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FOREWORD

The current special issue, Media Entrepreneurship in Web 3.0 presents a collection of the best papers that were presented in the 2nd international conference of Research in Innovation and Technology with a focus on a business opportunity in creative industries and challenges of technological startups in acceptance of disruptive innovation.

This conference held in Shahid Beheshti University in Tehran at the 10 March 2019. A considerable number of researchers, practitioners and executive managers from the country and international community participated in this event. Two main panels, as well as two parallel panels and one workshop addressed special concerns of the innovation and business in the current period of time. The main two panels were 'emerging business opportunities in the creative industries' and 'challenges of startups to adopt disruptive innovations'. The former hosted and sponsored by the ministry of Culture and Islamic Guidance and latter by 'Iran National Science Foundation' and 'Sariland Accelerator'. In parallel panels, presentations done in physical appearance as well as virtual presentation, to use technology and innovation for a hybrid form of conference.

As the members of the presidential board of this conference, we hope this event will create continued dialogue between Iranian scholars in the field and international community. Collaborative research projects among researchers from different countries, such as what can be seen in this special issue, promise that aim of this conference to bridge between researchers of international community has been partially met.

We would like to thank the authors of the articles in this collection for their influential contributions and their hard efforts during the conference and then for preparation of their final manuscripts. Then, we must appreciate the reviewers of the conference that spend lots of energy and efforts for evaluation and review of receiving submissions. Our biggest thanks are to Prof.Dr.Maria Alejandra Gonzalez Perez, the Editor-in-Chief of AD-Minister who generously provides the 2nd conference as well as the 1st one, with this special issue and also for her honorable serving as a scientific member of conference. We also thank the founding members of this conference, Prof.Dr.Mike Friedrichsen, from Berlin University of Digital Sciences and Prof.Dr.Wilfried Modinger from Stuttgart Media University and Steinbeis University of Berlin for their very important role in success of the conference. Our special appreciation is for Dr. Yashar Salamzadeh (USM, Malaysia), Dr. Idongesit Williams (Aalborg University, Denmark) and Dr. Somayeh Labafi (Irاندو, Iran), who took responsibility as the guest editors of this special issue. By their supervisions and commitments to the quality, the selected articles took rounds and rounds of revision to be prepared for publishing. Last but not least

We'd like to thanks Hadi Zarea as chief of executive committee of the conference and his wonderful team. They were the cornerstones and pillars of the conference and success of this conference is deeply in owe of their great work.

At the end, we wish the readers will find this special issue useful and knowledgeable. Moreover, we look forward for a more fruitful and productive 3th conference in the next year.

Esmail Ghaderifar

Director of Strategic Technologies Center, Vice-Presidency for Science and Technology

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GUEST EDITORIAL: MEDIA ENTREPRENEURSHIP AND WEB 3.0, THE WAY PASSED, THE WAY FORWARD

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INTRODUCTION:

Media entrepreneurship in Web 3.0 is focused on the entrepreneurial activities of individual entrepreneurs and small media firms. Web 3.0 and social media platforms have provided a unique opportunity for start-ups and small businesses, which enables them to propose value to the demanding customers (Labafi and Williams, 2018). The Web 3.0 concept describes social communication platforms that adds the element of cooperation to the communication characteristics evident in Web 2.0 and the cognition characteristic evident in Web 1.0 (Fochs, 2017). Social media platforms enables media and technological start-ups to offer their innovations without market entry barriers. Today, social media platforms is a significant breeder of entrepreneurial pursuits.

The entrepreneurial possibilities created by web 3.0 has been of interest to researchers in the study of media entrepreneurship. The value proposition presented by social media platforms has led to a heightened interest in its utilization for entrepreneurial activities by creative individuals and small firms.. Hoag and compain (2006) were the first scholars who presented a definition for media entrepreneurship. Since then, several scholars have studied this subject. These scholars include, Hoag (2008), Achtenhagen (2008, 2017), Hang (2016), Will et al (2016), Khajeheian (2016, 2017), Price-Schultz and Jones (2017), and Hasenpusch and Baumann (2017). In most recent and comprehensive definition, Khajeheian (2017) defined media entrepreneurship as “taking the risk to exploit opportunities (creation/ discovery) by innovative use of (radical/incremental/imitative) resources (ownership/control) in transform of an idea into activities to offer value (creation/delivery) in a media form (content/platform/user data) that meets the need of a specific portion of market (businesses or consumers), either in an individual effort or by creation of new venture or entrepreneurial managing of an existing organizational entity and to earn benefit (money/attention/favourite behaviour) from one of the sources that is willing to pay for (direct consumers, advertisers, data demanders or any customer of generated information of consumers).”

The interest in this subject experienced a sharp growth in 2017. This signalled the growing importance of web platforms and social media to entrepreneurial activities. Within this time, there was also significant growth to social media start-ups and firms. They provided economic contribution via

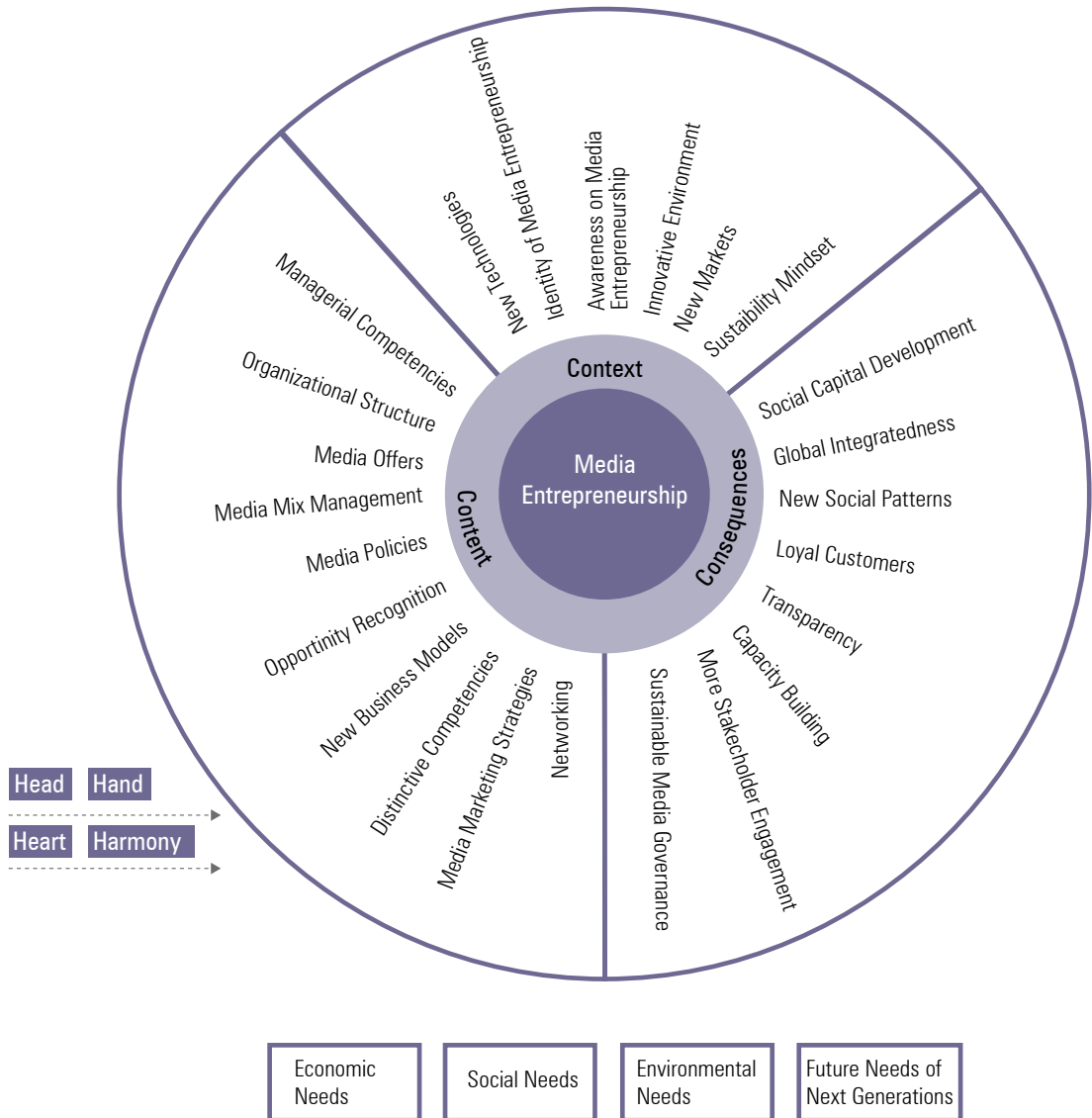
employment and innovation. Growth in these areas increased the importance of media entrepreneurship as an area of interest and as a field of study.

THE WAY FORWARD:

In order to get to a comprehensive look at Media entrepreneurship in web 3.0, we have considered three different aspects. The first aspect is the need for infrastructure that supports businesses and start-ups; and of course the need for sustainable approaches that guarantee the future of these businesses in their dynamic environment. These infrastructures includes different needs needed to fulfil some entrepreneurial approaches. These approaches are, namely, social needs, environmental needs, economic needs and future needs of next generations. On the other hand, there are needs for driving forces that will ensure that the momentum for these businesses is always available when needed. Furthermore, that energy can be guaranteed to enable the continuous movement of media entrepreneurship towards newer goals in future.

We have summarized these driving forces as Head, Hand, Heart and Harmony. We need some activities to be done in media entrepreneurship (which is the Hand) otherwise this driving force may stop. Some policies and strategic approaches on media entrepreneurship need to make, and improve (Head) upon media entrepreneurship practices. This field also needs people who are interested in enhancing its impact on society and they have to love this businesses otherwise the profit making approach will become the dominant approach here (Heart). Lastly we need some international and national entities to have the responsibility of harmonizing and balancing all activities in this field (Harmony). The last thing we need to consider is the internal concerns of Media Entrepreneurship which we have divided it to three main dimensions namely: Content, Context and Consequences (3C Model). Of course we need to have it in mind that almost all these approaches can perform better in a web 3.0 environment.

There is a diverse set of criteria in each dimension of our proposed model, so we have presented the schematic model below not to make the descriptions longer, and some suggestions for future researches, according to this model, are provided later.



ARTICLES IN THIS SPECIAL ISSUE:

This opening article of this special issue provides an insight about the status of media entrepreneurship research and the methodological challenges that the researchers in the field are facing with. **Datis Khajeheian**, who is one of the leading scholars in the media entrepreneurship researches, firstly provides the status of research in this field by citing most of conducted researches in the recent two decades. Then he addresses the challenges that he has been faced with, as a professor in supervising and as a scholar in review of researches. In particular, he clarifies the difference between some terms that are interchangeably used in the subject research and suggest the researchers to use these methodological terms in the right place. This article can be used as a guideline for nascent researchers.

Since the very first media entrepreneurship researches, the qualitative approach has been the dominant and most of researches have been done by qualitative methods. In the article 2 of this special issue, **Roshandel Arbatani, Kawamorita, Ghanbary and Ebrahimi**, finally fill the gap of lack of quantitative researches and present a quantitative model of media entrepreneurship. by use of SEM and MLP-ANN, they developed Khajeheian's framework (2013) that is the most cited framework in Media Entrepreneurship study. They ranked the involving factors of media entrepreneurship and showed how policy makers can prioritize them for development of media entrepreneurship in social media platforms.

The article 3 is an empirical investigation on the impact of media convergence on the exploitation of entrepreneurial opportunities. **Salamzadeh, Radovic Markovic and Memar Masjed** surveyed 119 cofounders of small and medium sized media enterprises with an online questionnaire and analysed the collected data with regression analysis. The findings reveal that four types of divergence, including media distribution channels, media content producers, audiences, and advertisers, affect exploitation of entrepreneurial opportunities in small and medium sized media firms.

The article 4 is a survey that measures the performance of corporate entrepreneurship activities in Iranian media firms, using linear regression. **Zahra Minafam** shows that the rate of product innovation is highly effected by corporate media entrepreneurship, and revealed that media entrepreneurship in corporate level leads to new and innovative products.

The article 5 addresses corporate media entrepreneurship too, and investigates the subject of open innovation in public service broadcasts as a way to access the external sources of creativity. By conducting 17 interviews with top ranked managers of Iranian public service broadcast (IRIB), and thematic analysis of interviews' codes, **Sharifi, Khajeheian and Samadi** suggest that Iranian media environment is inefficient because of a lack of intermediary firms that facilitate connection of large organization with innovative small enterprises and creative individuals. They showed that IRIB can access the external sources of ideas with assisting the creation and development of such intermediaries.

The article 6 uses a recently popular research method of social network analysis to understand how buyers of Digikala, the prominent Iranian online retailing, act and behave in twitter. **Sharafi Frarad, Kolli, Soltani and Ghanbary** collected and analysed the tweets in the Black-Friday, when online retailers offer discounts on the products, and found that negative tweets have been significantly more than positive tweets, mainly pointing on false pricing and discount, fake goods. They suggest that Web 3.0 platforms need to pay sufficient attention to the reflection of their services in social media platforms, because the negative feedback may destroy their reputation.

Following the above articles that are in the subject of media entrepreneurship, there are three articles that are not in the scope of the special issue, but investigates managerial subjects that is in the scope of journal of Ad-minster. These three articles are as follow:

The article 7 studies a rarely-investigated aspect of media platforms: the digital footprint and its application in recruitment. **Boudlaie, Nargesian and Keshavarz Nik** showed that human resource managers now use social media of applicants to better understand the candidates for a vacant position. By study of the human resource managers of two banks, they conducted 10 interviews and by thematic analysis of codes extracted three major themes: increase in complexity of employment process, optimization due to acquiring vision from the applicants, and retention of employees.

In the article 8, **Ghashami, Alborzi, Movahedi Sobhani and Radfar** address the idea of choosing the most appropriate method for implementing a business intelligent system in organizations with different maturity level. The purpose of this research is to provide a basis for choosing the appropriate approach for implementing business intelligence systems in organizations. The result is a fuzzy model that shows the best executive packages to implement business intelligence based on data (size and maturity of an organization). The present research is carried out in banking industry in two parts. The first part presents a model for selecting a method for implementing business intelligent systems based on the maturity of the organization and in second part, the proposed model has been tested. This model is proposed by considering issues related to the implementation of business intelligent systems in organizations and the output of the model consists of 5 different implementation packages in 5 levels of organizational maturity. Finally, the authors argue that the implementation of business intelligent systems in any organization should be consistent with the level of maturity and intelligence in the organization, and also by using IT tools in the implementation of business intelligent systems, the success can be Guaranteed.

In the article 9 **Ebrahimi, Ghaderifar , Jamali Moghadam, Manuchehrian and Arfa** ranked factors influencing brand imitation. This study recognizes the important factors that affect brand imitation and rank them according to the importance level. Factor ranking has been implemented by using the Rough-TOPSIS method. The results emphasize that the law is the most important factor that can prevent imitation of brand and fraud. This ranking helps companies increase the security of their

brands. Paper has contribution in this field. First, this study collects and evaluates the imitation factors, while previous studies have identified only stimulatory factors for imitation. Second, authors have used the TOPSIS-Rough methodology for ranking, which develops the theoretical approach to this field. Finally, this study compared the results of TOPSIS-Rough with TOPSIS-Fuzzy results to increase the validity.

Javadi Yeganeh in the article 10 uses game theory to investigate why Iranians refuse the government requests to give up their public subsidies. A multiplier prisoner's dilemma used for two groups of people who did not applied for subsidies and those who applied in spite of no need to those subsidies as the sample of study. The findings of this paper is very useful for policy makers to understand how the people act and reflect to their policies.

RESEARCH STREAMS FOR FUTURE:

Based on our model, below are some suggestions for future research on media entrepreneurship to make. It can be one of the main ways toward empowering this emerging field of research and for sure, new ideas can come up from this process.

- Investigating the role of managerial and distinctive competencies on media entrepreneurship.
- Evaluation of the impact of media mix management on media entrepreneurship.
- Business model innovations for media entrepreneurship.
- Investigating the role of sustainable media governance on media entrepreneurship.
- Role of media entrepreneurship on capacity building and social capital development.
- Issues on transparency and media entrepreneurship.
- The role of media entrepreneurship on global interestedness.

We, as the guest editors, wish you will find the articles of this special issue useful and insightful. And we hope that media entrepreneurship as an area of interest will benefit from the selected papers of this special issue and will help the development of this subject.

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QUALITATIVE METHODS IN MEDIA ENTREPRENEURSHIP RESEARCH: CLARIFICATION OF THE TERMS FRAMEWORK, MODEL AND PATTERN

MÉTODOS CUALITATIVOS EN LA INVESTIGACIÓN SOBRE EMPRENDIMIENTO DE MEDIOS: ACLARACIÓN DE LOS TÉRMINOS "MARCO", "MODELO" Y "PATRÓN"

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ABSTRACT

The interchangeable use of some terms that imply on specific concepts and constructs has been a challenge for the students and novice researchers. In particular, terms such as framework, model, pattern and the verbs such as design, identify, present, propose have been used in several cases in the different meaning and cause some confusion for the researchers. This paper is a conceptual article that clarifies the use of such technical terms in qualitative researches in the area of media entrepreneurship. Simply, it defines framework as the limit and boundaries of a never studied phenomenon that includes factors and elements; model as a depiction of the relationship among the factors and elements that predicts how the phenomenon works, and pattern as a previously successfully examined model that can be benchmarked by the future researchers. Then the proper verbs for these technical terms have been suggested. The findings are applicable in the media entrepreneurship and similar areas of qualitative researches, including creative industries.

KEYWORDS

Media Entrepreneurship, Research Method, Qualitative methods, Framework, Model, Pattern.

RESUMEN

El uso intercambiable de algunos términos que implican conceptos y construcciones diferentes ha sido un desafío para los estudiantes e investigadores principiantes. En particular, términos como "marco", "modelo" y "patrón" y los verbos como "diseñar", "identificar", "presentar" y "proponer" han sido utilizados en varios casos en sus diferentes significados y causan confusión para los investigadores. Este texto es un artículo conceptual que aclara el uso de dichos términos técnicos en investigaciones cualitativas en el área del emprendimiento de medios. De manera simple, define el marco como el límite y los límites de un fenómeno nunca estudiado que incluye factores y elementos; el modelo como una representación de la relación entre los factores y elementos que predice cómo funciona el fenómeno, y el patrón como un modelo previamente examinado con éxito que puede ser evaluado por los futuros

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investigadores. Luego se han sugerido los verbos apropiados para estos términos técnicos. Los hallazgos son aplicables en los medios de comunicación empresarial y áreas similares de investigaciones cualitativas, incluidas las industrias creativas.

PALABRAS CLAVE

Emprendimientos de medios, método de investigación, métodos cualitativos, marco, modelo, patrón.

