrd and Turner, 2001; Ray et al.,

2005; Rai et al., 2006; Jorfi and Jorfi, 2011; Cui et al., 2015; Charoensuk et al., 2014). Hence, this paper hypothesizes that both IT strategies can effectively support the strategy of open innovation, which further contributes to better business performances of banks.

Open Innovation Concept

The open innovation concept was developed in 2003, as a result of market changes which have implied that the traditional approach to innovation - i.e. the closed innovation model, is no longer viable (Chesbrough, 2003). Chesbrough defines open innovation as "the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively" (Chesbrough et al., 2006, p.1). In addition, Chesbrough et al. (2006) defines open innovation as "a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as they look to advance their technology" (Chesbrough et al., 2006, p.1).

Bearing in mind that intellectual capital and knowledge flows are inseparable components of the new economy, the concept of open innovation has been recently defined as distributed innovation process based on knowledge management outside the organization using tangible and intangible mechanisms in accordance with the organization's business model (Chesbrough and Bogers, 2014).

The concept of open innovation is recognized as a key strategic element for the commercialization of innovations, the basis for the reduction of operating costs and increase of companies' profitability (Chesbrough, 2003). Some authors point out that open innovation is the most appropriate way to create superior value for the organization and customers (Hertog, 2000; Schmitt et al., 2013), since it is based on a new way of thinking which includes openness, flexibility, exchange of intellectual property, investment in the global foundation of knowledge and integration with customers, partners, universities and other stakeholders, with the aim to incorporate new knowledge, ideas and resources from the external environment (Chesbrough, 2003a; Laursen and Salter, 2006; Enkel et al., 2009; Tornjanski et al., 2014).

Otvorenost organizacije i inovacione performanse

Eksterno traganje za znanjem obuhvata dve dimenzije. Jedna dimenzija se odnosi na raznovrsnost eksternih kanala koje kompanija koristi za prikupljanje ideja (eng. *external search breadth*). Ova dimenzija predstavlja broj različitih spoljašnjih kanala kojima se prikuplja eksterno znanje, a meri se kao ukupan broj eksternih izvora koje koristi jedna kompanija (Laursen i Salter, 2006). Druga dimenzija eksternog traganja za znanjem se odnosi na intenzitet prikupljanja ideja / znanja iz određenih izvora (eng. *external search depth*). Ova dimenzija objašnjava koliko duboko kompanija generiše znanje iz prethodno uspostavljenih odnosa sa partnerima (Laursen i Salter, 2006). Drugim rečima, širina (eng. *external search breadth*) odražava raznolikost eksternih izvora, dok dubina (eng. *external search depth*) odražava intenzitet prikupljanja ideja / znanja, oslanjajući se na te izvore (Cui i saradnici, 2015). Obe dimenzije predstavljaju stepen otvorenosti organizacije (Laursen i Salter, 2006).

Inovacija zahteva miks raznovrsnih elemenata znanja (Katila i Ahuja, 2002). Imajući to u vidu, upotrebom različitih izvora znanja, organizacija uvećava mogućnosti za sticanje novih i komplementarnih znanja što implicira mogućnost većih inovacionih performansi. S druge strane, dubina, odnosno intenzitet generisanja znanja iz eksternih izvora može doprineti razvoju poverenja između zainteresovanih strana, što predstavlja važan element u konceptu otvorenih inovacija (Fasnacht, 2009). Poverenje omogućava prenos tacitnog znanja u organizaciju što je prepoznato kao posebno značajno za inovacione performanse (Dyer i Nobeoka, 2002).

Mnogi autori su prepoznali značaj eksternog inkorporiranja znanja u inovacione procese (Becker i Dietz, 2004; Caloghirou i saradnici, 2004; Luca i Atuahene-Gima, 2007), dok su neki pronašli da raznovrsnost i intenzitet prikupljanja znanja imaju različite efekte na inovacione performanse. Prema Laursen i Salter (2006), raznovrsniji izvori prikupljanja znanja (eng. *external search breadth*) više doprinose inkrementalnim inovacionim performansama, dok intenzitet generisanja znanja iz eksternih izvora (eng. *external search depth*) ima pozitivan

efekat na radikalne inovacione performanse. S druge strane, Chiang i Hung (2010) su pronašli da je raznovrsnost (eng. *external search breadth*) u pozitivnoj korelaciji sa radikalnim inovacionim performansama, dok na inkrementalne inovacione performanse utiče intenzitet (eng. *external search depth*). Nedavno, istraživanje koje je sprovedeno u Kini ukazuje da usklađenost IT strategija i otvorenih inovacija vodi ka poboljšanju inovacionih performansi, što implicira unapređenje organizacionih performansi (Cui i saradnici, 2015). U ovom radu se polazi od pretpostavke da IT strategija usmerena na fleksibilne tehnologije može efektivno podržati inkorporiranje eksternog znanja iz različitih izvora, čime se povećava verovatnoća za stvaranje radikalnih inovacija.

Inkorporiranje eksternog znanja iz različitih izvora obezbeđuje veće mogućnosti za prikupljanje raznovrsnog znanja koje može implicirati veći broj inovacija (Cui i saradnici, 2015). Otuda, u ovom radu se polazi od pretpostavke da IT strategija usmerena na fleksibilne tehnologije može veoma brzo preusmeriti smer prikupljanja znanja iz različitih eksternih izvora, čime se povećava verovatnoća za većim obimom inovacija.

Druga IT strategija koja se odnosi na integrisane informaciono-komunikacione tehnologije, a predstavlja intenzivnu razmenu znanja kroz čvrsto vezanu saradnju sa eksternim partnerima pomoću izgrađene bilateralne infrastrukture, podstiče duboku razmenu ideja te se smatra da olakšava kreiranje radikalnih inovacija (Byrd i Turner, 2001; Gibson i Birkinshaw, 2004; Ray i saradnici, 2005; Rai i saradnici, 2006; Jorfi i Jorfi, 2011; Cui i saradnici, 2015; Charoensuk i saradnici, 2014). S toga, u ovom radu se pretpostavlja da kontinuirana saradnja sa izabranim partnerima, te podržana integrisanim tehnologijama, vodi ka stvaranju radikalnih inovacija.