INTRODUCTION

I have taught media management and entrepreneurship in my last ten years in different countries, including Iran, Denmark and Germany, plus several guest lecturing in other countries. In all of my experiences that involved with supervision activities, I have been faced with careless use of technical word in the title and problem statements of proposals, theses and research projects. When I assign as a reviewer for a scientific journal, the story is the same. I face with different use of some technical words with no care of what they really mean. In the study of media entrepreneurship as an underdeveloped area of study with unclear boundaries with entrepreneurship and media management, the problem is more challenging. Students apply the terms inappropriately and then during the project they understand that what they are seeking for needs to be addressed by another word. To reduce this confusion and to provide a written text as a guide for those students, is the main incentive to author this conceptual article.

A REVIEW ON MEDIA ENTREPRENEURSHIP RESEARCH

In the last two decades the subject of media entrepreneurship has received increasing attention from scholars, both established and novices. In a thorough review of the literature, we find Habann (2000) has investigated media enterprises from a resource view perspective. We also find the possibly first special issue of media entrepreneurship in 2002 in the international journal of media management as media and entrepreneurship. This special issue covers some subjects that are not particularly studied media entrepreneurship, but they had an entrepreneurial look at the media enterprises. For example, Frank and Schreier (2002) focused on entrepreneurial opportunities, and Gerport and Negal (2002) studied venture capital firms in the mobile business of Germany. Then we find Robert Picard (2004) who authored an interesting article about the typology of risks in family-based media enterprises. In 2005, we see a first article that focused on the media entrepreneurs: Ngwainmbi (2005) in an article of “The Black media entrepreneur and economic implications for the 21st century” in the Journal of Black Studies provides a perspective to study the media entrepreneurs as a subject of study, not a context. Consequently, Dennis et al (2006) raised the level from individual to the firm level and studied media companies and their strategies. There is an article from Hoag and Campaine on the subject of media entrepreneurship in the era of big media. The date and publisher of this article have never found, but based on google scholar we assume it is a workshop paper that is published in 2006.

Since 2007 onward, the research in media entrepreneurship boosts. Min Hang (2007), Leona Achtenhagen (2008) and Anne Hoag (2008) can be called founding mothers of the new stream in media entrepreneurship research. Min Hang published her doctoral thesis and then papers from it in the subject of the organizational mode of media ventures. Then, she published an insightful paper that titles “media and entrepreneurship: what do we know and where should we go”, accompanying with Aldo Von Weezle. This paper can be seen as an announcement for born of media entrepreneurship as a serious area of study. Berthod et al, in a short paper that presented in a workshop at MMTC, Jonkoping International Business School, introduced new media entrepreneurship, focusing on the media ventures that are based on internet communities. In that year, the first quantitative research that converged the subjects of media and entrepreneurship together get published. Hindle and Klyver (2007) explored the relationship between media coverage and participation in entrepreneurship. We do not consider this research as a contribution in the field of media entrepreneurship, because it shows which factors in the media effect on the general entrepreneurial activities, and not merely on media entrepreneurship.

In 2008, Anne Hoag published a paper titled measuring media entrepreneurship she suggested that there are three levels for the study of media entrepreneurship and also showed how media entrepreneurship can be expanded in different levels. Leona Achtenhagen studied entrepreneurship in German traditional media. In this year, we see two papers in the subject that are published in the journal of media business studies, that is published by MMTC, Jonkoping University in Sweden. The first is published by McKelive and Picard (2008) on the growth and development of new and young media firms, and the next is Dubini and Provera (2008) in the subject of organizational form for enterprises that operate in the field of music.

In the next four years there is a recession in the researches in the field, but it sounds like a preparation for the change of focus on the digital media arena. Two first papers looked by a strategic lens: In 2009 Vukanovic (2009) published a paper about strategic management of digital media in the digital economies and in the next year Shao (2010) examined digital strategy of U.S media and then Aldo von Weezle (2010) authored a paper that focused on the core of entrepreneurship: “creative destruction: why not researching entrepreneurial media?”. In 2011, in the European media management association conference, Khajeheian and Arbatani (2011) presented an article about media entrepreneurship in the age of economic recession and how it reconstructs the media industry. In 2012 Campaign and Hoag published their workshop paper in a more concrete and academic form and extracted the factors that support and hinder new entry in media markets.

Since 2013 we observe a new raise in media entrepreneurship studies. I published my framework for social media entrepreneurship (Khajeheian, 2013). This article that has been one of the most-cited articles in the subject until today, presented the first framework for the study of media entrepreneurship and suggested 23 factors

and five categories that result media entrepreneurship in social media. Ifeduba (2013) studied media entrepreneurship in Nigeria and extracted new patterns, orientations and strategies. In that year, the first article in the subject of media entrepreneurship teaching published. Ferrier (2013) published an article about the curriculum development of media entrepreneurship.

Between 2014 and 2017 the several books and papers in the field of media entrepreneurship have been published. Min Hang (2016) published the first book in the field of media entrepreneurship titled 'Media Corporate Entrepreneurship'. This book, as the title express, focuses on corporate entrepreneurship in media organizations. Will et al (2016) published a chapter entitled 'media venturing and media management' in the book 'managing media firms and organizations' that is edited by Gregory Lowe and Charles Brown, two presidents of European Media Management Association. In that chapter they used two subjects of opportunity and digital media product as the central topic of their chapter. One of the contributions in the field provided by Khajeheian and Tadayoni (2016) who studied how public service broadcasts can foster media entrepreneurship as a public service as well as a source of creativity for their content. They researched in the Public service broadcast of Denmark, Danish Radio (DR) and developed the theory of strategic acquisition by adding a third agent of intermediaries to the other actors of large organizations and small enterprises. They suggested that while large organizations have an advantage in resources and small enterprises have the advantage of innovation, the intermediaries get benefit from contracting, and they facilitate the exchange of value between these two actors and make an efficient media market.

In this period of time (2014-2017), Khajeheian published three papers in the subject of media entrepreneurship, that two of them are at the policy level. In 2014, he authored an article about media entrepreneurship policy for developing countries, and argued that in the age of globalization of knowledge, national innovation systems have a significant effect on media entrepreneurship in the societies and suggested policy makers to create a media environment that large media and small enterprises can exchange the value. Also in a response to F.C.C Telecommunication Act, he published a policy review article (Khajeheian, 2016a) and argued that the media policy-makers need to consider fostering of entrepreneurship as the main target, and instead of regulations, try to set a framework for the growth of small media firms. Another publication of him studied the business model innovation based on audience commodification and suggested small media firms to invent new business models based on the user engagement mechanisms (Khajeheian, 2016b).

Since 2017, we observe a boom in media entrepreneurship research. Several special issues, books and journals are published in these years. A special issue of media entrepreneurship in the International Journal of Media Management, including four articles (Price Schultz and Jones, 2017; Zboralska, 2017; Sindik and Graybeal, 2017; Hassenpusch and Baumann, 2017) accompanied by an editorial from professor Leona Achtenhagen: 'Media Entrepreneurship—Taking Stock and Moving Forward'

provided a clear image from the status of research in media entrepreneurship. In the article 'Media Entrepreneurship: A consensual definition', possibly the most comprehensive definition of media entrepreneurship provided by Khajeheian (2017). Also a special issue of entrepreneurship and innovation in media markets get announced in the *Global Media Journal – Canadian Edition*, but unfortunately due to pass away of Mahmoud Eid, Editor-in-Chief, the journal stopped for a long time and at the time of writing of this article has not published yet. Finally, Khajeheian and Friedrichsen (2017) published a book chapter in the aspect of corporate media entrepreneurship and depicted how television can get benefit from the creativity of audiences and collect them as an inventory of innovation.

In 2018, the book of 'competitiveness in emerging markets: Market dynamic at the age of technological disruptions' covers media entrepreneurship in four different levels: two chapters in broadcasting level (Jensen and Sund, 2018; Murschetz and Prandner, 2018; Karimi and Salavatian, 2018), three chapters in the level of enterprises (Gladysz et al, 2018; Arbatani et al, 2018; Hajmohammadi, 2018; Salamzadeh, 2018; Labafi and Williams, 2018), two papers in the level of individual media entrepreneurs (Tajeddin et al, 2018; Tokbaeva, 2018) and finally three chapters in the macro level and policy and regulations (Reboucas, 2018; Layton, 2018; Safari, 2018). Also in an article that published in the *Journal of Entrepreneurship and Innovation in Emerging Economies*, Tsourvakas and Riskos (2018) identified emergent success factors of entrepreneurial e-media companies; and Cicek (2018) published a paper about social media management. Khajeheian (2018) also researched enterprise social media and discussed how the communication style in media enterprises affects the team.

Finally, the year 2019 seems to be a very particular year for media entrepreneurship research, due to the launch of three new journals. *Journal of Media Management and Entrepreneurship (JMME)* published its first issue at the beginning of this year with five articles. Horst and Murschetz (2019) in 'strategic media entrepreneurship: theory development and problematization' shed a light on the strategic aspect of media entrepreneurship. Tokbaeva (2019) studied the case of the Russian market and how russian media managers act entrepreneurially in the evolving market of Russia. Sreekala Girija (2019) studied the political economy of media entrepreneurship and how commercialization and commodification work in the business model of a digital news media enterprise. Hossein (2019), studied ubiquitous social media on the mobile phone as an incentive for media entrepreneurship. Finally, Chen (2019) investigated the effect of user motivation, cognition and behavior in collaborative social networks. These five articles accompanied by a book review of Hang's media corporate entrepreneurship (Li, 2019), an industry report of Aldo van Weezle and an editorial from the Editor in Chief (Khajeheian, 2019).

Aalborg University Press launched 'Nordic Journal of Media Management' that is the first journal in the field that is published by a university press rather than a commercial publisher. 'Media Management Review' is another newly launched

journal in the field. This open access journal publishes novel researches in the field of media management with a specific focus on media entrepreneurship and media businesses. All three new journals are launched in 2019, and marks this year as a special year for media management research.

In addition to the abovementioned, a special issue of 'Media Entrepreneurship in Web 3.0' has been announced in the journal of Ad-minster as a collection of conference papers. By that conference reports it can be understood that seven articles in the subject of media entrepreneurship is expected to be published in this special issue. Another special issue that are expected to be published at the end of this year is the special issue of 'media entrepreneurship in emerging markets' in the Baltic Journal of Management, a prestigious journal in the field of management that publishes by Emerald.

Such expansion of publication opportunities in the year 2019 signals for a significant increase in the academic attention to the media entrepreneurship. Arbatani et al (2019) in their review of higher education institutes that teach media management worldwide, show that the interest to the business side of media management is increasing and it is expected to see the continuation of the trend in the upcoming years.

In spite of such dramatic growth of interest, the ambiguity is not yet gone. Nascent researchers, students of related fields, and newcomer researchers frequently ask about the coverage, boundaries and more importantly, research methods that can be used in the study of media entrepreneurship. In my article 'Media Entrepreneurship: A Consensual Definition' I tried to clear the coverage of media entrepreneurship and the levels of analysis as well as the areas it covers. By reducing the confusion in the boundaries, we face with the problem a lack of particular definition for technical terms in media entrepreneurship research. therefore, In the current article I aim to provide the target researchers with clear guidance of research methods that they can use. I expect this article will be considered as a reference for students and researchers for the correct use of methods to develop new frameworks, models, patterns and theories.

FRAMEWORK, MODEL AND PATTERN

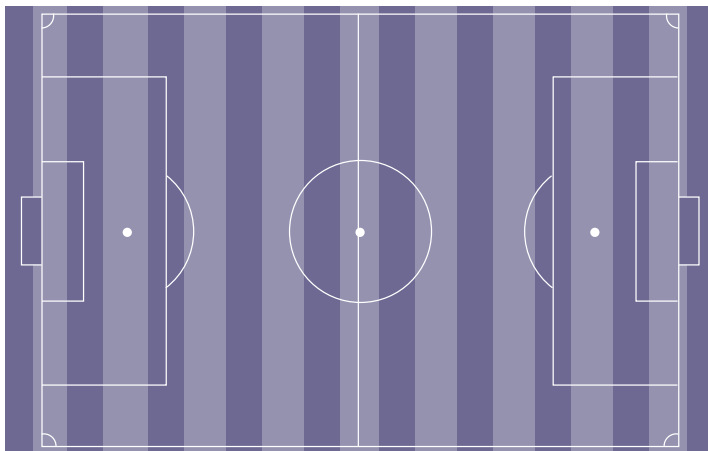
These three concepts have been the cornerstone of many difficulties and challenges. Frequently we face with students and researchers that use these three words interchangeably, while they are not. Each of these, imply on a specific idea that must be used carefully, especially in media entrepreneurship research that is not established yet. Researchers must understand where they stand and which one of concepts is proper for them to use. Let's start with the term 'framework'.

When we have no previously proven model or an established theory or something to stand on it, we need to develop a framework. Thus in theorizing a new phenomenon, a framework helps us to understand the boundaries, the constructing factors, the categories and the basics of how the phenomenon works. Then we can use these

understandings to develop our knowledge about that phenomenon, by investigation of relationships that predict the behavior and performance of our subject.

I getting used to get benefit from football to give a clear idea about what these three confusing and overlapping concepts are talking about. So let's borrow from this exciting sport again for a better understanding of what framework is. The football ground (and the rules) is a good example of a framework. The ground determines where the ball is in and where it is out or in what location of the ball a goal is scored. It also depicts that there will be two teams of eleven men, and three referees. It also gives us a clue about how a match is won or lost. By all of these, we get a sense of how football gets played.

Figure 1: Framework depicts the elements and rules

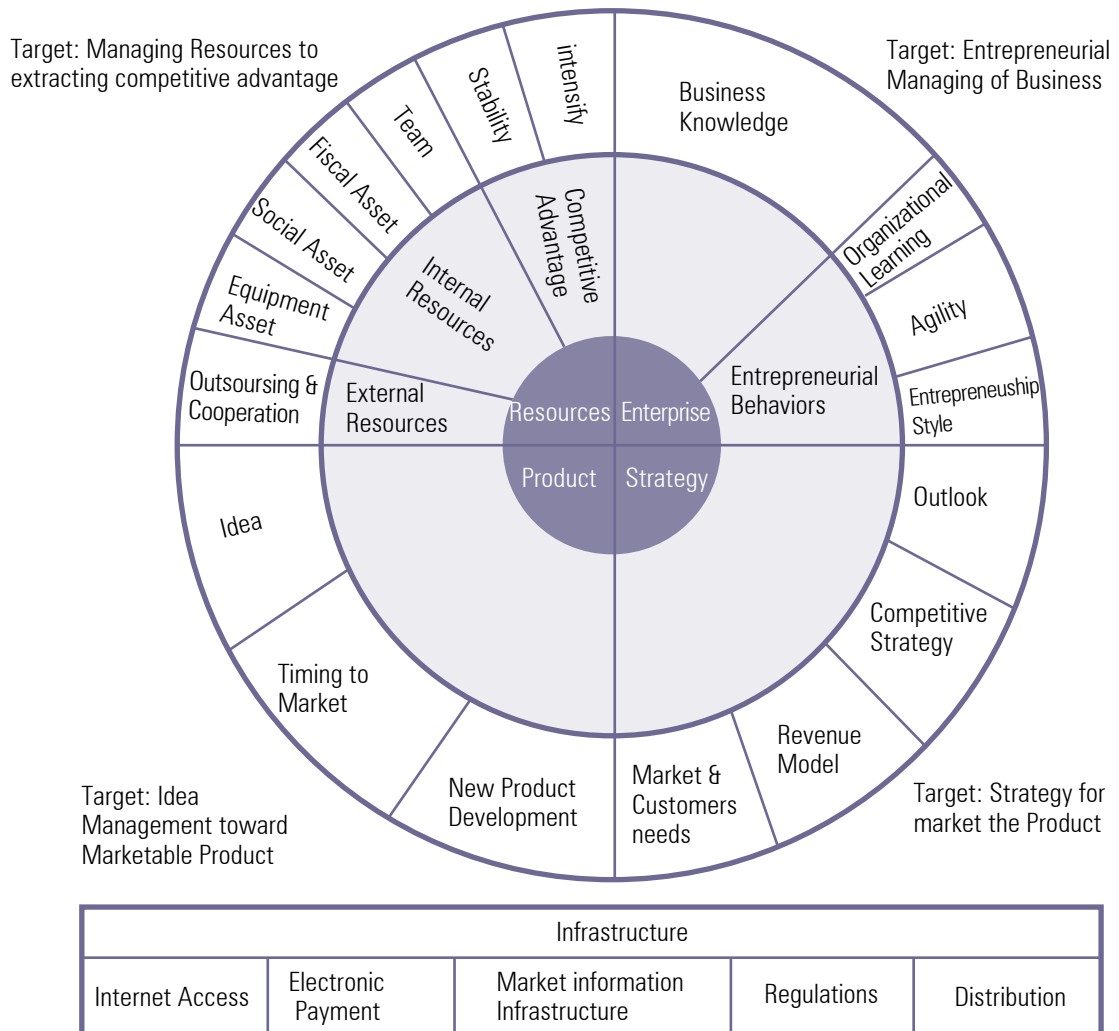


In a similar way, a framework helps us to understand the basics of an unknown phenomenon and get prepared for more advance understanding in the future. For the study of media entrepreneurship, as a less-explored phenomenon, frameworks are very useful and it is the reason that I used the framework as the core of my first research article that I published in the subject of media entrepreneurship: "A framework for media entrepreneurship in social media". Considering that there is no prior knowledge about what the media entrepreneurship is, and what factors play in it, I understood that it is not possible to reach an advanced understanding of how media entrepreneurship can be done successfully. Thus I started to develop a framework to understand the boundaries of media entrepreneurship and the involving factors. I extracted 23 elements and categorized them into five categories. I also innovated a wheel from four controllable categories and a road from the uncontrollable category of infrastructures. Figure 2 depicts that framework.

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Qualitative Methods in Media Entrepreneurship Research: Clarification of the terms Framework, Model and Pattern

Figure 2: Media Entrepreneurship Framework (Khajeheian, 2013)



Source: Khajeheian, D. (2013). New venture creation in social media platform; Towards a framework for media entrepreneurship. In *Handbook of social media management* (pp. 125-142). Springer, Berlin, Heidelberg.

By such a framework, it becomes clear that what media entrepreneurship can be. Of course it is very possible that some factors are neglected or a better categorization can be made. No framework is complete, or perfect. It is an effort to explain the phenomenon. As it can be seen, there is no relationship between the elements, and there is no explanation to predict how it works. It is just a clarification. But it creates a ground for future researches to advance our knowledge.

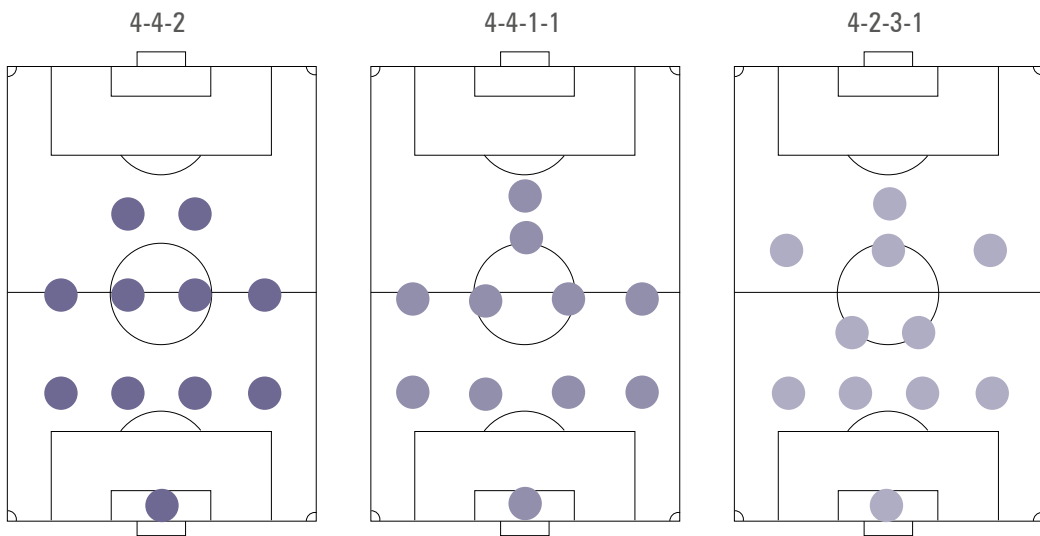
Considering the exploratory nature of framework development, qualitative methods are more proper methods. Content analysis, theme analysis, ethnographic research and means of data collection such as interview and observation are more popular in developing frameworks.

MODEL

A model explains relations and how the elements connect. It depicts the relationships and how the phenomenon performs. Back to the football ground, the model shows how the eleven players can score. Model of classic 4-4-2 shows the arranging of men as four defenders, four midfielders and two forwards; while 3-5-2 advises different arrangement of players, by three defenders, five midfielders and two forwards. It is obvious that these two models inspired from two different perspectives to the match. One coach trusts on a linear defense system, and another relies on wingers to use the width of the ground. The similar is applicable for a research model. When the elements are previously extracted and a framework is developed, a research 'model' tests how they relate together and what correlations exist. A model proposes relationships and then tests it to confirm or decline if it works.

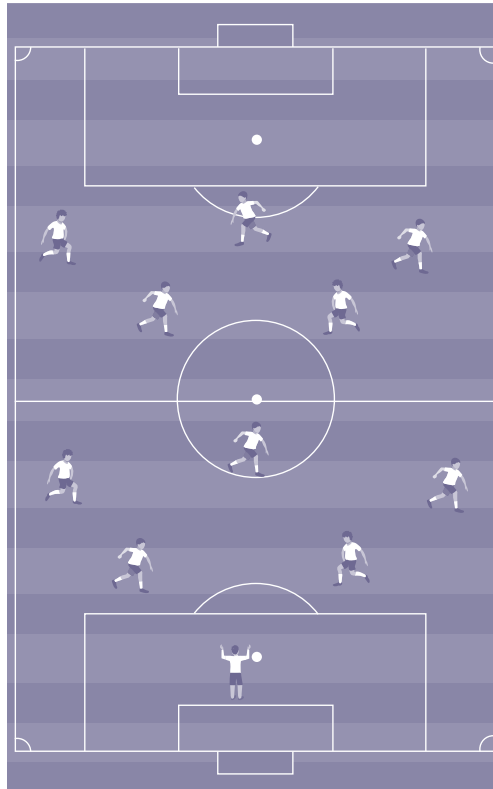
Back to my framework of 2013, I identified 23 elements in my framework and categorized them into five classes. However, I didn't suggest how elements connect to result in media entrepreneurship. Clearly, I was faced with vague and ambiguity of what the media entrepreneurship is at all! Thus I had to extract the constructive elements, without care of how they will connect together. The development of such a framework was very necessary. But after the publishing of the framework, a model is required. This model must explain how these 23 elements connect together and which one effect on which another.

Figure 3: Different Models of football



The one who makes this relationship, is like a football tactician. He/she proposes the proper arrangement of players to score. And like football that different coaches use different systems, it is completely possible that different researchers propose different relationships for elements. Thus, a model is an effort to predict how the system works successfully. In the literature review of media entrepreneurship, I found no model for media entrepreneurship. for this reason, it is needed to develop the framework to a model. Media entrepreneurship models can be in two particular types: causation models, that study what causes media entrepreneurship and effectuation models, that study what are the effects of an entrepreneurial action. Media entrepreneurship policy articles that cited in the literature section, mostly follow the causation approach, because they seek to understand the 'cause' of entrepreneurship and to motivate them by setting policies. Some articles that study the consequences of media entrepreneurship, follow the effectuation approach, because they are seeking to understand the effect of media entrepreneurship on economic development, or creativity, or unemployment, or other impacts it may have on the society or particular sectors.

Figure 4: A Model predicts and explains relationships



To work with models, normally the quantitative methods are more suitable. Correlation, factor analysis, Structural Equation Modeling (SEM) and similar analysis methods can be used to test the models, and questionnaires, data tracing and quantitative data collection tools are the regular means for collecting the data for the test of models.

PATTERN

And what the pattern is? Let's imagine the patterns that our mothers used for needlework. The pattern was a previously successful design, that our mothers used as a guide to creating such design by their needlework. The same is true in research. A pattern is a successful sample that has been implemented somewhere and now we follow it to repeat the success.

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Again, let's back to football. We understood that a model is a specific arrangement that a coach uses for his players to win the match. While there are some generic models, like 4-4-2, 3-5-2, 4-2-3-1, 4-3-3 etc., coaches innovate with making some changes in the implementation of the generic model, based on their analysis of the rival team. When one of the models works and triumph a tournament, this model becomes a pattern that other coaches follow. Total football of Dutch Rinus Michels, or Guardiola's Tiki-Taka, or Italian Marcelo Lippi's 4-4-1-1 are some examples of successful models that turned to patterns. So, a pattern is not something new to invent, but is a successful implementation of a model that is a candidate to be used in other contexts. In media entrepreneurship we can use patterns as benchmarks for the success of entrepreneurial actions in media. It can be a successful policy, or a well-performed style of leading a team of creatives, or a workable method of exploring business opportunities, or any similar successful experience can be mentioned as a pattern.

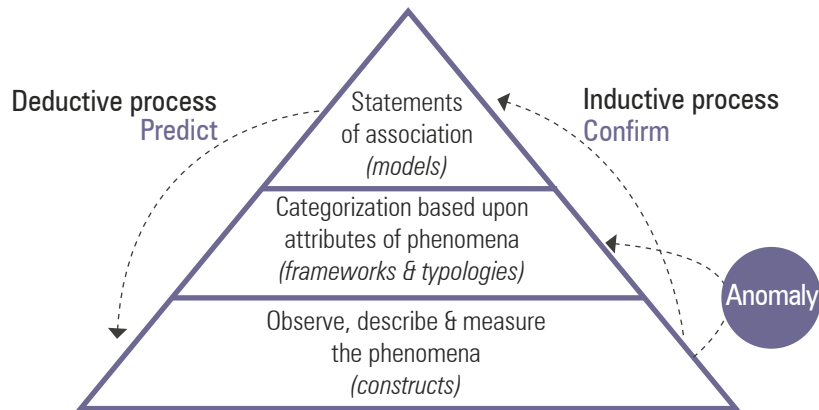
Figure 5: Marcello Lippi's 4-4-1-1 becomes a pattern that benchmarked with many coaches after the success of Italy in world cup 2006



Therefore, we cannot use these three terms interchangeably. Any of them implies on a specific stage of development. We face with an unknown and theoretically undiscovered phenomenon, a framework will help to structure our knowledge and to build our first foundations of understanding it. Elements, dimensions and borders appear in the framework. In the next stage of the progress of our knowledge, we develop the framework with setting relationships among variables and elements. "Relationship" is a key term that differs between framework and model. Finally, when a model works successfully and shows its merit, it will be a pattern for others to imitate and follow.

The abovementioned paragraph also implies on something tricky on verbs. During my years of teaching, I have received some combinations of words in students' proposals: Designing a Pattern, Designing a model, Developing a Pattern, etc. Now that we know the difference between these three terms, it is time to use corrects verbs. We "Present" a framework, because it is our catch from the phenomenon and can be different from the understanding of other researchers. As Carlile and Christiansen (2004) argue in their circle of theory building, after observation, we categories our data and then make our statement of relationships. Thus it is very depended on the collected data from different samples that most possibly are different case by case. Therefore, frameworks might be different in various researches and researchers "Present" their frameworks. I normally suggest my students to use "to present", or words such as "to offer", "to suggest" and similar words when they aim to work on the framework. When we work on a model, the verb is different. We use "develop" when addressing a model, because we use a framework as the basis and try to understand what relationship exists among its elements. Thus we further develop a framework as a model and the most appropriate word is "to develop" a model. It is possible that a researcher presents a framework and develops it as a model in one research, as many of the researches that are conducted by mixed methods. This study can use the verb "to design", because they present a framework and develop it as a model in one step and in fact they design and develop a model. Finally, the appropriate verb for a pattern is "to present" or "to offer" or "to introduce". Because the researcher reports a working model as a successful and workable model for other cases, thus a pattern is presented to imitate and apply.

Figure 6: Carlile and Christiansen (2004) Circle of theory building



Case studies are very popular in media entrepreneurship research. These case studies can present some patterns for media entrepreneurship actions. As I defined, the pattern is a previously successful experience of something that can be used by others to gain a similar result. This is what case studies do. They study an actual experience and show the readers how to repeat the successful learnings or prevent the fails.

CONCLUSION

Media entrepreneurship as a field of interest is becoming more and more popular among media management researchers and scholars. Ubiquitous media on mobile phones (Hosseini, 2019) and inexpensive digital equipment (Khajeheian et al, 2018) have made media a fertile ground for entrepreneurial activities, and in consequence, it is expected that media entrepreneurship will be even getting more research interest in the near future. However, in the absence of a strong theoretical foundation and absence of frameworks and models, researchers face with some difficulties. This conceptual article aimed to provide the researchers, especially students of media management and entrepreneurship a guide for the selection of proper terms for their dissertations and theses as well as research papers, and to present them a clear differentiation among the words and terms.

With the emergence of new technologies, there are new grounds for the study of media entrepreneurship. Blockchain, Big Data (Marashi and Hamidi, 2018; Nemati and Khajeheian, 2018), Internet of Things, and 5G are from the new emerging subjects for the study of media entrepreneurship. By the guidance of this paper, the

researchers can decide what term and stage is the most proper one for their research. If there are some frameworks, they can develop them as models, and if there are some models, they can apply those models in real cases to see if it is possible to present a pattern for successful performance. All in all, it is expected that published researches in media entrepreneurship will be increased due to the increasing number of journals and special issues. In such situation, a clear understanding of concepts is more needed and likely, will result more decent researchers.

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MODELLING MEDIA ENTREPRENEURSHIP IN SOCIAL MEDIA: SEM AND MLP-ANN APPROACH

MODELADO DE LA INICIATIVA EMPRESARIAL DE MEDIOS EN LAS REDES SOCIALES: ENFOQUE SEM Y MLP-ANN

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ABSTRACT

The present paper addresses the need for a quantitative model for media entrepreneurship. In a framework of social media entrepreneurship that is presented by Khajeheian (2013), 23 factors are introduced and categorized in five groups. Four groups of enterprise, resources, strategy and product are controllable and infrastructure is the uncontrollable group. In the current research, these groups are considered as variables and factors are used as measures. In a survey 305 Iranian students responded a questionnaire. SEM and MLP-ANN used for analysis. Results show that resources are on the highest rank, strategy and infrastructure are placed as 2nd and 3rd and enterprise and product placed at the lowest rank. This model can be used as a foundation for developing more quantitative researches in the subject of media entrepreneurship.

KEYWORDS

Media entrepreneurship, social media, digital startup, entrepreneurial action, SEM

RESUMEN

El presente documento aborda la necesidad de un modelo cuantitativo para el emprendimiento de medios. En el marco del emprendimiento en redes sociales presentado por Khajeheian (2013), se introducen y

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Modelling Media Entrepreneurship in Social Media: SEM and MLP-ANN Approach

categorizan 23 factores en cinco grupos. Cuatro grupos de empresa, recursos, estrategia y producto son los controlables y la infraestructura es el grupo incontrolable. En la investigación actual, estos grupos se consideran como variables y los factores se utilizan como medidas. En una encuesta, 305 estudiantes iraníes respondieron un cuestionario. Las metodologías SEM (modelo de ecuaciones estructurales) y MLP-ANN (red neuronal artificial basada en el perceptrón multicapa) utilizados para el análisis. Los resultados muestran que los recursos están en la posición más alto, la estrategia y la infraestructura se ubican en el segundo y tercer lugar, y la empresa y el producto en el más bajo. Este modelo se puede utilizar como base para desarrollar más investigaciones cuantitativas en el tema del emprendimiento de medios.

PALABRAS CLAVE

Emprendimiento de medios, emprendimiento de redes sociales, acción empresarial, SEM, MLP-ANN

INTRODUCTION

Entrepreneurship is important in the national and global economies today so that, it main engine of economic growth and prosperity (Boufaden, 2013; Dutta, Roy, & Sobel, 2009). Small and medium-sized enterprises (SMEs) in the European Union account for 99 % of the total employment (European Commission, 2016) and In the United States, small entrepreneurs have created employment between 2.5 million and 4.7 million each year from 1994 to 2015 (bls, 2016). Khajeheian (2014) the effective role of entrepreneurship in developing countries has attracted attention; Iran is one of these countries. In recent years, entrepreneurship has increased in Iran. World statistics show In 2018, Iran ranked 72 with an increase of 13 in the world's 137 countries (Acs et al, 2018). Although the census points out that growth is in Iran but these show Iran's unfavorable position, part of this is due to government policy. Accordingly, one of Iran's researches identifies the gap between government-related entrepreneurship programs in Iran with global indicators of increasing levels of government-led entrepreneurship activities, such as reforming government policies and laws for the success of Iranian entrepreneurs (Modaresi & Davodi, 2015). Statistics showed In 2015 Of the nascent Iranian entrepreneurs who entered the entrepreneurial world in the last three years, 7 % reached the stage of stability; also 4 % went out of their businesses this year (IRNA, 2016) Therefore, it is felt that entrepreneurship in Iran needs a model But we don't have this kind of model. This study seeks to provide a model for the success of media entrepreneurship in Iran. Media entrepreneurship is important because, in the era of knowledge economy, media industries can become the engine of economic development (Hollifield, 2003: 101). In this research, based on the framework Khajeheian (2013) the success factors of media entrepreneurs are modeled in an entrepreneurial way. We first identify the relationship between the variables by using our structural equations modeling, and then the accuracy of the proposed model is determined according to the mentioned framework, and the importance of the factors of this model, is determined. This research, on the one hand, has led to a strengthening of media entrepreneurship literature, whose weakness was emphasized by Khajehian (2017) and on the other hand, innovation is in the methodology.

LITERATURE ON MEDIA ENTREPRENEURSHIP

In 1971, the first research on entrepreneurship and media by looking at the field of music was published (Peterson & Berger, 1971) but until 2000, there are not many articles on the subject; however, the third millennium is a beginning of interest in research on entrepreneurship and media (Hang & Van Weezel, 2007). However, what is now clear is that entrepreneurship and media have a mutual impact on each other. (Hang & Van Weezel, 2007; Khajeheian, 2013; Khajeheian & Roshandel Arbatani, 2011). On one hand, the media can promote entrepreneurship and on the one hand, entrepreneurship phenomena heavily impact media industries as long as they, in their very nature, fall into the culture and creative industries (Hang & Van Weezel, 2007) however, our focus in this research is on the impact of entrepreneurship in the media industry, which is considered media entrepreneurship. Media entrepreneurship is still nascent. Achtenhagen (2008: 124) wrote: "As the area of media entrepreneurship is still a young and undeveloped field, this phenomenon is poorly understood" and now too some researchers still believe there is no significant improvement on media entrepreneurship (Khajeheian, 2017: 92). Of course media entrepreneurship is defined by some researchers. According to Hoag and Seo (2005: 3) media entrepreneurship is the creation and ownership of a small media company or media organization that creates at least one innovation in the business market. Khajeheian & Roshandel Arbatani (2011) the media entrepreneurship defines the use of limited resources by small media companies to take advantage of opportunities in a particular marketplace. But the most complete definition seems to be this definition: "Media entrepreneurship is taking the risk to exploit opportunities (creation/ discovery) by innovative use of (radical/incremental/imitative) resources (ownership/control) in transform of an idea into activities to offer value (creation/delivery) in a media form (content/platform/user data) that meets the need of a specific portion of market (businesses or consumers), either in an individual effort or by creation of new venture or entrepreneurial managing of an existing organizational entity and to earn benefit (money/attention/favorite behavior) from one of the sources that is willing to pay for (direct consumers, advertisers, data demanders or any customer of generated information of consumers)" (Khajeheian, 2017: 102). Companies the media seeks to explore new ways of using their current resources to create emerging revenue paths and increase company assets (Dutta, Roy, & Sobel, 2009).