Intenzivna i čvrsto povezana saradnja sa odabranim partnerima jača međusobno poverenje, što je preduslov za dugoročnu razmenu znanja i iskustava zarad obostranih ciljeva. Partneri koji imaju odnos zasnovan na poverenju uz podršku integrisanih informaciono-komunikacionih tehnologija, olakšavaju protok znanja što implicira efikasan proces razmene ideja te dovodi do uvođenja

Openness of the Organization and Innovation Performances

External search for knowledge includes two dimensions. One dimension refers to a variety of external channels that the company uses to collect ideas (*External Search Breadth*). This dimension represents a variety of external channels used to collect external knowledge and it is measured as the total number of external resources used by one company (Laursen and Salter, 2006). The second dimension of the external search for knowledge is related to the intensity of gathering ideas / knowledge from certain sources (*External Search Depth*). This dimension explains how deeply the company generates knowledge from the previously established relationships with partners (Laursen and Salter, 2006). In other words, the external search breadth reflects the variety of external sources, while external search depth reflects the intensity of gathering ideas / knowledge, relying on these sources (Cui et al., 2015). Both dimensions represent the degree of openness of the organization (Laursen and Salter, 2006).

Innovation requires a mix of various elements of knowledge (Katila and Ahuja, 2002). With this in mind, using various sources the organization increases opportunities to gain new and complementary knowledge, thus implying the possibility of major innovation performances. On the other hand, the depth or intensity of the generation of knowledge from external sources may contribute to the development of trust between the parties, which is an important element in the concept of open innovation (Fasnacht, 2009). Trust allows the transfer of tacit knowledge to the organization, which is recognized as particularly important for innovation performances (Dyer and Nobeoka, 2002).

Many authors have recognized the importance of incorporating external knowledge into innovation processes (Becker and Dietz, 2004; Caloghirou et al., 2004; Luca and Atuahene-Gima, 2007), while some find that the variety and intensity of knowledge acquisition have different effects on innovation performances. According to Laursen and Salter (2006), diverse sources of knowledge acquisition (*External Search Breadth*) contribute more to incremental innovation performances, while the intensity of the generation of knowledge from external

sources (*External Search Depth*) has a positive effect on radical innovation performances. On the other hand, Chiang and Hung (2010) found that the variety (*External Search Breadth*) is positively correlated with radical innovation performances, while the intensity (*External Search Depth*) affects incremental innovation performances. Recent research conducted in China indicates that alignment of IT strategies and open innovations leads to improvement of innovation performances, which implies the improvement of organizational performances (Cui et al., 2015). This paper hypothesizes that the IT strategy focused on flexible technologies can effectively support the incorporation of external knowledge from different sources, which increases the chances of creating radical innovations.

The incorporation of external knowledge from different sources provides greater opportunities for a collection of diverse knowledge that can imply a greater number of innovations (Cui et al., 2015). Hence, this paper assumes that the IT strategy focused on flexible technologies can quickly redirect the gathering knowledge from various external sources, thus increasing chances for a greater scope of innovation.

Another IT strategy which refers to integrated information and communication technologies, and which represents an intensive exchange of knowledge through the tight-binding cooperation with external partners using the built bilateral infrastructure, encourages a deep exchange of ideas and is believed to facilitate the creation of radical innovations (Byrd and Turner, 2001; Gibson and Birkinshaw, 2004; Ray et al., 2005; Rai et al., 2006; Jorfi and Jorfi, 2011; Cui et al., 2015; Charoensuk et al., 2014). Therefore, this paper postulates that continuous cooperation with selected partners, supported by integrated technologies, leads to the creation of radical innovations.

Intense and tight-binding cooperation with selected partners strengthens mutual trust, which is a prerequisite for long-term exchange of knowledge and experience for the sake of mutual goals. Partners who have a relationship based on trust with the support of integrated information and communication technologies, facilitate the flow of knowledge, which implies an efficient process of exchange of ideas, and leads to the introduction of a number of new

većeg broja novih proizvoda i / ili usluga (Dyer i Nobeoka, 2002; Cui i saradnici, 2015). Imajući to u vidu, u ovom radu se polazi od pretpostavke da čvrsto povezana saradnja sa partnerima uz izgrađenu bilateralnu infrastrukturu između organizacija vodi ka uvođenju većeg broja novih proizvoda i / ili usluga.

Metodologija i metode istraživanja

U radu se primenjuje metoda studije slučaja kako bi se obezbedio holistički pogled na predmet istraživane pojave u realnoj situaciji, zasnovanoj na konkretnim podacima i istraživanjima. Budući da efekti IT strategija i strategija otvorenih inovacija na inovacione i finansijske performanse nisu izučavani u bankarskoj industriji, naše istraživanje se fokusira na pojedinačnu studiju slučaja banke, zasnovanoj na kvalitativnim i kvantitativnim podacima.

Primarni izvori prikupljanja podataka uključuju dubinske intervju u okviru banke koja je predmet istraživanja (u daljem tekstu: banka), interna dokumenta i finansijske izveštaje. Tehnika ispitivanja putem intervjua je sprovedena u banci na ciljanom uzorku ispitanika kako bi se obezbedila pouzdanost da učesnici ispunjavaju uslove za uključivanje u studiju. Dubinski intervju je obavljen sa zamenikom direktora IT sektora (u daljem tekstu: P. V.) i zamenikom direktora sektora za kredite fizičkim licima, kao najprofitnijem sektoru banke (u daljem tekstu: M. M). Intervju je obavljen pojedinačno sa svakim od učesnika, u vremenskom trajanju od sat vremena.

Sekundarni izvori prikupljanja podataka obuhvataju podatke sa korporativnog sajta banke, facebook i twitter stranice banke, kao i podatke iz izveštaja revizorskih kuća i centralne banke.

Prikaz i analiza rezultata

Banka koja je predmet istraživanja je evropska banka koja je počela sa radom u Srbiji 2003. godine. Danas servisira više od 900.000 klijenata sa 1,500 zaposlenih. Ukupno tržišno učešće od 4,68% plasira je na sedmo mesto po veličini bilansne aktive u bankarskom sektoru Srbije (NBS, 2015).

Prikaz dobijenih rezultata iz intervjua

Zamenik direktora IT sektora napravio je uvod u intervju naglašavajući tri izuzetno važna elementa za razvoj banke kroz IT inovacionu paradigmu:

"...interno znanje, eksterno znanje i menadžement koji ima sluha da čuje ideje i proaktivnost da ih primeni..."

Prema P. V., zaposleni u IT sektoru predstavljaju važan resurs za generisanje inovativnih ideja, u čije znanje se kontinuirano ulaže.