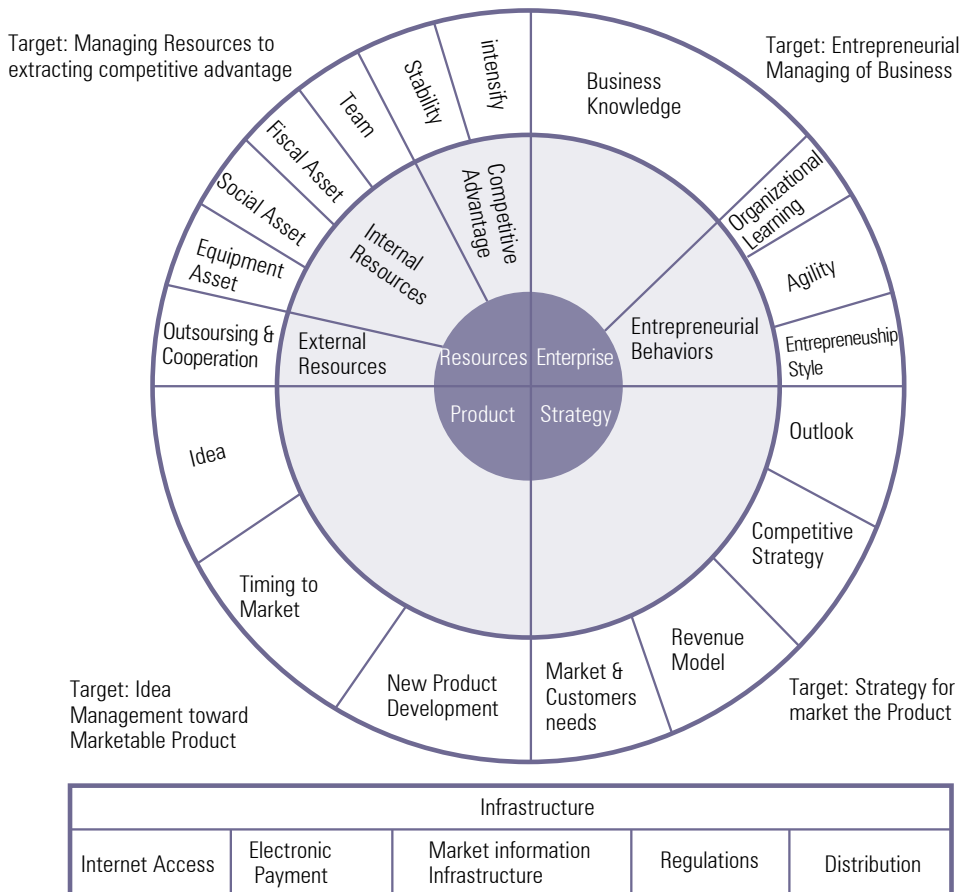
Indeed, the emerging media industry is created with the presence of entrepreneurs who take the risk of introducing and presenting media products in response to available opportunities. According to Hang (2016), some of the opportunities include online business opportunities, online gaming business opportunities, digital TV business opportunities, and business opportunity and joint venture. However, an entrepreneurial act that we know about establishing a media company or production and the marketing of a new product/ service is impossible only with taking advantage of opportunities. Achtenhagen (2017) also says research shows media companies have never been successful and have not really been entrepreneurs. Based on

research, it seems that the main reason for this is the focus of media entrepreneurs on some aspects and the neglect of other dimensions of success (Khajeheian, 2013; Taheri & Roshandel Arbatani, 2018)

CONCEPTUAL MODEL

The framework that presented by Khajeheian (2013) provides a basis to model the social media entrepreneurship. In his framework, 23 factors are categorized in four categories of controllable, including enterprise, product resources and strategy; and one category of uncontrollable, namely infrastructures. The framework is depicted as a wheel on a ground. The wheel represents four controllable categories that ideally are balanced; the ground is the infrastructure category that facilitates (downward slope) or slow down (upward slope) rolling of this wheel. Figure 1 depicts this framework.

Figure 1: The framework of media entrepreneurial in social media context (Khajeheian, 2013)

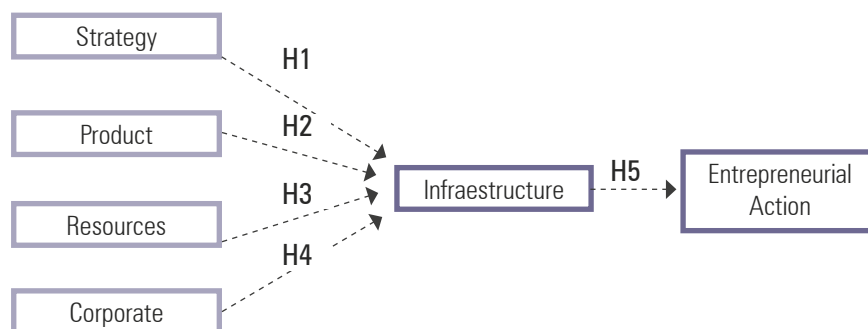


Source: Khajeheian, Datis. (2013). New venture creation in social media platform; Towards a framework for media entrepreneurship. In Handbook of social media management (pp. 125-142). Springer

To model the social media entrepreneurship, the authors uses four controllable categories as independent variables, and infrastructure category as intermediate variable. Figure 2 depicts the conceptual model. The research hypotheses are developed as following:

- H1: Strategy positively effects on Infrastructure.
- H2: Product positively effects on Infrastructure.
- H3: Resources positively effects on Infrastructure.
- H4: Corporate positively effects on Infrastructure.
- H5: Infrastructure positively effects on Entrepreneurial action.

Figure 2: The Conceptual Framework of Research



METHODOLOGY

The survey is a flexible research approach used to investigate a wide range of topics (Mathers, Fox, & Hunn, 2007). The present research is a survey research. according to Glasow (2005), in survey research, independent and dependent variables are determined in the study and before the survey, a model is designed to determine the relationships between variables by the researcher.

Sampling

The research population consisted of students and graduates of entrepreneurship and media of Iranian universities. The reason for choosing this statistical community was their close relationship with the subject of research as well as their identification as potential and actual entrepreneurs. The sample number plays an important role in the estimation and interpretation of the structural equation modeling results. Although a small sample is not recommended, but even with 50 samples, it is possible to conclude, but it is recommended that the sample size be 100 (Share Pour 2001), so in this study, considering this consideration, 305 individuals as samples Research was selected. Overall, the statistics of the participants in this study were summarized in Table 1. As you can see, the greatest contributors to this study were men. Undergraduate also contributed 38.2% more than others. Meanwhile, between the ages of 18 and 22, 37.3% were the most contributing. Of the surveyed

individuals, 77.7% stated their entrepreneurship intention, indicating that the right partners were selected.

Table 1: Participants' contributions to research on gender, academic education, age, etc.

	selection switch	Percentage	Number of persons
Age	18-22	37.3%	114
	23-27	28.8%	88
	28-32	17.2%	53
	33-37	10.8%	33
	38 up	5.9%	18
Gender	Female	38.6 %	118
	Male	61.6%	188
Academic education	Undergraduate	38.2%	117
	Graduate	24.8%	76
	Masters student	17%	52
	Masters	11.8%	36
	Ph.D. student	4.2%	13
Entrepreneurial intention	P.H.D	3.9%	12
	Sure	22.5%	69
	Perhaps	55.2%	169
	I do not know	12.1%	37
Entrepreneurship history	No	10.1%	31
	Yes	12.1%	37
	No	87.9%	269

Data Collection

Often employ the questionnaire as a tool for data collection in surveys (Mathers, Fox, & Hunn, 2007). In this study, the questionnaire was used to collect data. The distributed questionnaire was designed via researcher based on the model of Khajehian (2013) and the questionnaire was shared with people through online social media. Questionnaire items are rated with 5 option Likert scale (5 = Extremely and 1 = Very low). The researchers tried to make this questionnaire understandable for everyone, as a questionnaire will be ineffective if it is not designed in a manner easily understood.

Reliability and validity

In the first step, assess the measurement model was done. The reliability of questionnaire evaluated by Cronbach's alpha, Dillon-Goldstein's rho and check the first and second eigenvalue of the indicators' correlation matrix (Table 2). Some researchers suggest 0.7 and above as the favourable point for Cronbach's alpha (Ebrahimi et al., 2018a; Khajeheian and Ebrahimi, 2020) and DG rho (Sanchez, 2013; Hair et al., 2014; Ebrahimi et al., 2019). As the value of these coefficients is higher than 0.7, the reliability of research means is confirmed. The first eigenvalue should be much more larger than 1 whereas the second eigenvalue should be smaller than 1 (Sanchez, 2013: 57). Accordingly, according to Table 1, the reliability of the research can be confirmed.

Also, the convergent validity method was used to determine validity. According to Henseler et al. (2015) the measurement models, according to outer loadings and the AVE index. In order to examine the convergent validity, due reflective measurement model, the values of AVE (Block Communalities) have been investigated. Some researchers have pointed out that a higher value of 0.5 indicates the validity of convergence models (Hair et al., 2014; Ebrahimi & Mirbargkar, 2017; Ebrahimi et al., 2018b). As shown in Table 1, the AVE index for the five research variables is higher than 0.5, so we can say that the convergence models is validity. The researchers did not linger on the AVE index for validation, and the convergent validity of the model was examined with respect to outer loadings. Since some researchers consider the value of over 0.4 for outer loadings to be a convergence validity (Hair et al., 2006; Hair et al., 2014; Ebrahimi et al., 2017), according to the data in Table 1, the validity of the measurement model is confirmed.

Table 2: Measurement models and measures

Factors and items	Outer loadings	AVE (Block_Community)	C.alpha	DG.rho	Eig.1st	Eig.2nd
Strategy						
(SD=0.738, M=4.024)		0.543	0.789	0.856	2.720	0.725
Q 1	0.745					
Q 2	0.783					
Q 3	0.684					
Q 4	0.781					
Q 5	0.686					
Product						
(SD=0.833, M=4.012)		0.671	0.756	0.860	2.020	0.521
Q 6	0.791					
Q 7	0.831					
Q 8	0.835					
Resources						
(SD=0.774, M=3.883)		0.527	0.819	0.869	3.160	0.754
Q 9	0.705					
Q10	0.644					
Q11	0.777					
Q12	0.767					
Q13	0.684					
Q14	0.769					
Corporate						
(SD=0.793, M=3.859)		0.597	0.775	0.856	2.390	0.653
Q15	0.730					
Q16	0.798					
Q17	0.800					
Q18	0.760					
Infrastructure						
(SD=0.777, M=3.910)		0.573	0.812	0.870	2.870	0.761
Q19	0.757					
Q20	0.637					
Q21	0.786					
Q22	0.813					
Q23	0.780					

Note: C.alpha, Cronbach's alpha; DG.rho, Dillon-Goldstein's rho; eig.1st, first eigen value; eig.2nd, second eigen value; AVE, average of variance extracted; SD, Standard deviation; M, Mean.

Discriminant Validity was assessed at the construct level by HTMT, as it has been shown in Table 3. Values less than 0.9 are considered favorable for this index (Henseler et al, 2015).

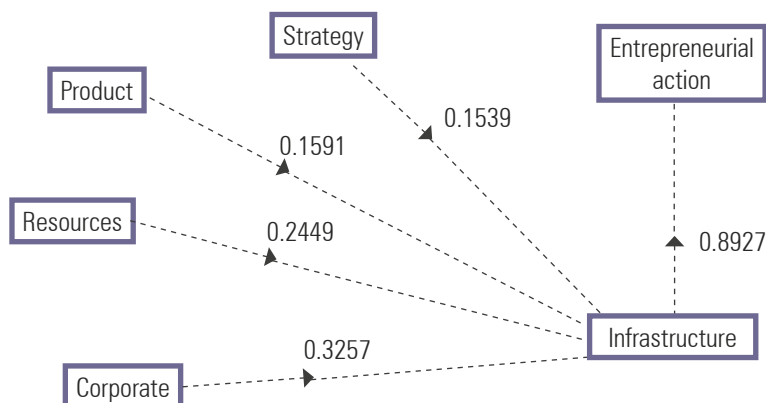
Table 3: Discriminant validity by Heterotrait-Monotrait Ratio (HTMT)

Variables	Strategy	Product	Resources	Corporate	Infrastructure	Entrepreneurial action
Strategy						
Product	0.848					
Resources	0.847	0.835				
Corporate	0.875	0.798	0.856			
Infrastructure	0.844	0.804	0.868	0.892		
Entrepreneurial action	0.869	0.804	0.875	0.853	0.828	

ANALYSIS AND FINDINGS

After confirm the reflective measurement models in the first step, in the second step, using the SEM approach with the help of the software packages Plspm and Matrixpls in R software to evaluate the structural model and test the hypotheses. The main reason for using this approach is, firstly, the focus of the study on the prediction of the relationship between independent variables and the dependent variable, and secondly, the model presented in this study was designed exploratory with a previous study of previous research. Software output is calculated after the conceptual model of the research (fig 3).

Figure 3: Software Output Conceptual Model Software Research



The structural model test was performed based on the Inner model. R^2 indicates the amount of variance in the endogenous latent variable explained by its independent latent variables. The value of R^2 is presented only for the intrinsic variables of the model and its exogenous structures are equal to zero. The greater the R^2 value of the intrinsic structures of the model, the better the fit of the model. As shown in Table 4, the coefficient of R^2 for the Infrastructure variable is equal to 61.4 and is equal to 79.7 for the entrepreneurial action variable. Moreover, "Mean_Redundancy" is the amount of variance in an endogenous construct explained by its independent latent variables. In other words, it reflects the ability of a set of independent latent variables to explain variation in the dependent latent variable. High redundancy means high ability to predict (Sanchez, 2013: 68).

GoF is an indicator used for general fitting that controls both measurement and structural models. GoF can be used a global criterion that helps us to evaluate the performance of the model in both the inner and the outer models. The higher value of GoF is better (Sanchez, 2013: 80) and in this research the value of GoF is 0.600 and its acceptable good.

Table 4: Assessment of structural inner model indicators

Variable	R^2	Mean_ Redundancy	Model fit
Strategy	-	0.000	GoF= 0.600
Product	-	0.000	
Resources	-	0.000	
Corporate	-	0.000	
Infrastructure	61.4%	0.352	
Entrepreneurial action	79.7%	0.374	

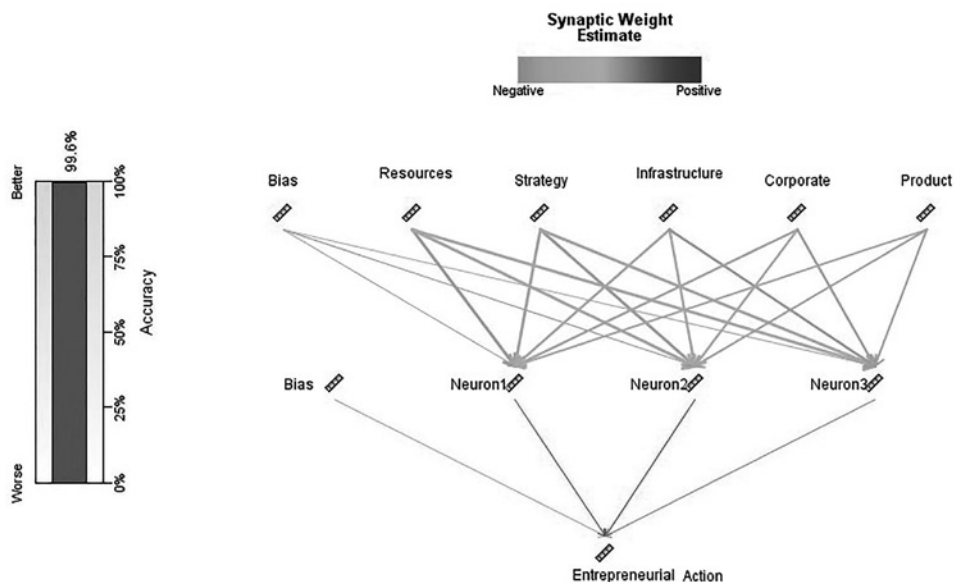
In order to test the research hypotheses, direct effects were evaluated. According to the results of Table (5), it can be stated that all research hypotheses have been supported. Actually the bootstrap confidence interval (95%) provided by the percentiles 0.025 and 0.975. This is especially important for the path coefficients. As you can see from the table (5), bootstrap intervals for the path coefficients of hypothesis do not contain the zero. Hence we say that these coefficients are significant at a 5% confidence level.

Table 5: Results of research hypotheses

Hypotheses	Direct effect	Std. error	Low CL	High CL	Decision
H1	0.154	0.058	0.050	0.277	Supported
H2	0.159	0.048	0.059	0.242	Supported
H3	0.245	0.066	0.118	0.372	Supported
H4	0.326	0.061	0.208	0.446	Supported
H5	0.893	0.013	0.870	0.919	Supported

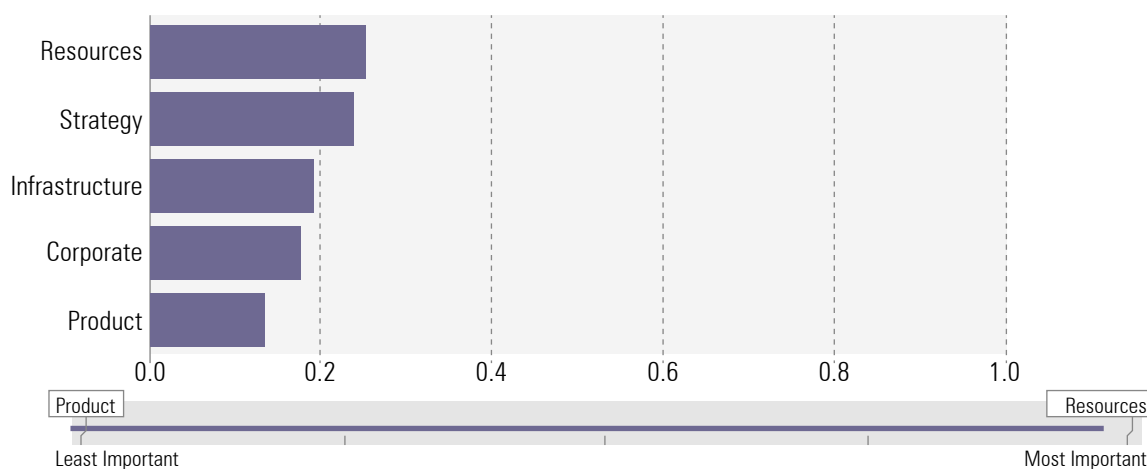
In the final part of this study, the accuracy of the model was examined and the importance of its factors was determined. By focusing on the Multilayer Perceptron (MLP) Artificial Neural Network (ANN), design items and accuracy were 99.6% complete in model analysis. Also, in line with SEM results, relationships have been evaluated as Synaptic weight estimation, which tracks positively to the ultimate target of entrepreneurial action.

Figure 4: MLP-ANN analysis output and accuracy



Also, with precision in the MLP-ANN output, we find that the resource variable has the highest importance in the proposed model. Also, the strategy variable is then of great importance. Of course, it is important to note that all the predictors have a positive effect and, in their own place, have an important role in explaining the entrepreneurial action (fig5).

Figure 5: Predictor's importance in MLP-ANN analysis



DISCUSSION

The study of media entrepreneurship has grown in recent years, and various studies have been done in this regard (Hoag & Compaine, 2006; Hoag, 2008; Achtenhagen, 2008; Goyanes, 2015; Girişimciliği, 2018; Achtenhagen, 2017; Tokbaeva, 2019; Khajeheian, 2019; Girija, 2019; Hossain, 2019) So that "the practice of media management is becoming entrepreneurial" (Will, Brüntje & Gossel, 2016). The aim of this research was to model media entrepreneurship in social media platforms. Entrepreneurship in media provides policy strategies for promoting new entry and more independent media voices (Hoag, 2008). Findings show that fewer than 10 percent of sample of this study, who are 305 students from the fields of entrepreneurship, media management and business, are not intended to do an entrepreneurial action, and 77 percent of them are willing to involve in entrepreneurial activities. Considering the age of sample, findings confirm Zaheer et al (2018) that attention to media entrepreneurship has a positive relationship with education level and their intention to earn income from social media. They also confirm Tsourvakas and Riskos (2018) that entrepreneurial orientation in the students of journalism has been increased. On the other side, findings of this article contradict with Goyanes (2015), that discussed students of communication in Spain

lack entrepreneurial orientation, and therefore it is predictable that they prefer employment in traditional media over entrepreneurship and self-employment. Thus, based on findings of the current research, it can be concluded that Iranian students prefer entrepreneurial actions more than being employed in public or private media organizations.

Two major phases conducted in this research. First was assessment of model based on the research framework and test of hypotheses. Second phase was to importance of items in research model. Five hypotheses tested and confirmed. Based on the model, infrastructure ranked as the strongest variable of research in predicting entrepreneurial action in social media by 0.892 and then accordingly, enterprise, product, resource and strategy are the most effective variables. On the other hand, accordingly, resources, strategy, infrastructure, enterprise and product are the most important variables in entrepreneurial action in social media platforms.

It shows resources are the most important factor in media entrepreneurship, emphasizing Alvarez and Busenitz (2001) theory of resource based entrepreneurship. Ireland et.al. (2009) considers strategic management of resources essential to increase entrepreneurial actions. Resource classification systems are provided in a variety of ways, but Chan-Olmsted (2006) considers resources knowledge-based and property-based. Khajeheian (2013) in self framework argues that resources include competitive advantage, internal resources and external resources; The competitive advantage include of competitive stability and intensify, internal resources include the team, fiscal asset, equipment asset and social capital, and the external sources include of cooperation and outsourcing. Though the classification is different but For example equipment asset is property-based resource but team is knowledge-based which Chan-Olmsted points to. Importance of this variable shows that a media entrepreneur needs to identify the competitive advantage and how to use internal and external resources to exploit this.

Equipment and fiscal asset as part of domestic resources It has recently been claimed that the digital revolution and disruptive technologies has minimized the need for equipment and fiscal asset (Kong 2008; Khajeheian, Friedrichsen & Mödinger, 2018). Despite the minimal need for financial resources and equipment, social capital as part of the internal resources is a maximum component because "social capital enhances entrepreneurship" (Dana & Light, 2012) and it is an important factor in success of entrepreneurs and Media businesses (Casson & Giusta, 2007; Tsourvakas & Riskos, 2018). The importance of social capital is such that some researchers consider it to be effective in internationalizing companies (Gonzalez-Perez, Velez-Ocampo & Herrera-Cano, 2018). Also, The social network of an entrepreneur as his social capital can be helpful in various phases of business, including the identification of ideas, employment, product distribution, increasing customers, marketing, etc (Tajeddin, Emami & Rastgar, 2018).

The team's and human resources impact on entrepreneurship has also been seen in research; team trends have an impact on entrepreneurial orientation and entrepreneurial action (Makhdoom, Li & Asim, 2019). In media organizations, group productivity is more important than performing individual tasks (Sylvie et al., 2009) and The behavior of team members has been seen as a factor affecting media companies (Dal Zotto & Kranenburg, 2008). "core competitiveness of a company significantly depends on the strategic allocation of human resources and the related policies" (Huang, Huang & Tzeng, 2016) so it can be inferred that the team's value as agents for discovering and creating opportunities it's a lot.

Brawn et al (2001) emphasize on the control of resources and argue that outsourcing allows entrepreneurs to act flexible and agile and to act successfully; This indicates the importance of outsourcing and cooperation. One of the respondents of this research is a media entrepreneur that used telegram social platform to exchange research materials, but in spite of identification of a niche market, because of lack of sufficient staff to response the demand, failed. It confirms Girişimciliği (2018) that argues an entrepreneur needs to use external resources. All in all, resources are yet a fundamental need for entrepreneurial action.

Strategy has introduced as the second important variable in social media entrepreneurship. Albarran believes "Strategic management is concerned with developing the tools and techniques to analyze industries and competitors and developing strategies to gain competitive advantage." According Daidj (2018) A Strategic Approach at Two Levels include External and Internal. What is discussed in strategy is the need customers, revenue model, competitive model and outlook refer than at by Picard (2011) in the form of media economics concepts and by kung (2008) in the framework of strategic media management concepts and Includes both levels. The Outlook is as a part of the strategy one and it has been named a dignified key force on the media company (Dal Zatto & Kranenburg, 2008). Also, a media entrepreneur must for survival, looking for customer retention, build relationships with them and keep them loyal (Gladysz, Khajeheian & Lashkari, 2018) because In the age of disruptive technologies, it's harder to keep a customer harder (Tamaddoni et al, 2017). In the case of the revenue model, According Tsourvakas & Riskos (2018) shows that For the electronic media business, a multiple income resource strategy is not necessary for success, so for media entrepreneurial action on the social network, it can be said that having a primary revenue model is sufficient."A firm can develop a revenue model based on subscription costs and fees (customer side), advertising (often used in media and entertainment), sponsoring revenues, revenue sharing (with other firms), and commis-sions and transaction cuts from provided services, and by simply selling a product" (Daidj, 2018).

In recent decades the concept of strategy is intertwined in entrepreneurship, and on the same basis strategic media entrepreneurship has been attracted new research interest (Hasenpusch & Baumann, 2017; Horst & Murschetz, 2019).

Strategic media entrepreneurship is “coexistence or combination of opportunity-seeking and advantage-seeking behaviors” (Horst & Murschetz, 2019). There are two points of view about the opportunity; the perspective of the creation of the opportunity and the perspective of the discovery of opportunity (Will, Brüntje & Gossel, 2016). strategic media entrepreneurship seems to seek to discover the opportunity As Hindle and Klyver (2007) sees the opportunity search activity as the first phase of entrepreneurship. According Horst and Murschetz (2019) strategic media entrepreneurship the company has a better performance; Media strategic entrepreneurship seems to require “dynamic capabilities” management because Oliver (2016) claims “dynamic capabilities” as the most complex component of media company compliance with the highly complex environment of corporate performance. Dynamic capabilities management leads to a strategic renewal of the media as a process in entrepreneurship. Hang (2018) say “strategic renewal leads only to the reconfiguration of existing business within a corporate setting”. Strategic renewal is usually based on the identification of new opportunities, and much of it is based on imitative innovation; Khajeheian (2013) referred to imitative innovation as a way of success of entrepreneurial media action in Iran. Although the importance of strategy is at a very short distance after resources, without strategy, entrepreneurship is not possible.

Infrastructures ranked as the third variable. Based on the framework, legal infrastructures, internet access, payment, market information, and distribution are the main factors of infrastructure. Goyanes (2015) argues that entrepreneurial perception from the infrastructures may lead to increased intention to entrepreneurship and Turker and Sonmez (2009) emphasize on the importance of infrastructure on entrepreneurship intention. The Internet is recognized as an essential infrastructure for the media's entrepreneurial action on social networks; kung (2008) say Internet and digitization are an opportunity for media companies to move to new areas and Berthod, Huyskens and Loebbecke (2007) talk about Internet entrepreneurship. Hajmohammadi (2018) stress that internet is a source for Iranian entrepreneurs to offer new services, such as internet taxies, delivering services, e-payments and many different services. In fact, with the growth of the Internet and access to social networks, digital entrepreneurship has been intensified (Nambisan, 2017; Labafi, 2017). According to Sylvie et.al. (2009) Laws and regulations are highly complex in the media industry; media entrepreneurs claim that freedom of business activity is limited by rules and regulations (Rebouças, 2018) so many of researchers stress on the importance of policy for fostering of media entrepreneurship and discuss that government must reduce regulations to facilitate entrepreneurship (Rebouças, 2018; Safari, 2018; Khajeheian, 2014, 2016; Doyle, 2013). The market information system was referred to as part of the infrastructure; market information is both informally and informally gathered. Some companies now operate in the field of market intelligence collection and sell it to applicants, which we call the formal collection of market

information. But another part of collecting market information can be done through social media networks because The social media are inexpensive sources and of market intelligence and source customer's voice (Safari, 2018).

Enterprise and product placed at the last ranks, with a considerable distance with strategy and resources. The Enterprise includes business knowledge, agility, organizational learning, and entrepreneurial style. Some researchers emphasize that business knowledge effects on the success of business (De Clercq & Arenius, 2006; Fernandes et.al, 2017; Labafi et al, 2018). The knowledge structure provides an opportunity to identify and design value (Emami & Naderi, 2018). Also, the product includes the strength of the idea, the timing of the product presentation and the development of product skills. Albarran (2006) says the product is the most important thing to distinguish media from other companies. Media products usually include nonmaterial element and a material element And since they are considered talent goods (Medina, Sánchez-Tabernero & Arrese, 2016) without strong ideas are taken into consideration. Tsourvakas & Riskos (2018) argues that idea is the cornerstone of entrepreneurship and must be considered as a critical success factor. Ifedube (2013) stress on the entrepreneur's ability to recognize the idea that fits with opportunity. Kong (2008) writes: The first patterns of media success indicated the increase in the production of products, because the basic assumption of the system was that "a good idea is finally taken into consideration." Although this success system is now outdated, it shows that a good idea is a prerequisite for success, and successful entrepreneurial action needs a good idea (Emami & Khajeheian, 2019). According to Huyskens & Loebbecke (2007) Consider the idea of product and service as a driver of entrepreneurial success. Although the idea is referred to as an opportunity and is referred to as the first step in the creation of a business (Salamzadeh & Kirby, 2017) , one can actually see the idea in the heart of opportunities. Finding an idea is a product development issue (Yousefikhah, 2017; Moradi-abadi et al, 2017). An entrepreneur who does not dominate product development skills may fail, as product development involves a process that begins with identifying needs and continues to grow in satisfactory sales. That's why it is emphasized that product development skills are taught for entrepreneurship (Silva, Henriques & Carvalho, 2009). All at all, It can be concluded that access to social media and low-risk possibility of offering a product or service based on social media is the reason to rank these two important factor lower than former variables.

CONCLUSION AND SUGGESTIONS

This research contributes in development of media entrepreneurship by modeling of this concept for the first time (as far as a thorough search of databases shows). The authors hope that this model will be used by entrepreneurs as well as policymakers to develop media entrepreneurship (Khajeheian, 2016). It suggests that policy makers must pay enough attention to infrastructures and to invest sufficiently on internet, payments, and communication infrastructures and also to reduce the bureaucracy and regulations. It also concluded that entrepreneurs must

balance their investment of all four categories of media entrepreneurship factors and to not overlook one in cost of others.

The authors suggest the future researchers to conduct new researches to develop measures for evaluating the success of media entrepreneurship in each of these classes. Also they suggest the researchers to work on development of more advance models that cover all 23 factors of the framework and to provide more detailed explanation of how these factors impact successful media entrepreneurship.

Another suggestion is to conduct a new research to re-explore the framework of Khajeheian (2013) and to understand if new trends and disruptive technologies have changed some factors of the framework.

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THE EFFECT OF MEDIA CONVERGENCE ON EXPLOITATION OF ENTREPRENEURIAL OPPORTUNITIES

EL EFECTO DE LA CONVERGENCIA DE LOS MEDIOS DE COMUNICACIÓN EN EL APROVECHAMIENTO DE OPORTUNIDADES EMPRESARIALES

ABSTRACT

This paper sheds light on specific aspect of Media Convergence which is not only about convergence and similarity, but about divergence in different aspects and opportunities which bring up for entrepreneurial activities. Problem area of this study is to understand how media convergence provides new business opportunities in media markets and how media entrepreneurs can exploit those opportunities for proposing value to target customers. This paper follows a quantitative research design. Therefore, 119 cofounders of small and medium media firms answered an online questionnaire, and the data was analyzed by SPSS. Regression analysis was used to analyze the data. The findings reveal that four types of divergence, including media distribution channels, media content producers, audiences, and advertisers, affect exploitation of entrepreneurial opportunities in small and medium sized media firms.

KEYWORDS

Media Entrepreneurship; Media Convergence; Opportunity Recognition; Media Markets, Web 3.0.

RESUMEN

Este documento arroja luz sobre aspectos específicos de la convergencia de los medios de comunicación, que se trata solamente de convergencia y similitud, sino de divergencia en diferentes aspectos y oportunidades que se presentan en las actividades empresariales. El área problemática de este estudio

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es comprender cómo la convergencia de los medios de comunicación brinda nuevas oportunidades de negocio en los mercados de los medios de comunicación y cómo los empresarios de los medios pueden aprovechar esas oportunidades para proponer valor a sus clientes objetivo. Este trabajo realiza un diseño de investigación cuantitativa. Por lo tanto, 119 cofundadores de pequeñas y medianas empresas de medios respondieron un cuestionario en línea, y los datos fueron analizados a través del programa estadístico SPSS. El análisis de regresión se utilizó para analizar los datos. Los hallazgos revelan que cuatro tipos de divergencias, que incluyen los canales de distribución de medios, los productores de contenido de medios, las audiencias y los anunciantes, afectan el aprovechamiento de oportunidades empresariales en pequeñas y medianas empresas de medios.

KEYWORDS

Emprendimiento de medios; convergencia de los medios de comunicación; reconocimiento de oportunidades; mercados de los medios de comunicación, Web 3.0.

INTRODUCTION

Media Convergence has changed media markets significantly, in regard with the value proposition, value chain and value chain players (Picard, 2010, Khajeheian et al, 2018). By presence of Web 3.0, that is called co-operation and co-creation Web (Fuchs, 2017), we stand on a breaking point in the media industries, so that the old traditional value creation logic is obsolescing and a new one is emerging. This period is a proper time for media entrepreneurs to act entrepreneurially to exploit emerging opportunities (Khajeheian, 2013, 2017). This article is both a theoretical and practical study of how media convergence effects on the market opportunities for entrepreneurs. Media convergence is the process which opens up the window for these entrepreneurial activities in media context by increasing the possibility to offer different media content for very specific niche markets (Khajeheian, 2016; Labafi et al., 2018). Some new sub-industries inside the media industry- such as video games, augmented reality, mobile apps, social networks and so on- are the fast growing subsectors of the media industries which are products of converged media, while their divergence in nature and implementation makes them unique and potent for playing a considerable role in the future of media industry.

OPPORTUNITY RECOGNITION THEORIES

The field of entrepreneurship has two general perspectives on entrepreneurial types and the sources of entrepreneurial opportunities: the Schumpeterian (Hagedoorn, 1996) and the Kirznerian perspectives (Kirzner, 2009). The Schumpeterian entrepreneur is considered to be a creator of opportunities, creating new opportunities through his creative destruction. While, the Kirznerian entrepreneur is considered to be a discoverer of opportunities which arise from market [disequilibria] (Fuduric, 2008:3). Joseph Schumpeter argued that entrepreneurs change the market equilibrium by creative destruction process, which means innovation and offering new products or services to the market. This creates new demand and thus changes the supply demand curve in the economy and therefore entrepreneurs create opportunity by changing the equilibrium using their creative destruction. Kirzner from the other

side considers the entrepreneur as who discovers the opportunities in the market by recognition of the market gaps and benefit from market disequilibrium. Paying attention to these approaches is important when we study the opportunities in context of different economies. “A simpler, less resource intensive form of entrepreneurship has the ability to manifest in economically stagnating peripheral regions. Entrepreneurship in these areas of the world is often the only source of economic and social meaning available to [Marginalizing the poverty]” (Fuduric, 2008:4). Thus when the Schumpeterian approach to the opportunity creation based on the creative destruction, the Kirznerian approach toward opportunity is the discovering of those opportunities which laid in the market disequilibrium (Iversen et al., 2007).

In another approach toward entrepreneurial opportunities (Sarasvathy et al., 2010), three types of opportunities are proposed: First, the allocative view which deals with opportunities that emerge when both supply and demand sides are known. In this approach, entrepreneur is a risk manager who competes to get more resources. Moreover, information is available for all economic players, and thus the winner will be who is good at allocating resources to the most appropriate opportunities. Second, the discovery view in which only one side- either supply or demand- is known (Salamzadeh et al., 2013). This view is drawn from the Kirznerian approach. The Kirznerian opportunity is a result of entrepreneur’s alertness, since the information is available at the aggregate level, but only the Kirznerian entrepreneur discovers it at the individual level. Third, is the creative view in which both supply and demand are not known. Last one follows the Schumpeterian view of entrepreneurial opportunities. Only partial information is available even at the aggregate level, and innovativeness of the Schumpeterian entrepreneur is the key to opportunity creation (Malerba and McKelvey, 2019).

EMERGING OPPORTUNITIES ON MEDIA CONTENT

When we talk about media businesses and media markets, the opportunity is the cornerstone, and worth to be explored more. Like any other abstract concept, this is reasonable to take a glance on the definitions (Radovic-Markovic and Salamzadeh, 2012; Mirzadeh et al., 2017). Shane (2003:16) describes an entrepreneurial opportunity as “a situation in which a person can create a new means-end framework for recombining resources that the entrepreneur believes will yield a profit”. Shane and Venkataraman (2000) define opportunity as the subject of Entrepreneurship: “Entrepreneurship is an activity that involves the discovery, evaluation and exploitation of opportunities to introduce new goods and services, ways of organizing, markets, processes, and raw material through organizing efforts that previously had not existed”. There are a huge number of definitions about the opportunities which each of them explain one or some dimensions of the phenomenon, and of course no definition will be complete to describe the whole dimensions of that. However one may be more suitable for our purpose than others in the case of our article, which brought to you in below paragraph.

Following the years experiencing being the lecturer for opportunity recognition and exploitation, we define Entrepreneurial Opportunity as “the introducing, creating or developing a set of circumstances which by offering an idea, a concept, a product/service, an image, a sense, a business or a solution one enables to propose the value which a segment of market willing to pay the money or spend the time and energy for and also the entrepreneur or enterprise benefits from core competency and competitive advantage”. On this concise and precise definition, the elements of entrepreneurial opportunity have been articulated and provide a fine basis for the rest of the paper about how divergent convergence in media industry may raise the opportunities for entrepreneurs.

Upon this definition, the media entrepreneurs are ready to use any innovation to meet the needs for niche markets, and this is what media convergence provides for them: the opportunity for opening up new markets addressing niche markets. We want to take back to the three stages of Stober’s (2004) theory of evolution, invention, innovation and institutionalization. Although the invention is mainly far from the scope of media entrepreneurs, however they actively participate in the process of innovation and also institutionalization. This is very interesting part of study about how media entrepreneurs may direct these latter processes toward an evolution in media products and services. This seems that there are numerous approaches for media entrepreneurs upon their creativity and intrinsic flexibility to offer the innovations (Khajeheian and Friedrichsen, 2017; Sharifi et al., 2017). Ravioli (2006) believes that “Creative industries have been at the centre of the so called convergence. Effect of convergence has been the blurring of boundaries between different media sectors and the emergence of new sectors”.