"... Zaposleni u IT sektoru prolaze kroz razne obuke i treninge u okviru banke i van nje. Ta znanja omogućavaju ljudima da holistički sagledaju i upravljaju celokupnim poslovnim servisima do krajnjih korisnika, a ujedno stižu i sve potrebne veštine za razvoj i upravljanje informacionim sistema i procesima... Na primer, ITIL, PMP, COBIT 5 obuka obezbeđuju menadžerima i zaposlenima uvid u najbolju poslovnu praksu u različitim segmentima IT poslovanja, s ciljem da se to znanje implementira u sve procese kako bi se inovirao postojeći način rada. Značajan izvor znanja koji zaposleni koriste su i seminari iz različitih oblasti IT sveta, ali i organizovani skupovi za zaposlene, neformalna druženja sa partnerima, saradnicima i vendorima gde se razmenjuju iskustva, ideje i anegdote. Kao rezultat kontinuiranog ulaganja u ljude, zaposleni su odlični inovatori. Mi smo prvi u Srbiji započeli razvoj mobilnog bankarstva sa prvom verzijom Android platforme 2.2. Ta inovacija je potekla upravo iz naše kuće..."

P. V. ističe da otvorenost IT-a ka spoljašnjem okruženju predstavlja osnovu za uspešno poslovanje banke, te da su strategije usmerene na prikupljanje znanja iz partnerskih odnosa i različitih eksternih izvora, iz kojih su mnoge ideje primenjene uz višestruke koristi za banku i korisnike bankarskih usluga.

"... Otvorenost ka spoljašnjem okruženju je danas neminovnost, posebno za bankarski sektor i IT svet. Sve se brzo menja i sve brzo zastareva. Danas moramo paralelno da upravljamo troškovima i rizicima, uvodimo nove tehnologije, unapređujemo postojeće sisteme i procese, brinemo o klijentima i pravimo profit. Zato su nam neophodne inovacije i znanje van organizacije. Najznačajniji i najefektniji izvori za inovacije su partnerstva sa IT kompanijama i vendorima. Na primer, Oracle, HP i Microsoft nam obezbeđuju neiscrpan izvor znanja i ideja

products and / or services (Dyer and Nobeoka, 2002; Cui et al., 2015). With that in mind, this paper assumes that the tight-binding cooperation with partners supported by bilateral infrastructure built among organizations leads to the introduction of increased number of new products and / or services.

Methodology and Research Methods

The paper applies the case study method to provide a holistic view on the researched phenomena in real life, based on specific data and research. Since the effects of the IT and open innovation strategies on innovation and financial performances have not been studied in the banking industry, our research focuses on a single case study of a bank based on qualitative and quantitative data.

The primary sources of data collection include in-depth interviews within the bank under study (hereinafter: the bank), internal documents and financial reports. The interviews were conducted at the bank on a targeted sample of respondents for the sake of ensuring that the participants meet the requirements to be included in the study. In-depth interview was conducted with the IT Division Deputy Head (hereinafter: P.V.) and the Household Lending Division Deputy Head, as the most profitable division in the bank (hereinafter: M.M.). The interviews were conducted individually with each of the participants for a period of an hour.

Secondary sources of data collection include the data from the corporate website of the bank, Facebook and Twitter pages, as well as data from the reports of auditing firms and the Central Bank.

Presentation and Analysis of Results

The bank is a European bank which commenced its operations in Serbia in 2003. Today it services more than 900.000 clients with 1.500 employees. With the total market share of 4.68% it is ranked at the seventh place according to balance sheet assets in the banking sector of Serbia (NBS, 2015).

Review of Results Obtained by Interviews

IT Division Deputy Head made the introduction to the interview highlighting three

very important elements for the development of the bank through the IT innovation paradigm:

"... Internal knowledge, external knowledge and management sensitive to hear ideas and have a proactive approach to apply them ...".

According to P.V., the employees of the IT sector are an important resource for generating innovative ideas; therefore the Bank has been continuously investing in their knowledge.

"... The employees in the IT sector go through various trainings and courses within and outside the bank. Collected knowledge enables employees to perceive holistically and manage all business services to the end users, gaining at the same time necessary skills for developing and managing information systems and processes ... For example, ITIL, PMP, COBIT 5 trainings provide managers and employees insight into the best business practice in different segments of the IT business, to implement this knowledge in all processes in order to innovate the existing mode of work. An important source of knowledge for employees are seminars in various fields of the IT world, as well as gatherings for employees, informal meetings with partners, associates and vendors, where they exchange experience, ideas and anecdotes. As the result of continuous investment in employees, the staff members are great innovators. We were the first in Serbia to start developing mobile banking with the first version of Android 2.2. This innovation came right from our house ..."

P.V. points out that the openness of IT to the external environment is the basis of successful operation of the bank, and that the strategies are aimed at gathering knowledge from partner relationships and various external sources, based on which many ideas have been applied with multiple benefits for the bank and the end users of banking services.

"...Openness to the outside environment is now a necessity, especially for the banking sector and the IT world. Everything is changing fast but also becomes obsolete fast. Today we have to parallelly manage costs and risks, introduce new technologies, improve existing systems and processes, take care of customers and make profit. That is why we need innovation and knowledge from outside of the organization. The most important and the most effective source of innovation is partnering with IT companies and vendors. For example, Oracle, HP and Microsoft are providing an inexhaustible source

koje prikupljamo u različitim oblicima. Ne mogu da izostavim da su pristupi spoljnim bazama znanja kao što su Gartner i IDC mnogo doprineli razvoju mnogih inkrementalnih inovacija u našoj banci. Isto tako, internet, društvene i socijalne mreže koje pospešuju interaktivan odnos sa spoljnim okruženjem predstavljaju online mesto za prikupljanje najrazličitijih i dobrih ideja od raznih stejkholdera, uključujući i konkurenciju...”

Banka veoma ulaže u razvoj informacionih sistema i tehnologija. Uloga informacionih sistema i tehnologija se ogleda u efikasnom i efektivnom bankarskom poslovanju, te su IT strategije usmerene na automatizaciju bankarskih poslova s ciljem da se zadovolje korisnici bankarskih usluga bez obzira na geografsku distancu, omogućavajući im kvalitetnu uslugu kroz razvijene mreže daljinskog bankarstva kao što su internet bankarstvo, telefonsko bankarstvo i mobilno bankarstvo. Otuda, fleksibilne i integrisane informacione tehnologije se primarno ne razvijaju u svrhu generisanja ideja, osim internet-zasnovanih tehnologija koje omogućavaju brzo, jednostavno i efikasno inkorporiranje eksternog znanja. S druge strane, izgradnja bilateralne infrastrukture između banke i partnera predstavlja veliku investiciju za obe strane, vreme i dodatno ulaganje specijalizovanog osoblja za taj poduhvat, napominje P. V. i ističe da u vreme transformacije bankarskog sektora u Srbiji treba primenjivati pristupe koji obezbeđuju efikasno integrisanje inovativnih ideja i znanja u svaki segment bankarskog poslovanja uz minimalne troškove i rizike (P. V.).