SPECIALIZATION CONTENT TO VOLUME MEDIA CONTENT

Identical content must be able to be called up via an array of media in media segments must refer to and build on each other in order to effectively shape content syndication and also content for the customer this is the only way to translate the potential value of content for the media companies into additional turnover, into enhanced results and therefore mid-term into shareholder value. In order to survive in today’s competitive landscape with flagging growth, three new imperatives are emerging for those media companies that also want to belong to the players setting the tone in the market tomorrow: 1) Radically realign the segment-specific self-perception, 2) Create an organization enabling a seamless transition from the current core business to the new self-perception as a content manager, 3) Design and implement meaningful partnership concepts. (Ringlstetter and Vizjak, 2003:4; Goodarzi et al., 2018). Also Patrizio (2012) argues that what convergence will bring about is the opportunity for companies to explore and bring to market new and different business models and the opportunity for consumers to access media through many more channels. Stipp (1999:12) told that: “I am convinced that there is an abundance of opportunities for both consumers and business. The new technological developments and resulting

products will provide great benefits to several consumer segments. Business can be very profitable without selling the same product to everybody. In fact, the evolution of marketing has shown that it is usually more profitable to sell targeted products to several consumer segments. This is true of the market for new media products also”.

Based on the postulate of growth in revenue, Ringlstetter and Vizjak (2003) argue that the media industry is currently shifting rapidly from a specialization to a volume business. This rapid shift is based on the reduction of segment-specific costs triggered by digitalization. In this way, digitalization enables content to be separated from the original medium. The decisive strategic implication of this separation of content and format is that current products of the individual companies are no longer considered channel-specific. Instead, content is now considered usable in general and supported by new technologies, it is increasingly generated, aggregated and increasingly also distributed by cross-segmental economies of scale. The target is therefore content leveraging or respectively the content syndication and this across a broad spectrum of channels where customers can be reached (Ringlstetter and Vizjak, 2003:5).

USER GENERATED CONTENT AS EMERGING DOMINANT CONTENT PROVIDER

Luders paper on Converging forms of communication seems appropriate opening for this section. She introduces three forms for communications: interaction, participation, and social integration. On her idea, the main feature of interaction is to joy from symmetrical communication channels, which are in contrast with asymmetrical communication channels in mass media. The second form is participation, which its main characteristic is to be unformatted and unedited. This is what we focus on, as User Generated Content and has been discussed by Greenberg in upcoming section. This content is the embodiment of user participation in the media, which has been completely evolved from their participation in mass media. In the converged media, the UGC may be the main and unique type of content, such as what we see in social networks, while in the mass media, this is merely a part with a small share in the whole media schedule. The latter form of converged communication is what Luders (2007) named social integration, the desire of audience to be in a specific place in communication with others in the [social] media. The forms she describes is a suitable opening about the importance of the role audiences play in the converged media, as they mixed with media company in some cases, which has become a part of Media Value Chain instead of being the receiver of the value created by media company.

On the subject of active participation, Jenkins (2008:3) explains: “circulation of media content-across different media systems, competing media economies, and national borders-depends heavily on consumers’ active participation”. On his mind, the term participatory culture contrasts with older notions of passive media spectatorship and rather than talking about media producers and consumers as occupying separate roles, we see them as participants who interact with each other according to a new set of rules. The media convergence empowered media

consumers to actively participate in creation of content and take effect on the value media offer. This participation of consumer has something neglected in traditional value creation models, such as Porter's one, thus implies on the necessity of revising in the previous models and offer new models which include the consumer participation in the value creation process.

Comtesse & Huang (2008) coin the phrase "Value Creation 2.0" to show that the turning of consumers into active stakeholders in the economy make them an integral part of the value creation process and turn the economy to a participative one. They call these active consumers the "ConsumActor" to take into account their participation in creation of value, by two dimensions includes Creator of context (action), creator of content (knowledge). They believe this is a change of paradigm imposed by the active participation of ConsumActors in the economy and in the process of value creation. They propose that diagram for their so-called "Value Chain 2.0" consists of two major trends: Participative Activities vs. Primary Activities and Global activities vs. Support Activities. Participative Activities vs. Primary Activities, implies that basic activities of business integrate the activities of the ConsumActor. This dimension includes: 1.1.-Open Inbound Logistics vs. Inbound Logistics: The supply (reception, stock and distribution of raw materials) can be entrusted in certain cases to the ConsumActor (e.g. The customer arrives with his own T-shirts for personalization), 1.2.-Co-operations vs. Operations: Le ConsumActor participates actively in the manufacturing process (e.g. Wikipedia), 1.3 Outbound Logistics by Customers vs. Outbound Logistics: The ConsumActor is in total or partial charge of the marketing activities (e.g. EBay). 1.4 Viral vs. Marketing and Sales: The techniques of viral marketing rely on the customers themselves (e.g. Amazon), 1.5 Communities of Practice vs. Services: The communities of practice assume totally or partially the after sale services. Global activities vs. Support Activities implies that The support environment does not belong any longer to the company itself, but to the whole ecosystem in which the company is immersed in. this dimension includes: 2.1.-Mutistakeholders Infrastructure vs. Firm Infrastructure: The internal infrastructures of a company connect directly to the infrastructures of the other "stakeholders". The result is a multi-stakeholder environment. (e.g. computer cloud). 2.2.-Customer Network Management vs. HR management: The management of human resource management is extended and now also includes the client's network. (e.g. Facebook). 2.3.-Co-Creation vs. Technology Development: Research and development integrates the creativity of a company's ConsumActors (e.g. P&G Connect). 2.4 Open Procurement vs. Procurement: ConsumActors penetrate also the supply chains (Comtesse & Huang, 2008).

The UGC and raise of its share in the media content, creates some opportunities for media entrepreneurs to take part in a market which has not been explored well and may be full of niche opportunities. Flinn (2010:43) describes User Generated Content as the Harnessing and Sharing of Community Knowledge. In a brilliant paper titled "When the Editor Disappears, Does Editing Disappear", Susan Greenberg

(2010), investigates the changes in the editing as one of the critical parts of the media content providing process. She concluded that editing does not disappear, but shifts from a third-party intermediary to the author and the reader, and from human to more automated types of intervention. However, despite the promise of the “semantic web”, these kinds of intervention are unlikely to reach high standards on a consistent basis. The absence of experienced human mediation in the writing process – as in other areas of life – can be harmful to public life, and ways should be found to show the added value that they make.

THE DIVERGENCES IN THE MEDIA INDUSTRY

So far we mentioned that divergence is the natural consequence of media convergence and according to the age of convergence, this is not far from the mind that there are numerous divergences in the media market. Here we investigate briefly four main divergences in the media markets and then go further to the main idea of the paper, how media entrepreneurship can benefit from the opportunities and play a constructive role in the host economy' media market. These four major divergences are divergence in media distribution channels, in media content producers, in Audiences and in Advertisers. We take a brief review on each of those in following based on which we mixed the theories to form the big picture in the past section.

(i) Divergence in media distribution channels

The first and immediate consequence of media convergence is the divergence in media distribution channels. “As technology develops, it is inevitable that new media channels will be created. Inevitably, new channels will be created, which will lead to new challenges and opportunities. Therefore, it seems prudent for media owners to develop a general approach to leveraging new channels” (McPhilips and Merlo, 2008:244). They also propose three strategies for competition in such a competitive market: 1) A “dumping” strategy, whereby the firm imposes a new product on a market and focuses on growth. This is often seen when firms aim to create network effects. Skype, for example, currently offers its services mostly for free, and is fast becoming the industry standard. Yet, it will probably start expanding its sources of revenue once the market has ‘tipped’. 2) A “domination” strategy, whereby the firm uses its scale to drive down costs. These savings are subsequently passed on to consumers in terms of lower prices, thus stimulating further sales and growth. For example, Google is using its scale to produce Google TV and offer a comprehensive package at fiercely competitive rates. 3) An “umbrella” strategy, whereby the firm aims to recoup its investment as quickly as possible by charging a high price until new market entrants emerge, which heightens competition and drives down prices (McPhilips and Merlo, 2008:244-245).

H₁: Divergence in media distribution channels affects exploitation of entrepreneurial opportunities in small and medium sized media firms.

(ii) Divergence in Media Content Producers

New Media empowers users to take part in the production, distribution and exhibition of media contents. As the advances in technology dramatically fall the price users should pay for the production facilities, the production costs are decreases and enable individuals to own a home studio to their own production. This was exclusively in the control of large media production companies. Also internet has provided the distribution channel to access to the audiences and delivery of the media content to the target market. The increase in User Generated Content is a trend which creates opportunities and challenges in the media markets, and will take a greater share in the upcoming converged media.

User-generated content gives scope for co-creation in the form of blogging and, more recently, the rise of amateur content that is distributed via television. This extends the resource network of the media owner. For example, Current TV (led by former U.S. Vice President Al Gore) allows viewers to engage and become part of the broadcast, through the production of amateur news reports and creation of a global community of self-appointed journalists. To keep this in perspective, this has not yet become a mass market phenomenon, as the quality is variable and the media owner can be affected by the integrity of the citizen journalist. Yet, amateur production quality and risks of poor accuracy are potentially offset by the “real” nature of the content, which some people feel adds to the attraction. Thus User-generated content can act as a powerful marketing tool not only to engage consumers, but ultimately also to shape professionally produced content (McPhilips and Merlo, 2008:246).

H₂: Divergence in media content producers affects exploitation of entrepreneurial opportunities in small and medium sized media firms.

(iii) Divergence in Audiences

The Audience Fragmentation is the concept arises directly from the media convergence. In definition “As people watched or read these new channels, there were fewer people using any one of them” (Turow, 2009:6; Ebrahimi Nejad and Sharifi, 2016). Therefore, increasing the television channels, internet websites, radio stations, newspapers and so on leads to small number of audiences for any given channel and thus smaller share of total market. McPhilips and Merlo (2008:245) articulate five important trends which changed the Audience: the democratization of content, user-generated content, personalization of schedules, social networking, and divergence of consumer groups.

H₃: Divergence in audience affects exploitation of entrepreneurial opportunities in small and medium sized media firms.

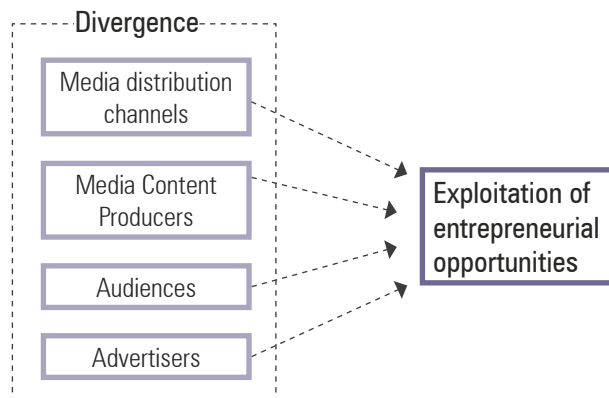
(iv) Divergence in Advertisers

The digital technology empowered audiences to personalize the media content. Using the personal video recorders, TiVo, recording facilities and all various equipment for digital recording, the audiences can watch what they want and when they want. In addition to the customization of the sequence and schedule, an influencing consequence of these advancements is enabling the audiences to skip the advertisement, the critical resource of financing for media. This is the most important evolution which may cause a great decrease in the revenues of media. This can results to a shift of advertisements to the platforms which prevent users from skipping the Ads, such as embedded Ads in the videogames, inside the movies and creative contents, etc. we observed that Youtube embeds advertisement in the beginning of its clips, to force audiences to watch a short length Advertisement before the intended clip. These techniques are the efforts to keep the Advertisers and make them confidence that their Ads will see by the users.

On the other hand, there are some other trends which highly effect on the divergence in Advertisers. One of them is the Audience Fragmentation. This is the increase in media channels and thus the more control of audience on what they watch. More media channels means less share of market for any given channel and thus less viewer for contents and Advertisements. This results to the fragmentation in Advertisers too, because they have to choose among the broad band of channels and also based on the different medium they select for the media mix, the different formats for advertisements. Therefore, the media convergence particularly results to the divergence in Advertisers, because the more specific distribution channels for audiences.

H₄: Divergence in advertisers affects exploitation of entrepreneurial opportunities in small and medium sized media firms.

Figure 1. Research framework



RESEARCH METHODOLOGY

Based on the mentioned above section, the authors tried to examine the effect of divergences in media distribution channels, media content producers, audiences, and advertisers on exploitation of entrepreneurial opportunities in selected small and medium sized media firms. In order to do so, the media firms were selected among the start-ups listed in the ICT Start-ups Empowerment and Facilitation Center (ISEFC) of Iran which is a national centre supervised by the Information Technology Organization of Iran. The questionnaire was sent randomly to respondents through an online survey tool. A total of 119 respondents answered the questionnaire (64% response rate). The content validity of the questionnaire was evaluated by a number of three experts, and the reliability was assessed by Cronbach's alpha (0.787). The following table shows the demographic data of respondents. SPSS was used to analyze the data. Through a regression analysis technique, the authors developed an equation in order to describe the statistical relationship between variables.

Table 1. Profile of respondents and variables

Characteristics of respondents		Number of respondents	Percentage
Gender (sex)	Male	63	53%
	Female	56	47%
Relevant experience (years)	Less than 1 years	28	24%
	1 to 4 years	65	55%
	More than 4 years	26	21%
Field of education	Media/ Communication	7	5%
	Management	38	32%
	Engineering	46	39%
	Other	28	24%

FINDINGS

The findings are explained based on the results of the regression analysis.

First hypothesis: Divergence in media distribution channels affects exploitation of entrepreneurial opportunities in small and medium sized media firms.

As mentioned in the extant literature, divergences in media distribution channels is an important element in the success of media based start-ups. However, their effect on exploitation of entrepreneurial opportunities was not scrutinized. According to the test results, divergences in media distribution channels positively affect

exploitation of entrepreneurial opportunities in small and medium sized media firms. This finding is in line with those of the Jin's (2015). Just like Vukanovic (2018), Jin (2015) implicitly argues that the ownership of various distribution channels or media content will affect the success of media firms in exploiting opportunities.

Table 2. Model summary and parameter estimates

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.485 ^a	.235	.229	.73251	.235	36.259	1	118	.000	0.760

a. Predictors: (Constant), divergences in media distribution channels
b. Dependent Variable: exploitation of entrepreneurial opportunities

Second hypothesis: Divergence in media content producers affects exploitation of entrepreneurial opportunities in small and medium sized media firms.

According to the findings of the regression analysis, divergences in media content producers affects exploitation of entrepreneurial opportunities in the studied firms. The same findings are recently observed in von Rimscha et al.'s (2018) prominent work "*Patterns of successful media production*", in which they highlight the importance of proliferation of media content producers as a critical point in the success of media producing firms.

Table 3. Model summary and parameter estimates

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
2	.345 ^a	.119	.112	.78938	.119	15.822	1	117	.000	0.884

a. Predictors: (Constant), divergences in media content producers
b. Dependent Variable: exploitation of entrepreneurial opportunities

Third hypothesis: Divergence in audience affects exploitation of entrepreneurial opportunities in small and medium sized media firms.

Findings revealed that divergence in audience significantly affects the exploitation of entrepreneurial opportunities in the studied firms. Therefore, audience divergences make it more possible for media start-ups to become successful in exploiting entrepreneurial opportunities in media industries. Scholars such as Malmelin and Villi (2017) and Salamzadeh and Markovic (2018) have the same stand point of view in this regard. They believe that abundance of audience as well as their divergence

will absolutely affect the success of media firms in facing different opportunities.

Table 4. Model summary and parameter estimates

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
3	.568a	.323	.317	.68916	.323	56.277	1	118	.000	0.709

a. Predictors: (Constant), divergences in audience

b. Dependent Variable: exploitation of entrepreneurial opportunities

Fourth hypothesis: Divergence in advertisers affects exploitation of entrepreneurial opportunities in small and medium sized media firms.

Advertisement techniques have changed and therefore several advertisers-beside conventional advertising agencies- have appeared in the media industry, such as sole advertisers, online advertising agencies, and the like. According to the findings, divergence in such advertisers highly affects the exploitation of entrepreneurial opportunities in the studied firms. Similarly, scholars such as Deuze (2016) and Odibat et al. (2017) have highlighted the importance of advertisers and their divergence in media industries.

Table 5. Model summary and parameter estimates

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
4	.345a	.119	.112	.78938	.119	15.822	1	117	.000	0.884

a. Predictors: (Constant), divergences in advertisers

b. Dependent Variable: exploitation of entrepreneurial opportunities

In sum, the findings revealed that divergence in media distribution channels, media content producers, audiences, and advertisers could significantly affect the exploitation of entrepreneurial opportunities in small and medium sized media firms.

CONCLUSION

One of the major consequences of digital technologies is to enable the consumers of media to play the role in production and distribution of media contents. As Lawson-borders (2008:164) explains “The media industry and the public have a multitude of choices for sending and receiving different types of content. What might be of particular interest in this area of cultural convergence is the opportunity that has been

created for the traditional consumer of media to become a producer. New technologies have transformed the relationship of the public to become more active in numerous ways". This empowerment of users besides the increasing in media channels makes this possible to service to more niche markets which have not been met yet because of the cost of production for content providers, because of the very specific area of interests, because of low attractiveness for media companies in case of income or population or future forecasts, etc (Radovic Markovic and Salamzadeh, 2018). The important effect of this change in media markets from economic perspective is the emergence of opportunities for entrepreneurial activities in media industry, the marketplace which exclusively dominated by media giants and large companies and out of reach for media entrepreneurs to act. It seems that future of media markets is under shade of increasing divergence in media channels and audience segments, which are the direct results of media convergence and this divergence is the key to operate in this industry. Media content is the critical element in the market which may determine the winners, by creating and offering more diverse content in more diverse channels. From the other side, as Ringlsetter and Vizjak (2003) pointed out, the volume business replace the specialization business, based on the logic that a basic content may be adapted for different diverse markets, by minor changes, and therefore the media big content generators will still have upper hand in the market. These two different views seem paradoxical in the first look, but there is a tiny point which makes meaning and solves the contradiction. This is the inefficiency of large media companies to provide and make suitable changes for diverse niche markets, while the media entrepreneurs have instinctive advantage to do this. Kahejeheian (2013) adapted the Eliasson and Eliasson's (2005) theory to the "Efficient Media Market Theory" in a book chapter titles "New Venture Creation in Social Media Platform; Towards a Framework for Media Entrepreneurship" in Handbook of social media management. There, he explained "Strength of Media Entrepreneurs is exactly in the weak point of media large companies. Media entrepreneurs generally rely on their innovative and risky ideas, which commonly not covered by large ones. Generally large media companies concentrate on idea which is applicable in huge markets and critical mass. This can cover the costs and cause deeper penetration. Media entrepreneurs rely on small pieces of resources" (Khajeheian, 2013: 129; Salamzadeh, 2015). Thus we can now make peace between two opposite perspectives, which in the first the diversity of audiences causes specialization contents to be more wanted, while in the second this content will replace by volume business (Khajeheian, 2018a). Using the efficient media market theory of Khajeheian and Tadayoni (2016), the divergence in media audiences provides a fertile ground for media entrepreneurs to facilitate the transition in proposed value from volume media content (which will dominated by large media companies) to the specialization media content, which meets the needs for niche segments and generates low volume but numerous incomes.