Kao zaključak, P. V. je izveo da se, na osnovu dosadašnje prakse, radikalne inovacije stvaraju u okviru organizacije i kroz čvrsto uspostavljenu saradnju sa partnerima zasnovanu na poverenju, dok se pomoću raznovrsnih izvora prikupljanja znanja kreira mnogo više različitih ali inkrementalnih inovacija, koje ne treba zanemariti prilikom inoviranja ili redizajniranja bankarskih operacija.

Zamenik direktora sektora za kredite fizičkim licima (M. M.) je počeo intervju dajući poseban značaj inovacijama, budući da inovacije predstavljaju glavni pokretač razvoja i ključ za sticanje konkurentske prednosti banke u vremenu transformacije bankarskog sektora u kom se odnos snaga menja, odnosno u kom

korisnici usluga vladaju tržištem:

“... Jedan od najvećih izazova za menadžment danas je kako stvoriti i održati konkurentsku prednost, što je posebno važno u znanje-intenzivnim industrijama kao što je bankarski sektor ... Mi to radimo tako što inoviramo. Inoviramo naše proizvode, usluge, procese, model poslovanja... Inovacije su postale glavni pokretač razvoja naše banke i ključ za sticanje konkurentske prednosti...”

U današnjem poslovnom okruženju punom neizvesnosti, iznalaženje profitabilnih ideja sa potencijalom da stvore vrednost za banku i korisnike finansijskih usluga, stavlja u funkciju sve raspoložive resurse kako u okviru organizacije, tako i van nje, podvlači M. M. i naglašava da su zaposleni, klijenti banke i partneri ključ za generisanje znanja i ideja, a sposobnost menadžmenta i zaposlenih banke - temelj za uspešnu implementaciju:

“...Podstaknuti da inoviraju, zaposleni u okviru sektora za kredite fizičkim licima pažljivo osluškuju potrebe klijenata, i uz malo kreativnosti, aktivno učestvuju u inovacionom procesu. Mnogobrojne ideje i značajne inovacije su proistekle iz sektora. Na primer, mi smo jedna od prvih banaka koja je oformila tim mobilnih agenata i uvela servis koji klijentima omogućava brzo i efikasno podnošenje kreditnih zahteva bez odlaska u ekspozituru. Ta ideja je inicijalno potekla od zaposlenih iz sektora za kredite fizičkim licima, a kasnije razvijana i implementirana u saradnji sa kompanijom Microsoft, koja je naš partner u poslu. Razumejući potrebu klijenata da uslugu dobiju odmah i bez inicijalnog posećivanja ekspoziture, banka je opremila mobilne agente pametnim telefonima koji su opremljeni softverom razvijenim za ovu biznis platformu od strane Microsoft tima. Na taj način je klijentima omogućeno skeniranje/slikanje dokumenata na terenu i automatski / online prenos podataka u odgovarajuću ekspozituru banke, što je rezultiralo u brzoj obradi kreditnih zahteva uz apsolutnu sigurnost podataka. Uz pomoć ove inovacije, maksimalno smo iskoristili tehnologije u vlasništvu banke, skratili vreme obrade zahteva, smanjili troškove poslovanja i uspostavili nov kanal saradnje sa klijentima, koji su zadovoljni pruženom uslugom...”

Banka uspostavlja odnos sa korisnicima bankarskih usluga putem ekspoziture, trgovačke mreže, bankomata, POS terminala, telefonskog bankarstva, internet bankarstva, SMS bankarstva i mobilnog bankarstva, čime

of knowledge and ideas that we collect in various forms. I cannot leave out that the access to external knowledge bases such as Gartner and IDC greatly contributed to the development of many incremental innovations in our bank. Also, the Internet and social networks that facilitate interactive relationships with external environment are online gathering places for diverse and good ideas from various stakeholders, including the competition ...".

The bank invests a lot in the development of information systems and technologies. The role of information systems and technology is reflected in the effectiveness and efficiency of the banking business, therefore the IT strategies are focused on the automation of banking operations in order to satisfy the end users of banking services regardless of geographic distance, allowing them quality services through a developed network of remote banking services such as Internet banking, telephone banking and mobile banking. Hence, flexible and integrated information technologies are not primarily developed for the purpose of generating ideas, except for the Internet-based technologies that enable fast, simple and efficient incorporation of external knowledge. On the other hand, building bilateral infrastructure between banks and partners represents a substantial investment for both parties, additional investment of time and efforts of specialized employees for this project, says P.V. He also points out that at the time of the transformation of the banking sector in Serbia, the bank should implement approaches that ensure efficient integration of innovative ideas and knowledge in every segment of banking operations with minimal costs and risks (P.V.).

In conclusion, P.V. claimed that, based on the existing practice, radical innovations are created within the organization and through tight cooperation established with partners based on trust, while by using a variety of sources for knowledge acquisition many more different, yet incremental innovations are created, which should not be neglected in the process of innovating or redesigning banking operations.

Household Lending Division Deputy Head (M.M.) began the interview by highlighting the particular significance of innovations, as innovations are the main driving forces of

growth and the key to gaining competitive advantage of the bank at the time of the banking sector's transformation in which the balance of power is changing, i.e. in which customers rule the market:

"... One of the biggest challenges for management today is to create and sustain a competitive advantage, which is especially important in knowledge-intensive industries such as the banking sector ... We do that by innovation. We innovate our products, services, processes, business model ... Innovation has become the main driver of our bank's development and the key to gaining a competitive advantage ..."

In today's business environment full of uncertainty, finding profitable ideas with the potential to create value for the bank and customers, puts into operation all the resources available within the organization and outside of it, underlines M.M. and emphasizes that the bank's employees, customers and partners are the key to generating knowledge and ideas, whereas the ability of the bank's management and employees makes the basis for successful implementation:

"... Encouraged to innovate, employees in the household lending division carefully listen to the customers' needs and requirements, and with a little creativity, actively participate in the innovation process. Numerous ideas and significant innovations have emerged from the sector. For example, we were one of the first banks to set up a team of mobile agents and introduced a service that allows customers to quickly and efficiently submit loan applications without going to a branch. This idea initially came from employees in the household lending division, and later developed and implemented in collaboration with Microsoft that is our business partner. Having understood the customers' need to receive a service immediately and without initial visit to branches, the bank equipped mobile agents with smartphones having the software developed for this business platform by the Microsoft team. In this way we enabled the customers to scan / copy documents on the spot and automatically / online transfer the data to the appropriate branch of the bank, resulting in fast processing of loan applications with the top security of data. With the help of this innovation we have made the maximum use of the technology owned by the bank, shortened the processing time, reduced costs and established new channels of cooperation with customers who are now satisfied with the delivered service ...".

se olakšava uliv znanja iz spoljašnjeg okruženja. Pomoću ovih kanala, zaposleni pažljivo prate potrebe, ponašanje i emocije korisnika bankarskih usluga, te nastoje da im približe proizvode i usluge na najbolji mogući način. Uključivanje korisnika bankarskih usluga u inovacioni proces je jedna od inovacionih strategija koja se razvija i uspešno primenjuje u banci, napominje M. M. i ističe da internet-zasnovane tehnologije imaju ključnu ulogu u aktuelnoj fazi inkorporiranja korisnika bankarskih usluga u inovacioni proces.

“... Društvene mreže su nam omogućile prodor na tržište bez vremenskog i prostornog ograničenja. Pomoću društvenih i socijalnih mreža Facebook i Twitter uspeli smo da razvijemo bazu sa oko 70.000 klijenata sa kojima imamo interaktivan odnos i njihovo aktivno učešće u iznalaženju najboljih rešenja... Putem društvenih i socijalnih mreža edukujemo i informišemo naše klijente o svim aktivnostima banke, novim proizvodima, uslugama, kampanjama i događajima, a upoznajemo ih i sa našim zaposlenima... Uputstvo za kreiranje naloga za plaćanje sa datumom u budućnosti putem mobilnog bankarstva, koji klijentima omogućava planiranje troškova, je jedan od primera kako edukujemo i informišemo klijente o novim uslugama. Takođe, podstičemo naše i potencijalne klijente da učestvuju u raznim akcijama i nagradnim konkursima koje organizujemo na društvenim mrežama, čiji su pobednici nagrađeni... Na primer, renoviranje dečijih igrališta za najbolji crtež, osvajanje automobila plaćanjem Visa karticama, vikend za dvoje na Zlatiboru za najbrže složenu slagalicu, poklon vaučeri za beskontaktno plaćanje MasterCard PayPass karticom, osvajanje značajnih popusta u radnjama različitih namena i mnogi drugi... Klijenti su veoma aktivni i rekao bih da im se sviđa to što radimo i način na koji radimo, što nam govori podatak da nam se broj lajkova uvećao za 12.000 u odnosu na isti period prošle godine... S druge strane, kao rezultat pažljivog slušanja potreba klijenata, promenili smo radno vreme u 28 ekspozitura širom Srbije... Isto tako, kroz razne zabavne igre na koje ih pozivamo preko društvenih mreža upoznajemo se sa njihovim navikama, te oblikujemo proizvode i usluge po meri korisnika... Ne manje važno, pozivamo ih da budu otvoreni i slobodni u iznošenju svojih stavova i mišljenja, bilo pozitivnih ili negativnih, oko svih naših proizvoda i usluga. Pozitivne i negativne emocije klijenata nam

pomažu da ih bolje razumemo, te unapredimo svaki segment našeg poslovanja...”

“... Razvijena trgovačka mreža je izuzetno važna za prikupljanje znanja i ideja. Dugi niz godina čvrste saradnje je rezultirao u izgrađen partnerski odnos koji se zasniva na svakodnevnoj saradnji i poverenju. Njihove ideje, kao i ideje klijenata koji počinju odnos sa bankom preko trgovačkih mreža su doprinele razvijanju informacionih sistema koji olakšavaju procese između banke i trgovačke mreže, uvođenju novih proizvoda, kao i unapređenju postojećih... Najbolje ideje uvek bogato nagrađujemo što je veoma prepoznato kod klijenata i partnera...”

Zaposleni i uspostavljeni partnerski odnosi sa značajnim stejkholderima predstavljaju dva najznačajnija izvora za stvaranje i komercijalizaciju radikalnih inovacija, dok korisnici bankarskih usluga i ostali izvori prikupljanja znanja omogućavaju generisanje različitih znanja i ideja, te stvaranja inkrementalnih inovacija koje su u primarnoj funkciji zadovoljstva korisnika bankarskih usluga, unapređenja postojećih procesa i poboljšanja kvaliteta usluga. S toga predstavljaju važan element konkurentске snage banke, na čijem obimu treba kontinuirano raditi, zaključuje M. M.

Inovacione i finansijske performanse

Inovacione performanse su analizirane na osnovu prikupljenih podataka iz internih dokumenata banke koja je predmet istraživanja, te predstavljene na Grafikonu 1 za period od 2011. do 2014. godine. Na osnovu prikupljenih podataka, uočava se kontinuiran rast prikupljenih ideja, što ukazuje na to da otvorenim inovacionim aktivnostima, odnosno inkorporiranjem eksternog znanja, raste i obim. S druge strane, u toku 2011. godine, broj uvedenih inovacija je bio veći u odnosu na nerealizovane, dok se taj odnos menja rastom obima prikupljenog znanja. Posmatrajući krivu realizovanih inovacija, može se uočiti trend rasta koji je naglašen od 2013. godine. To ukazuje da banka uvećava kapacitete za implementaciju inovacija, što dalje implicira smanjenje jaza između implementiranih i neimplementiranih inicijativa.

The bank establishes relationships with the end users of banking services through branches, merchant network, ATMs, POS terminals, telephone banking, Internet banking, SMS banking and mobile banking, making it easier to acquire knowledge from the external environment. Through these channels the employees closely monitor the needs, behavior and emotions of clients and seek to familiarize them with the products and services in the best possible way. The inclusion of end users of banking services in the innovation process is one of the innovative strategies that is being developed and successfully applied in the bank, says M.M. and points out that the Internet-based technologies play a key role in the current phase of incorporating the end users of banking services in the innovation process.