This extension of playgrounds opens the door for media entrepreneurs (Khajeheian, 2018b). They have the multiple advantages to operate in the emerging media markets. Entrepreneurs benefit from their small size to be agile enough to migrate from a media sector to another and change the focal point from a segment to another. They joy from the innovation advantage, which make them distinguished from their larger counterparts, by the energy and interest dedicate to the new ideas and by the ability to engage in full scale to the different dimensions of an idea. The great characteristic of media entrepreneurs is that they are in most cases the users who feel the market need and operate the entrepreneurial activity and thus have a good smell and understanding from what market really needs. This results to innovation in products and services which in some cases boom the market and creates the platform for extension by large media companies. Beyond the above mentioned, the media entrepreneurs joy from the critical characteristic of themselves, the creativity and flexibility to adapt to the media market changes and agile and fast moving to integrate with new emerging market and risk taking to be dare to execute and commercialize their innovative ideas.

The opportunities emerge from media convergence are still unknown and the changes in media market are in the way. Nonetheless, media entrepreneurs are who that are enables to recognition and exploit them in an appropriate way. the obvious is that under effect of divergent convergence, the opportunities are very diverse and different and in many cases with low-level incomes and thus large media companies may not be prepare to pay enough attention to them. The presence of media entrepreneurs is the critical necessity for media markets to be able to use the potentials to feel the gaps and make value.

Research on media convergence has neglected a fundamental link, the local actors. The local roots of network industries are critical in the emergence and exploration of common interests: local embeddedness is the background where convergence can be explored (Ravioli, 2006). This is another point of the article to emphasize on the media entrepreneurs as the local actors which arise from the context and based on the understanding from the needs and contingencies of the target market. They can fill the gaps in the local markets which are out of reach or not profitable enough to be covered by the media large companies. In some cases, as well as developing countries, there are such a great number of profitable areas of interests or unmet needs which the established and existing media companies are not enable to even pay attention to them, thus local media entrepreneurs are the essential part of media market which by exploiting the opportunities progress the economy and develop the local societies. The divergence in media audiences which results from the convergence in media is one of the sources for evolution of start-up the new media enterprises (e.g. see, Salamzadeh and Kirby, 2017) and ought to be appreciated as a future trend in different contexts.

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CORPORATE ENTREPRENEURSHIP AND INNOVATION PERFORMANCE IN ESTABLISHED IRANIAN MEDIA FIRMS

EMPRENDIMIENTO CORPORATIVO Y DESEMPEÑO INNOVADOR EN EMPRESAS DE MEDIOS DE COMUNICACIÓN IRANÍES ESTABLECIDAS

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ABSTRACT

Recently, research has shown that corporate entrepreneurial activities of media firms are becoming a critical issue to improve their innovation performance. This issue becomes more important in established media companies, since innovation could help them in their competition with their competitors. The main objective of the present research is to investigate if the corporate entrepreneurial activities of the Iranian media firms are related to their innovation performance. This paper follows a quantitative research design which entails a survey among randomly selected Iranian media firms in seven main provinces of Iran. To do so, a linear regression technique- by SPSS software- was used. The findings revealed that rate of product innovation- among other elements- had highly affected by corporate entrepreneurial activities of the Iranian media firms, which show that corporate entrepreneurial activities of those firms could lead to higher rate of innovative media product development. Also, product innovation might be more affected by institutional elements, however, process innovation and technology indicators have almost a similar state. The more media firms apply entrepreneurial approaches in their companies, the higher the rate product and process innovation will be. By having this in mind, managers of those firms could concentrate on improving entrepreneurial aspects of their firms, and policy makers could devise required policies to improve entrepreneurial activities in those firms to reach higher rates of innovative products in media industries.

KEYWORDS

Corporate entrepreneurship, corporate entrepreneurial activity, innovation performance, established firms, Iran

RESUMEN

Recientemente, las investigaciones han demostrado que las actividades corporativas de las empresas de medios de comunicación se están convirtiendo en un tema crítico en cuanto a mejorar su desempeño en innovación se trata. Este asunto se vuelve más importante en las empresas de medios de comunicación establecidas, ya que la innovación podría ayudarles a competir con sus competidores. El principal objetivo de la presente investigación es indagar con respecto a si las actividades corporativas de las empresas de medios de comunicación iraníes están relacionadas con su desempeño en innovación. Este documento plantea un diseño de investigación cuantitativa que implica una encuesta realizada entre empresas de medios iraníes seleccionadas aleatoriamente en siete provincias principales de Irán. Para ello, se utilizó una técnica de regresión lineal, mediante el software SPSS. Los hallazgos revelaron que la tasa de innovación en productos, entre otros elementos, se había visto altamente afectada por las actividades corporativas de las empresas de medios iraníes, lo que demuestra que las actividades

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empresariales de estas firmas podrían conducir a una mayor tasa de desarrollo de innovación de productos de medios de comunicación. Además, la innovación de productos podría verse más afectada por elementos institucionales; sin embargo, la innovación de procesos y los indicadores de tecnología tienen un estado casi similar. Cuantas más empresas de medios apliquen enfoques empresariales en sus organizaciones, mayor será la tasa de innovación de productos y procesos. Teniendo esto en cuenta, las gerencias de esas firmas podrían concentrarse en mejorar los aspectos empresariales de sus organizaciones, y los formuladores de políticas podrían diseñar políticas requeridas para mejorar las actividades empresariales en estas organizaciones para alcanzar tasas más altas de productos innovadores en las industrias de medios de comunicación.

PALABRAS CLAVE

Emprendimiento corporativo, actividades empresariales, desempeño innovador, empresas establecidas, Irán.

INTRODUCTION

Entrepreneurship and business venturing, at both individual and firm levels, are becoming an essential part of any innovation ecosystem (Bharadwaj and Menon, 2000). Today, firms are dynamically striving to become more entrepreneurial and are taking different policies to achieve a better business venturing profile (Morris et al., 2010). Maybe it is due to their understanding that there are a lot of benefits associated with corporate entrepreneurship (Khajeheian and Friedrichsen, 2017). Consequently, we are witnessing that in the last three decades a substantial corporate entrepreneurial wave is shaped (Dunlap-Hinkler et al., 2010). This is more important in established firms than in new ventures, since due to their access to resources and capabilities they are more prone to innovate in their products, services, as well as to improve their technologies (Koen and Bertels, 2015).

On the other hand, innovation performance and entrepreneurial activities of the firms are highly interdependent. However, this argument is not supported in the existing literature clearly (Otache and Mahmood, 2015). Also, there are different approaches in investigating corporate entrepreneurship. This approach has led to a variety of definitions by a variety of authors (Kuratko et al., 2015; Bierwerth et al., 2015). In addition to this, the concepts of media corporate entrepreneurship and media entrepreneurial activities of firms are critical issues which are recently becoming a concern in countries with media entrepreneurship potentials (Miles et al., 2009; Khajeheian and Tadayoni, 2016; Jiang et al., 2018). This is also the case in countries with higher potentials in media sector, and mandates to improve the state of small and medium sized media enterprises in Iran (Khajeheian, 2016, 2018b).

The goal of this paper is to investigate a relationship between corporate entrepreneurship and innovative performance in Iranian media firms. We have developed a research instrument based on Morris and Kuratko (2002), Miller (1983), and Ireland, Kuratko and Morris's (2006) in order to measure corporate entrepreneurship; and Wong and Chin's (2007) for measuring innovative performance. Such a relationship is seldom investigated in the media entrepreneurship literature (Gao et al., 2019), which is one of the main theoretical contributions of the present paper. The author focuses on this gap by scrutinizing the interconnectedness and

interrelationship between corporate entrepreneurial activities and innovation performance of the Iranian media firms. In order to achieve this goal, the existing literature on the both fields and their connections is reviewed. Then, a framework and its indicators are defined. Findings are presented afterwards, and the paper concludes with some remarks and directions for future studies.

LITERATURE REVIEW

In the present section, the literature about “*media entrepreneurship*”, “*corporate entrepreneurship*”, and “*innovation performance*” are reviewed in more details in order to provide a better understanding of the mentioned research streams.

Media Entrepreneurship:

Although entrepreneurial activities are conducted in media firms, the concept of media entrepreneurship still remains vague and controversial (Khajeheian, 2013, 2017). Despite the great effort made by scholars such as Achtenhagen (2008), Fulton (2015) and Emami and Khajeheian (2019), there are different concepts which come into one’s mind regarding this phenomenon. Moreover, combining corporate entrepreneurial activities with media entrepreneurship in media firms is rarely discussed and scrutinized in the existing literature. Hoag (2008) defines media entrepreneurship as “the creation and ownership of a small enterprise or organization whose activity adds at least one voice or innovation to the media marketplace”. Achtenhagen (2008) put some comments on the mentioned definition and defined media entrepreneurship as “how new ventures aimed at bringing into existence future media goods and services are initially conceived of and subsequently developed, by whom, and with what consequences”. Definitions have evolved and the concept is becoming clearer for the scholars of the field, however, the connection between media entrepreneurship and corporate entrepreneurship is rarely discussed in the literature (Achtenhagen, 2017; Price Schultz & Jones, 2017; Kahjeheian, 2018a). More recently Hang (2016), in his distinguished book, tried to open new windows of opportunity for researchers of the field in order to combine these two concepts. These efforts lead to emergence of the concept of “*media corporate entrepreneurship*” which is increasingly drawing the attention of scholars.

Corporate Entrepreneurship:

Over the past decades, corporate entrepreneurship has been broadly followed by senior executives and academics as a valuable means for stimulating companies and increasing productivity, effectiveness and affectivity (Zahra and Covin, 1995). This refers to situations where established companies, rather than individuals or business units, act entrepreneurially (Covin and Miles, 1999). Actually, this issue is inevitable important for established firms to survive and renovate their existing status and

to increase their profitability and productivity (Zahra, 1996; Kuratko et al., 2014). Corporate entrepreneurship, which entails a complex process due to the challenges regarding the existing structures and processes of the companies, is- in nature- a behavioral phenomenon. Accordingly, all companies are situated in a continuum that ranges from “*highly conservative*” to “*highly entrepreneurial*” companies (see, Barringer and Bluedorn, 1999). This is the case, even, for those companies which are rarely attempting to reveal an entrepreneurial representation, but are acting innovatively (Morris et al., 2010).

Corporate entrepreneurship underwent many changes- both in its nature and definition- during its evolution. In a more recent definition of the concept, it is defined as a process through which employees of established firms commence novel activities, follow innovative blueprints, or value departing from usual processes in order to discover, form, or follow profitable entrepreneurial opportunities (see, García-Morales et al., 2014). In fact, entrepreneurship movement involves development of entrepreneurial behaviors within an established firm (Mason, 2011). However, according to some previous definitions of the concept, corporate entrepreneurship is defined as the ability of a company to discover and make use of entrepreneurial opportunities without being repressed by limitations of inputs, policies and regulations, as well as top managerial decisions (Otahe and Mahmood, 2015).

As Verma (2013) argues, it encompasses three types of process, i.e. (i) *innovation process*, (ii) *venturing process*, and (iii) *strategic renewal process*. Furthermore, some scholars propose that due to the interactions among different characteristics of individuals and firms, and according to the contextual factors, the nature of corporate entrepreneurial activities might change over the lifecycle of any company (Fini et al., 2012). In a nutshell, since 1980s, many scholars and professionals have shown great interest in the corporate entrepreneurial activities due to its precious effect on the revitalization, productivity and profitability of established firms (Urbano and Turró, 2013). However, some researchers argued that corporate entrepreneurial activities could not realized in large established companies, yet there are a number of advocates for this issue in the literature. Hence, as one could see, in the last decades, “*corporate entrepreneurship*” research and applications were emerged (Paunović, 2012). While some scholars have provided a basis for explaining and predicting how corporate entrepreneurship goes on in some countries, the author finds it necessary to pay attention to this concept in established firms of a developing economy (e.g. see Analoui et al., 2009; Maatoofi and Tajeddini, 2011). In the present paper, three main models of corporate entrepreneurship, i.e. Morris and Kuratko (2002), Miller (1983), and Ireland et al. (2006) are used in order to reach this aim.

Innovation Performance (IP):

As it is mentioned in the existing literature, results of corporate entrepreneurial activities are shown in two types of issues: (i) *strategic renewal of the firms*, and (ii) *the performance/new venture creation activities* (Gómez-Haro et al., 2011; Salamzadeh,

2015; Salamzadeh and Kirby, 2017). Although a company's approach toward corporate entrepreneurial activities directly affects its innovation performance, one could develop a more comprehensive explanation, based on the fact that this approach might expand the company's status (Simsek and Heavey, 2011; Salamzadeh and Markovic, 2018). Scholars of this field have conservatively put more stress on ways in which individuals could create positive changes within their own companies (Dunlap-Hinkler et al., 2010). It is important to know that innovation performance is variously defined by several scholars and researchers. For example, it is defined as "the degree to which new products- goods and services- meet their expected goals in the market" (Wang and Lin, 2012), or as "the extent to which new products have attained their share in the market, promoted sales, and increased the rates of asset return, investment return, and respectively met profit goals" (Chen et al., 2014).

In fact, innovation performance which is the outcome of a company's innovative activities and inputs has been extensively a vital issue for state-of-the-art companies (Wang and Lin, 2012). Moreover, improving innovation performance of the companies is important to an overall understanding of different issues such as learning, creativity, and innovation within companies (Bharadwaj and Menon, 2000). Nevertheless, one should note that innovation performance varies widely across different industrial segments and established organizations (Lee et al., 2015). Optimistically, there are some measures to determine innovation performance and the economic outcomes of innovative products or services (Guan et al., 2009). There are numerous managerial factors which have been linked with innovation performance in innovative companies, according to the existing literature (Wong and Chin, 2007). In order to be more precise, in this paper, Wong and Chin's (2007) conceptualization of the phenomenon is used, which includes three main groups: (i) *Product innovation rate* (including: number of changed product/total products, change in sales/total sales; and change in profit/total profit); (ii) *Process innovation rate* (including: number of process changes/total processes; and change in overall productivity due to product change); (iii) *Technology indicators* (including: percentage of expenditure on R&D/total sales; number of externally adopted technologies; and number of internally developed patents) (Wong and Chin, 2007). These categories are defined as follows:

Product innovation: without a doubt, product innovation is a vital issue for any established company which competes with its competitors. As new technologies are developed and our knowledge is improved, product innovation turns into a more important concern for established firms that are striving to succeed in this highly competitive world (Chen et al., 2015). Furthermore, nowadays, within established companies which follow corporate entrepreneurial approaches, the importance of new product development is higher, and their employees are usually more prone to follow innovative approaches. Therefore, it is important to gauge product development rates in order to succeed in this competition. On the other hand, the literature suggests that it is a significant part of the most of corporate entrepreneurial approaches (Kuratko et al., 2015; Kuratko and Audretsch, 2013).

Process innovation: process innovation approaches are broadly used in entrepreneurial companies (Kuratko et al., 2014). There are many benefits associated with these approaches. Making *radical, substantial, or even gradual* improvements in the existing processes in a way those processes become more productive or profitable is the main result of following such an approach in established companies (Alegre and Chiva, 2013). Therefore, process innovation is also a vital subject to be considered in any entrepreneurial established firm (Jayaram et al., 2014). By innovation in processes of a typical established firm, such a company might benefit from new customers, higher customer satisfaction rates, as well as higher returning customers (Adner and Levinthal, 2001).

Technology indicators: Some researchers suppose that innovation performance could be measured by process and product innovation (Hsu et al., 2014), others such as Wong and Chin (2007) and García-Morales et al. (2014) consider technology indicators for such a measurement. Technology indicators include a broad range of factors; however, in order to be more precise, in this study, the author bounded the definition to the above-mentioned indicators (Wong and Chin, 2007).

Innovation system and institutional factors:

Innovation ecosystem is a term which is used in order to describe the large number and diverse nature of participants/resources that are essential for innovation. These entities include entrepreneurs, venture capitalists, researchers, investors, university faculty, as well as business development agents and other technical service providers (Soofi et al., 2018). Each innovation ecosystem is mature to some extent. By the way, several major problems related to the innovation system in Iran, especially in recent decades, are emerging (Mirzadeh et al., 2017). There are a few very large companies, several medium sized firms and a large number of small firms operating in the Iranian innovation ecosystem which deal with each other strongly or loosely (Soofi et al., 2018). The innovation ecosystem is shaped subject to some institutions- *rules of the game*. Around six thousand new technology based firms have been established in national science parks as well as incubators affiliated to Iran's Ministry of Science, Research and Technology until now (Salamzadeh and Kawamorita Kesim, 2017). While new technology based firms were struggling with a fact that there was not a recognized and structured ecosystem of innovation in the country, more recently some attempts have been made to clarify this ecosystem, especially by policy makers and officials (see, Khajeheian, 2016). One could categorize these elements under the following categories: economic, social, political and technological elements.

For instance, among economic factors, new technology based firms are highly affected by the existence of relevant resources which are scarce in nature, including financial resources, expert human resources, and time limitations (see, Tanha et al., 2011). Regarding social elements, new technology based firms strive to compete with their rivals by absorbing their human resources, internalizing social values, and socializing; at the same time, low social welfare is evident in the ecosystem (see,

Mirzadeh et al., 2017). On the other hand, political unrest is vastly evident in the ecosystem, and thus policy makers could do a few things for new technology based firms, such as deregulation. At the same time, political bodies act as facilitators among different players (see, Mirzadeh et al., 2017). Last but not the least, technological elements are of paramount importance, since these elements highly affect the performance of new technology based firms. Especially, technological transitions are very critical (see, Tanha et al., 2011).

RESEARCH METHOD

In this research, a survey is conducted and a questionnaire is employed to collect the required data from the research population of 512 established media firms in seven main provinces of Iran (Tehran, Alborz, Shiraz, Isfahan, North Khorasan, East Azerbaijan, and Semnan) in order to scrutinize the interrelationships of corporate entrepreneurial activities of selected Iranian media firms which is shown in their innovation performance. The conceptual model is developed based on four main models. For CE, 15 items was selected from the questionnaire of Morris and Kuratko (2002), Miller (1983), and Ireland et al. (2006); and for IP, Wong and Chin's (2007) conceptualization of the phenomenon is used. Tables number 1 and 2 shows the indicators.

SPSS 21.0 was used to analyze the data. To test the strength and type of the relationship among dependent and independent variables, linear regression technique is used. Moreover, regression analysis could be used in order to infer causal relationships among independent and dependent variable(s). By the way, since Likert scale is used, this method will be applicable. It should be noted that institutional elements are also included in the model. Also, the institutional factors are integrated in this analysis to show the contextual effects.