"... Social networks have enabled us market penetration without time and space limitations. Using social networks Facebook and Twitter, we have managed to develop a base of around 70,000 customers with whom we have an interactive relationship and their active participation in finding the best solutions ... Through social networks we educate and inform our customers about all activities of the bank, new products, services, campaigns and events, and introduce them with our employees ... Instructions for creating a payment order with a future date through mobile banking, which allows customers to plan their costs, is an example of how we educate and inform customers about new services. Also, we encourage our current and potential customers to participate in various activities and prize competitions that we organize on social networks, where the winners are rewarded ... For example, the renovation of playgrounds for the best drawing, winning a car by Visa card payments, a weekend for two in Zlatibor for the fastest assembled puzzles, gift vouchers for MasterCard PayPass contactless payment cards, winning significant discounts in various stores, and many others ... Customers are very active, and I would say that they like what we do and how we do business, which is justified by the number of likes increased by 12,000 compared to the same period last year ... On the other hand, as a result of careful listening to the customers' needs, we changed business hours in 28 branches throughout Serbia Through a variety of fun games to which we invite our customers over social networks, we also learn their behavior and shape the products and

services according to the customers ... not least, we invite them to be open and free in expressing their views and opinions, whether positive or negative, about all our products and services. Positive and negative emotions of clients help us understand them better and improve every aspect of our business ...".

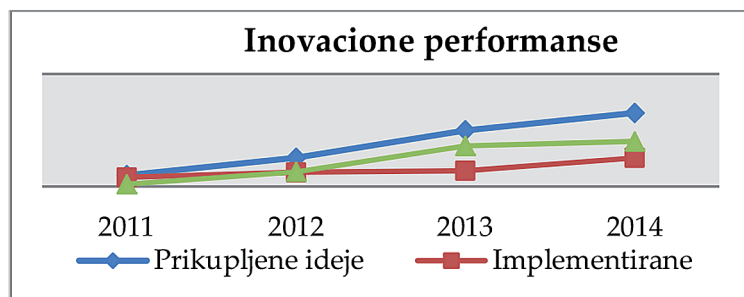
"... Developed merchant network is extremely important for gathering knowledge and ideas. Many years of close cooperation have resulted in an elaborate partnership based on the daily cooperation and trust. Their ideas, and ideas of customers who start relationships with the bank through merchant networks have contributed to the development of information systems that facilitate the processes between the bank and the commercial network, the introduction of new and improvement of the existing products... We always richly reward the best idea, which is highly recognized by customers and partners ...".

Employees and established partnerships with key stakeholders are the two most important sources for the creation and commercialization of radical innovations, while end users of banking services and other sources of knowledge acquisition allow the generation of various knowledge and ideas, and create incremental innovations whose primary purpose is to satisfy customers, improve existing processes and service quality. Therefore, they are an important element of the competitiveness of the bank, whose number should constantly be in the bank's focus, says M.M.

Innovation and Financial Performances

Innovation performances were analyzed on the basis of data collected from the bank's internal documents, (Figure 1) for the period from 2011 to 2014. Based on the collected data, continuous growth of collected ideas can be seen, suggesting that the volume grows simultaneously with the increase of open innovation activities, i.e. the incorporation of external knowledge. On the other hand, in 2011, the number of implemented innovations was higher compared to the unrealized, while this ratio changes with the increased volume of collected knowledge. Looking at the realized innovation curve, we can see the upward trend that was accentuated by 2013. This indicates that the bank increased its capacity to implement innovations, which further implies a

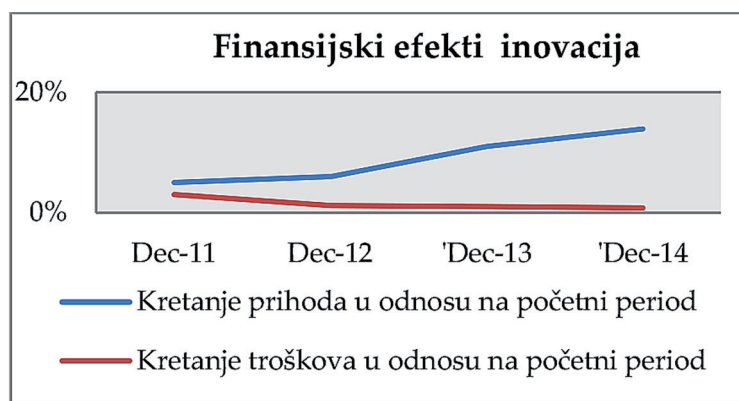
Grafikon 1. Inovacione performanse banke



Izvor: Kalkulacija autora na osnovu internih podataka banke

Na Grafikonu 2 su prikazani finansijski efekti uspešno realizovanih inovacija u sektoru za kredite fizičkim licima izraženi u procentnim poenima, te mereni za svaku godinu u odnosu na početni period koji predstavlja tačku otvaranja banke ka eksternom okruženju.

Grafikon 2. Finansijski efekti realizovanih inovacija banke



Izvor: Kalkulacija autora na osnovu internih dokumenata banke

Kretanje prihoda u odnosu na početni period predstavlja učešće prihoda ostvarenih od inovacija u ukupnim prihodima. Prihodi od inovacija su rezultat novih proizvoda i tržišta. S druge strane, smanjenje troškova poslovanja je nastalo usled inoviranih procesa. Na osnovu prikupljenih podataka, u decembru 2014., banka je ostvarila porast prihoda od 13,91% u sektoru za kredite fizičkim licima, odnosno smanjila troškove poslovanja za 2,2% u odnosu na početni period.

Analiza rezultata

Na osnovu prikazanih rezultata, ova studija ima dva ključna nalaza. Prvo, rezultati istraživanja ukazuju na potrebu uvođenja koncepta otvorenih inovacija u sektoru finansijskih usluga, u čijem razvoju značajnu ulogu imaju informaciono-komunikacione

tehnologije zasnovane na internetu. Drugo, učešće zaposlenih i čvrsto izgrađeni partnerski odnosi sa eksternim stakeholderima vode ka stvaranju radikalnih inovacija, dok raznovrsni kanali za generisanje znanja iz eksternog okruženja pomoću informaciono-komunikacionih tehnologija zasnovanih na internetu vode

ka većem obimu i stvaranju inkrementalnih inovacija. Nalazi iz dubinskih intervjua ukazuju da radikalne inovacije doprinose promeni poslovnog modela banke, dok su inkrementalne inovacije u primarnoj funkciji zadovoljstva korisnika bankarskih usluga, unapređenja postojećih procesa i poboljšanja kvaliteta usluga. Korisnici bankarskih usluga imaju značajnu ulogu u procesu kreiranja inkrementalnih inovacija. Banka na indirektnan način uključuje korisnike bankarskih usluga u inovacioni proces. Na društvenim mrežama je aktivno 8% klijenata u odnosu na ukupan broj klijenata banke, dok je interaktivan odnos sa klijentima porastao za 26% na kraju avgusta 2015., u odnosu na isti period prethodne godine.

Pažljivo prateći njihove potrebe, ponašanje i emocije, kreiraju se proizvodi i usluge po meri korisnika, što rezultira u njihovom zadovoljstvu, te pozitivnim inovacionim i finansijskim performansama. Trend rasta uspešno realizovanih inovacija, koji je naglašen od 2013. godine ukazuje na spremnost banke da uveća inovacione kapacitete, što implicira smanjenje jaza između implementiranih i neimplementiranih inicijativa. S druge strane, pronašli smo da IT strategija usmerena na izgradnju bilateralne infrastrukture između banke i partnera nije razvijena. Efekti IT i strategija otvorenih inovacija banke koja je predmet istraživanja se ogledaju u ostvarenom rastu prihoda od 13,91% u sektoru za kredite fizičkim licima i smanjenju troškova poslovanja za 2,2% u decembru 2014. godine u odnosu na početni period analize.

reduction in the gap between the implemented and unimplemented initiatives.

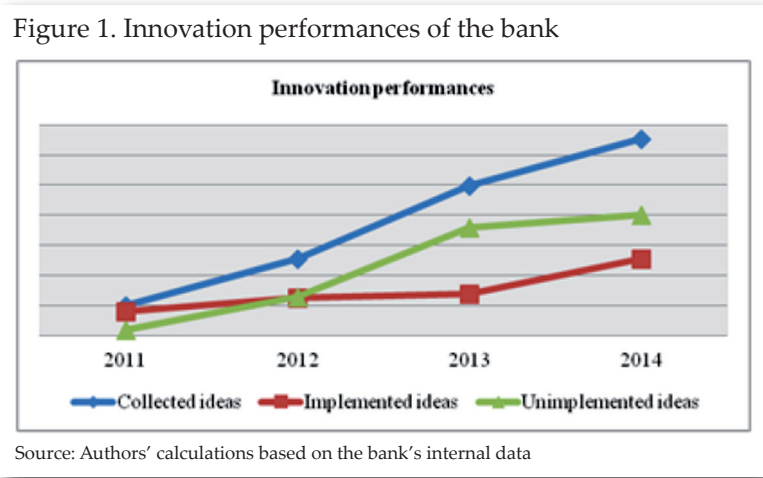
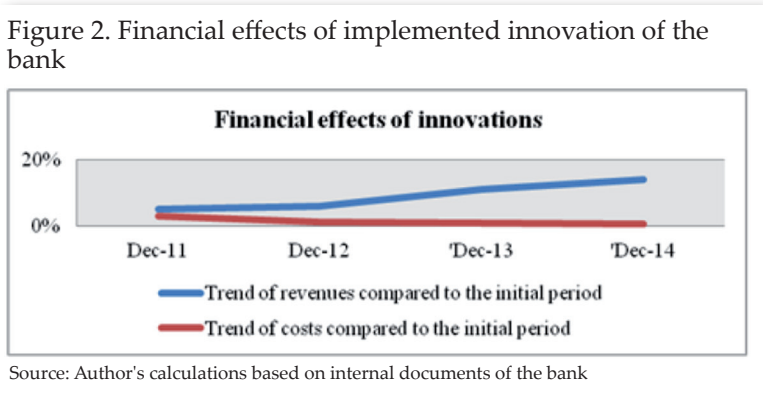


Figure 2 depicts the financial effects of successfully implemented innovations in the household lending division, expressed in percentage points, and measured for each year in relation to the initial period i.e. the point of opening the bank to external environment.



The trend of revenues compared to the initial period represents the share of revenues generated by innovations in total revenues. The revenues from innovations are the result of new products and markets. On the other hand, the reduction of operating costs is triggered by innovative processes. Based on the collected data, in December 2014 the bank achieved the revenue growth of 13.91% in the household lending sector, and reduced operating costs by 2.2% compared to the initial period.

Analysis of Results

Based on the results, this study has two key findings. First, the results suggest the need to introduce the open innovation concept in the

financial services sector, in whose development the Internet-based ICT play a substantial role.

Secondly, the participation of employees and tightly built partnerships with external stakeholders leads to the creation of radical innovations, while a variety of channels for the generation of knowledge from the external environment by means of the Internet-based information and communication technologies, leads to the creation of incremental innovations on a larger scale. The findings from in-depth interviews indicate that radical innovations contribute to the change of the bank's business model, while incremental innovations' primary purpose is to satisfy the customers, improve the existing processes and service quality. Customers play a significant role in the process of creating incremental innovations. The bank indirectly includes customers into the innovation process. 8% of all bank's customers use social networks actively, while the interactive relationship with customers grew by 26% at the end of August 2015, compared to the same period last year. Products and services for the customers are being created carefully following their needs, behavior and emotions, which results in their satisfaction and positive innovation and financial performance. The growing trend of successfully implemented innovations, which is accentuated by 2013, indicates the bank's willingness to increase innovation capacity, which implies a reduction in the gap between implemented and unimplemented initiatives. On the other hand, we found that the IT strategy focused on building bilateral infrastructure between the bank and the partner is not developed. The effects of the bank's IT and open innovation strategies are reflected in the realized revenue growth of 13.91% in the household lending division and reduced operating costs by 2.2% in December 2014 compared to the initial period of analysis.

Zaključci i preporuke

U ovom radu je predstavljena analiza efekata IT i strategija otvorenih inovacija na inovacione i finansijske performanse pomoću studije slučaja u cilju holističkog sagledavanja predmeta istraživane pojave u realnoj situaciji. Studija slučaja je zasnovana na kvalitativnim i kvantitativnim podacima pomoću kojih se došlo do značajnih rezultata.

Rezultati istraživanja ukazuju na potrebu uvođenja koncepta otvorenih inovacija u sektoru finansijskih usluga kako bi se maksimalno iskoristio potencijal iz eksternog okruženja. Informaciono-komunikacione tehnologije zasnovane na internetu olakšavaju prodor ka eksternom okruženju, čime obezbeđuju efikasnu i efektivnu primenu otvorenih inovacija. Zaposleni i duboko izgrađeni partnerski odnosi sa eksternim stakeholderima doprinose razvoju radikalnih inovacija, dok različiti eksterni izvori za inkorporiranje znanja pomoću informaciono-komunikacionih tehnologija

zasnovanih na internetu vode ka većem obimu i stvaranju inkrementalnih inovacija, u čijem procesu korisnici bankarskih usluga imaju vitalnu ulogu. Rezultati iz dubinskih intervjua ukazuju da radikalne inovacije doprinose promeni poslovnog modela banke, dok su inkrementalne inovacije u primarnoj funkciji zadovoljstva korisnika bankarskih usluga, razvoja postojećih procesa i poboljšanja kvaliteta usluga. IT strategija usmerena na izgradnju bilateralne infrastrukture između banke i partnera nije razvijena. Konačno, efekti IT i strategija otvorenih inovacija banke koja je predmet istraživanja su prikazani kroz finansijske rezultate koji se ogledaju u značajno ostvarenom rastu prihoda i smanjenju troškova poslovanja.

Banka koja je predmet istraživanja je primer dobre prakse kako se koristi znanje u funkciji inovacionih i finansijskih performansi organizacije. Kombinovanom upotrebom internog i eksternog znanja uz adekvatnu podršku menadžmenta s jedne strane i informaciono-komunikacionih tehnologija



Conclusions and Recommendations

This paper presents an analysis of the effects of IT and open innovation strategies on innovation and financial performances, by means of a case study with the aim of a holistic comprehension of the researched subject in real life. The case study is based on qualitative and quantitative data which yield significant results.

The research results point to the need to introduce the concept of open innovation in the financial services sector in order to maximize the potential of the external environment. The Internet-based information and communication technologies facilitate penetration to the external environment, thus ensuring efficient and effective use of open innovation. Employees and tight partnerships built with external stakeholders contribute to the development of radical innovations, while different external sources for incorporation of knowledge by means of the Internet-based information

and communication technologies lead to the larger volume and the creation of incremental innovation. Customers play a vital role in these processes. Results from in-depth interviews indicate that radical innovations contribute to the change of the bank's business model, while incremental innovations have the primary purpose of satisfying the customers, developing the existing processes and improving service quality. IT strategy focused on building bilateral infrastructure between banks and partners has not been developed. Finally, the effects of IT and open innovation strategies of the bank are shown in the financial results, i.e. the significant revenue growth and operating cost reduction.

The bank is an example of good practice on how to use knowledge as a function of innovation and financial performances of an organization. By combining the use of internal and external knowledge with adequate support of the management on one hand, and the Internet-based information and



zasnovanih na internetu s druge, odnosno ambidekstralnim pristupom inovacijama banka je potencijalno omogućila generisanje novih izvora prihoda korišćenjem znanja unutar i van organizacije.

U cilju maksimalnog iskorišćenja potencijala iz modela otvorenih inovacija, a na osnovu pregledane literature i dobijenih rezultata iz studije slučaja, u radu se izvode preporuke za menadžere u bankarskom sektoru: 1) Potpuna integracija eksternog znanja iz različitih izvora pomoću fleksibilnih informaciono-komunikacionih tehnologija, odnosno pomoću tehnologija zasnovanih na internetu kako bi se maksimalno iskoristilo znanje iz svih raspoloživih izvora uz minimalne troškove. 2) Učvršćivanje partnerskih odnosa sa eksternim stakeholderima utemeljenih na poverenju, kako bi se poverenjem došlo do značajnih radikalnih inovacija. 3) Kontinirano traganje i zasnivanje novih partnerskih odnosa, u cilju stvaranja većeg obima partnerstava iz različitih delatnosti. 4) Izgradnja bilateralne infrastrukture sa partnerima, kako bi se izvukao potencijal iz naprednih tehnologija, te dugoročno smanjili operativni troškovi. 5) Pomeranje sa indirektnog ka direktnom uključivanju korisnika bankarskih usluga u inovacione procese, u cilju prikupljanja većeg broja ideja kroz intenzivniju saradnju. 6)

Izgradnja partnerskih odnosa utemeljenom na poverenju sa korisnicima bankarskih usluga. 7) Uvođenje tehnologija za prepoznavanje emocionalnog stanja korisnika bankarskih usluga, pomoću kojih bi se imao pouzdan uvid u emocije klijenta, odnosno reakcija na proizvod, uslugu, situaciju i zaposlene u banci. 8) Potpuno uključivanje zaposlenih u inovacioni proces, kako bi se maksimalno iskoristio unutrašnji potencijal organizacije. 9) Uvođenje službe za upravljanje inovacijama u okviru organizacije, u cilju sistematičnog i efektivnog upravljanja nelinearnim inovacionim procesima i adekvatnim merenjem inovacionih i finansijskih performansi. 10) Adekvatno upravljanje rizicima, odnosno potencijalnim pretnjama koji mogu proistići iz modela otvorenih inovacija kao što su zaštita organizacione baze znanja i otkrivanje podataka koji nisu namenjeni za deljenje van organizacije.

Ovaj rad može doprineti menadžerima u finansijskim uslugama, bankarskom sektoru, IT sektora i menadžmentu inovacija.

Buduće istraživanje treba da obuhvati ispitivanje efekata IT i strategija otvorenih inovacija primenom drugih kvalitativnih i kvantitativnih tehnika koje će obuhvatiti veći uzorak u različitim sektorima.

communication technologies on the other, i.e. with an ambidextrous approach to innovations, the bank has potentially enabled the generation of new sources of income by using knowledge within and outside the organization.

To maximize the utilization of the open innovation model potential, based on the reviewed literature and the results obtained from the case study, this paper draws some recommendations for managers in the banking sector: 1) Full integration of external knowledge from different sources with the use of flexible information and communication technologies, i.e. Internet-based technologies, in order to maximize the knowledge from all available sources at minimum cost. 2) Tightening partnerships with external stakeholders based on trust, making trust an important driver to significant radical innovations. 3) Continuous search and building of new partner relationships to create larger volume of partnerships in various activities. 4) Building a bilateral infrastructure with partners to get out the potential of advanced technologies and reduce operating costs in the long run. 5) Shifting from indirect to direct involvement of customers in innovation processes, in order to collect a large number of ideas through increased cooperation. 6) Building partnerships with customers based

on trust. 7) The introduction of technology to identify the emotional state of the banking services users, based on which the bank could have a reliable insight into the emotions of the customer, or a reaction to the bank's product, service, situation, and staff members. 8) Fully involving employees in the innovation process to maximize the internal potential within the organization. 9) Introducing the unit for innovation management within the organization, for the purpose of systematic and effective management of non-linear processes of innovation and adequate measurement of innovations and financial performances. 10) Proper risk management, i.e. potential threats that may arise from the open innovation model such as the protection of the organization's base of knowledge and disclosure of data not intended for further sharing outside the organization.

This paper can be useful for managers in the financial services, banking, IT and innovation management.

Future research should include examination of the effects of the IT and open innovation strategies by the application of other qualitative and quantitative techniques that may include a larger sample from different sectors.

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