The established media firms were selected randomly from the companies registered in the Company Registration Office of Iran under the title of "knowledge based firms". Under random sampling, each member of the list had an equal opportunity of being chosen as a part of the sampling process. One of the main requirements of random sampling is the fact that it requires a complete list of population, which was hopefully available in this study. According to Cochran's formula, at the confidence level of 95 percent, and accuracy of 5 percent, 512 questionnaires were required. Thus, the authors distributed 700 questionnaires, and 512 respondents completely filled out the distributed questionnaires (response rate: 73%). The questionnaires were answered by top managers or chief executives of the firms. Questionnaires were printed and distributed by the researcher among the respondents. As mentioned earlier, the questionnaire of this research was adapted from those of Morris and Kuratko (2002), Miller (1983), and Ireland, Kuratko and Morris (2006), Wong and Chin (2007).

Following a pilot test- among 45 established firms, the instrument was modified and refined by three experts before it was used (*Expert validity/ Face validity*). The reliability of the instruments was analyzed by Cronbach's alpha coefficient

(0.758). Hence, the administered questionnaire had enough reliability to proceed for further analysis. Based on the research goals, the following hypotheses are highlighted to be studied.

H₁. The rate of product innovation of Iranian media firm is related to the level of corporate entrepreneurial activities in those firms.

H₂. The rate of process innovation of Iranian media firm is related to the level of corporate entrepreneurial activities in those firms.

H₃. The level of technology indicators of Iranian media firm is related to the level of corporate entrepreneurial activities in those firms.

Table 1. Indicators of corporate entrepreneurship

	Code	Indicators
Corporate Entrepreneurship	CE1	High rate of new product/service introduction, compared to competitors
	CE2	Emphasis on continuous improvement in methods of production and/or service delivery
	CE3	Risk-taking by key executives in seizing and exploring growth opportunities
	CE4	A very competitive 'undo-the-competitor' posture
	CE5	Seeking of unusual, novel solutions by senior executives to problems, via the use of 'idea people'
	CE6	A strong emphasis on R&D, technological leadership, and innovation
	CE7	A bold, aggressive posture, in order to maximize the probability of exploiting potential when faced with uncertainty
	CE8	Active search for big opportunities
	CE9	Rapid growth as the dominant goal
	CE10	Large, bold decisions, despite uncertainties of the outcome
	CE11	Steady growth and stability as primary concerns
	CE12	Number of new products introduced during the past five years
	CE13	Number of product improvement or revisions introduced during the past five years
	CE14	Comparison of new product introductions with those of major competitors
	CE15	Level of significance of new methods or operational processes implemented during the past five years

Source: Morris and Kuratko (2002), Miller (1983), and Ireland, Kuratko and Morris (2006)

Table 2. Indicators of innovation performance

	Code	Indicators
Innovation Performance	IP1	number of product changed to total product
	IP2	change in sales (due to product change) to total sales
	IP3	change in profit (due to product change) to total profit
	IP4	number of process changes to total processes
	IP5	change in overall productivity due to product change
	IP6	percentage of expenditure on R&D to total sales
	IP7	number of technologies adopted externally
	IP8	number of patents developed internally

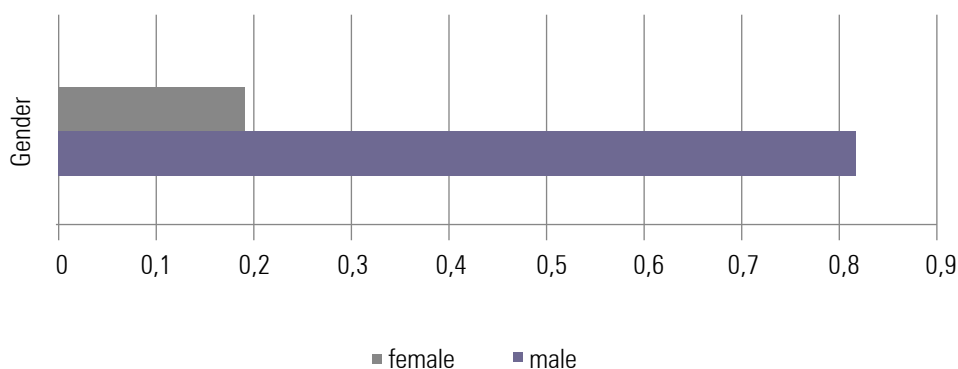
Source: Wong and Chin (2007)

FINDINGS

Demographic information:

Most of the respondents were male (81%), while a few of them were female (19%) (Chart 1). Moreover, about one third of the respondents had 10 to 15 years of experience (41%) (Chart 2), and most of them had a bachelor's degree (54%) (Chart 3). Chart 4 illustrates the demographic information of the firms. As shown in the chart, most of the firms had between 50 to 100 employees and might considered as small businesses. In terms of the experience of the firms, those that have 5-10 years of experience constitute the highest. Most of the firms were in Production field, and the rest were service providers. Most of the firms had 5 to 10 new products/services.

Chart 1. Gender of respondents



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Chart 2. Experience of respondents (year)

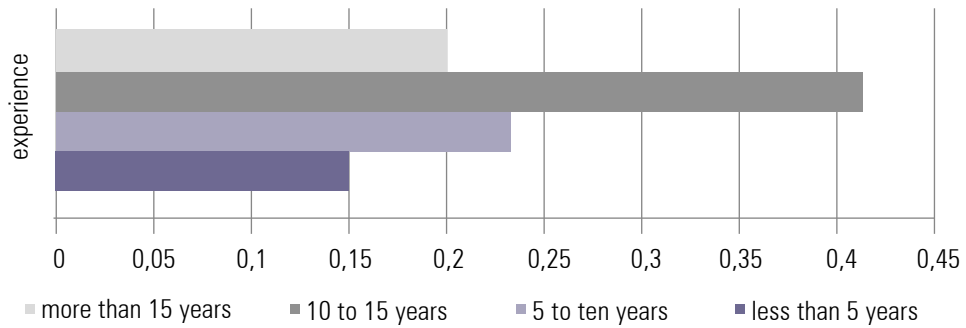


Chart 3. Education of respondents

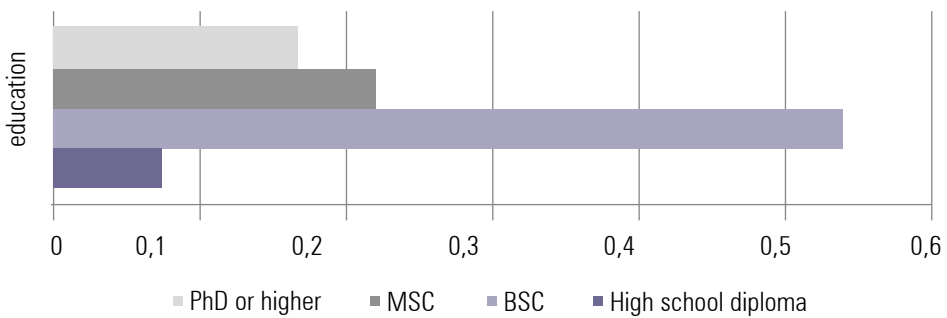
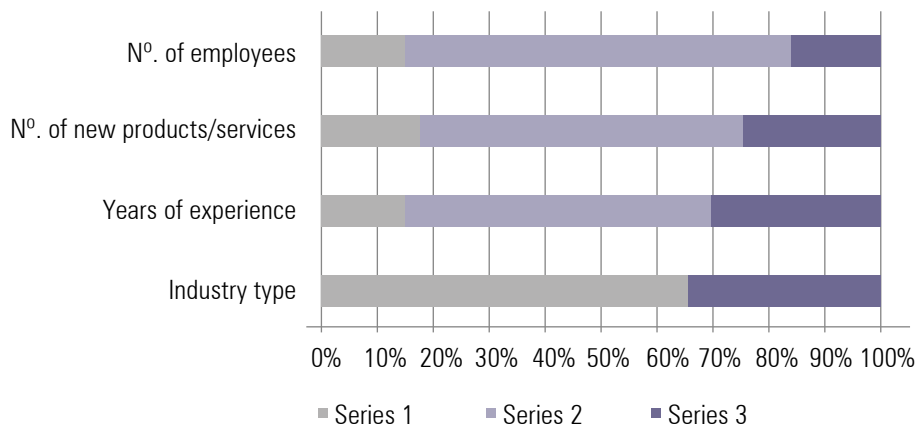


Chart 4. Demographic information of the firms



Legend: Industry type: Series 1: Production; Series 2: Service provider II Years of experience: Series 1: 3 to 5 years; Series 2: 5 to 10 years; Series 3: more than 10 years II Number of new services/products: Series 1: Less than 5; Series 2: 5 to 10; Series 3: more than 10 II Number of employees: Series 1: Less than 50; Series 2: 50 to 100; Series 3: more than 100

State of corporate entrepreneurship and innovation performance indexes:

It is important to understand the existing state of studied firms in terms of corporate entrepreneurship (Morris and Kuratko, 2002, Miller, 1983, and Ireland, Kuratko and Morris, 2006) and innovation performance indexes (Wong and Chin, 2007); since it might highlight some important points, such as their weaknesses and strengths. Tables number 3 and 4 shows the mean indexed of corporate entrepreneurship and innovation performance indexes in the studied firms. Means of means shows that firms are somehow conservative and corporate entrepreneurship policies are moderately followed in these companies (Table 3). According to the three mentioned theories which led to this model (i.e. Morris and Kuratko, 2002, Miller, 1983, and Ireland, Kuratko and Morris, 2006), some propositions might be offered. First of all, high rate of new product/service introduction, compared to competitors is moderately evident as the companies strived to compete vigorously (CE1). Second, a very competitive 'undo-the-competitor' posture is evident in the findings (CE4). Moreover, number of new products/services introduced during the past five years in the studied companies were high (CE12). Finally, it could be noticed that the level of significance of new methods or operational processes implemented during the past five years was high (CE15). At the same time, emphasis on continuous improvement in methods of production and/or service delivery (CE2), seeking of unusual, novel solutions by senior executives to problems, via the use of 'idea people' (CE5), and steady growth and stability as primary concerns (CE11) were low. It might be due to deficiencies in delivery system, lack of innovativeness in senior managers, as well as several institutional concerns that might hamper the growth of the studied companies. According to the data gathered based on Wong and Chin's (2007) model regarding innovation performance indexes, it is evident that the number of product changed to total product (IP1) as well as change in sales (due to product change) to total sales were high (IP2). Moreover, the number of process changes to total processes (IP4) were high, and number of technologies adopted externally (IP7) were increasing. Innovation performance index shows a moderate level of innovation performance in the firms (Table 4).

Table 3. Corporate entrepreneurship indexes

	Code	Frequency	Average weight
Corporate Entrepreneurship Indicators	CE1	512	3.57
	CE2	512	2.89
	CE3	512	3.25
	CE4	512	4.01
	CE5	512	2.57
	CE6	512	3.96
	CE7	512	3.23
	CE8	512	3.92
	CE9	512	3.87
	CE10	512	3.14
	CE11	512	2.57
	CE12	512	4.18
	CE13	512	3.79
	CE14	512	3.85
	CE15	512	4.02
Mean of means (CE)			3.52

Table 4. Innovation performance indexes

	Code	Frequency	Average weight
Innovation Performance Indicators	IP1	512	3.78
	IP2	512	4.01
	IP3	512	3.57
	IP4	512	3.84
	IP5	512	3.12
	IP6	512	3.37
	IP7	512	3.93
	IP8	512	2.98
Mean of means (IP)			3.57

Correlation analysis:

Before testing the hypotheses, we have to make sure that there is a significant correlation between corporate entrepreneurship and innovation performance (Product innovation, Process innovation, and Technology indicators). To do so, a correlation analysis was conducted. The following tables show that there is a significant correlation among these two concepts.

Table 5. Descriptive Statistics

	Mean	Std. Deviation	N
CE	2.7427	1.16487	512
IP	2.8118	2.59492	512

Table 6. Correlations

		CSI00001	CSI00002
CE	Pearson Correlation	1	.641**
	Sig. (2-tailed)		.000
	Sum of Squares and Cross-products	230.678	173.237
	Covariance	1.357	1.031
	N	171	169
IP	Pearson Correlation	.641**	1
	Sig. (2-tailed)	.000	
	Sum of Squares and Cross-products	173.237	1137.976
	Covariance	1.031	6.734
	N	169	170

** . Correlation is significant at the 0.01 level (2-tailed).

Hypotheses testing:

Hypotheses are tested accordingly and results are discussed in the below section. Regression analysis generated an equation to describe the statistical relationship between predictor variables and the response variable. After defining the regression model in SPSS, the fit was verified by checking the residual plots, and the results were interpreted.

H₁. The rate of product innovation of Iranian media firm is related to the level of corporate entrepreneurial activities in those firms.

Table 7. Model summary and parameter estimates

Dependent Variable: rate of product innovation							
Equation	Model Summary					Parameter Estimates	
	R Square	F	df1	df2	Sig.	Constant	b1
Linear	.135	7.766	1	511	.006	59.347	.059

The independent variable is corporate entrepreneurship.

A linear regression was performed. As can be seen, corporate entrepreneurship was a significant predictor of rate of product innovation. According to the table, product innovation rate is significantly dependent on corporate entrepreneurship in the studied established firms. Therefore, the more innovative products are produced by the established firms, the more they would be considered corporate entrepreneurial firms (Kuratko et al., 2015). As Artz et al. (2010) previously mentioned rate of product innovation could significantly affect corporate entrepreneurial performance of the firms, while Zhang (2011) believed that product innovation was not found to be significantly effective on corporate entrepreneurship performance. The findings are in line with the first group of scholars; however, one might propose different hypotheses to examine the probable differences in these findings. The regression equation is as follows:

$$\text{Rate of product innovation} = 59.347 + 0.059 * \text{corporate entrepreneurship}, R^2 = .135, F(1, 511) = 7.766, p < .006.$$

H₂. The rate of process innovation of Iranian media firm is related to the level of corporate entrepreneurial activities in those firms.

Table 8. Model summary and parameter estimates

Dependent Variable: rate of process innovation							
Equation	Model Summary					Parameter Estimates	
	R Square	F	df1	df2	Sig.	Constant	b1
Linear	.132	6.133	1	511	.000	59.213	.052

The independent variable is corporate entrepreneurship.

As it is mentioned in the table, corporate entrepreneurship was a significant predictor of rate of process innovation. Based on the table, rate of process innovation is also significantly affected by corporate entrepreneurial activities. This finding is in line with some scholars such as Kuratko et al. (2015), however, to some scholars, process innovation is not significantly affected by corporate entrepreneurial activities (e.g. see Bigliardi et al., 2011). It might be due to the differences in range of studies, which is highly affected by firm size and industry type (Damanpour, 2010). In this study, most of the firms had less than a hundred employees and might be considered as small businesses. The regression equation is as follows:

$$\text{Rate of process innovation} = 59.213 + 0.052 * \text{corporate entrepreneurship}, R^2 = .132, F(1, 511) = 6.133, p < .000.$$

H₃. The level of technology indicators of Iranian media firm is related to the level of corporate entrepreneurial activities in those firms.

Table 9. Model summary and parameter estimates

Equation	Model Summary					Parameter Estimates	
	R Square	F	df1	df2	Sig.	Constant	b1
Linear	.120	7.723	1	511	.002	60.125	.052

The independent variable is corporate entrepreneurship.

As it is mentioned in the table, corporate entrepreneurship was a significant predictor of technology indicators. Table 9 shows a significant relationship between technology indicators and corporate entrepreneurship. Based on the test results, technology indicators could be affected by corporate entrepreneurial firms. It means that if these firms become more entrepreneurial, technology indicators might change significantly. This element is infrequently discussed in the literature, and the findings of this research approve such relationship. In sum, all the hypotheses were accepted according to the results. It shows that corporate entrepreneurship affects innovation performance of the firms. The interesting point is that, although a considerable number of the firms were risk averse in nature, still the relationship exists. The regression equation is as follows:

$$\text{Technology indicators} = 60.125 + 0.052 * \text{corporate entrepreneurship}, R^2 = .120, F(1, 511) = 7.723, p < .002.$$

The effect of institutional factors- as intervening variables- is also studied. Thus, the results are shown in the following table. The findings are the result of a report of the (standardized) direct, indirect, and total effects, all of which can be obtained from the path coefficients. According to the findings, the institutional factors affect the relationship between corporate entrepreneurship and innovation performance (Product innovation, Process innovation, and Technology indicators).

Table 10. The moderating/mediating role of institutional factors

Independent variable	Intervening variable	Dependent variable	Direct effect	Indirect effect	Total effect
Corporate entrepreneurship	Institutional factors	Product innovation	0.337	0.124	0.461
Corporate entrepreneurship	Institutional factors	Process innovation	0.321	0.108	0.429
Corporate entrepreneurship	Institutional factors	Technology indicators	0.345	0.112	0.457

CONCLUSION

Media corporate entrepreneurship activities are becoming an integral part of any established media business which thrives to succeed (Hang & Van Weezel, 2007). Despite the fact that the concept is an emerging phenomenon, less attention has been paid to this issue in the existing literature. Even, the existing studies have marginally paid attention to this phenomenon (e.g. see Hang, 2016). It should be noted that innovation performance of the firms is also dependent on such activities (Otache and Mahmood, 2015). Thus, this study tried to shed more light on this relationship by studying 512 established Iranian media firms in seven provinces. The three studied hypotheses are tested and accepted based on the findings. Moreover, findings showed that there is a significant relationship between corporate entrepreneurship and the rate of product innovation, rate of process innovation and the technology indicators of the established Iranian media firms. These are in line with the findings of Barringer and Bluedorn (1999), Bharadwaj and Menon (2000), García-Morales et al. (2014), Chen et al. (2014), Hang (2016), and Khajeheian and Salamzadeh, 2013; and in contrast to those of scholars such as Zhao (2005) and Goodale et al. (2011).

Future researchers might focus on industry level innovation performance to see if regions with higher rate of corporate entrepreneurship enjoy higher innovation performance or not. Such efforts would be studied in the field of media firms, as these companies have a broad range of audience who follow them. Thus, researchers might focus on its impact on socio-economic development of the regions. Moreover, media corporate entrepreneurship might be operationalized using other frameworks (e.g. see Zahra, 1996; García-Morales et al., 2014; Kuratko et al., 2014). Using other types of questionnaires might improve the generalizability of

the findings. Also, it is suggested that, in future studies, authors pay more attention to institutional factors using North's (1971, 1986) definition of formal and informal institutional factors. Consequently, it is suggested for future scholars to use other operational definitions as well.

By the way, policy makers might improve media corporate entrepreneurship ecosystem in order to enhance innovation performance of the established media firms, and to improve the socio-economic state of the regions. Managers could also give attention to media corporate entrepreneurial activities in order to make their organization more innovative, and to get more audience and to expand their business. There were some limitations as well in conducting this research. For instance, there was no scale for measuring media corporate entrepreneurship, and thus one of the most commonly used models was used in this research. Moreover, data gathering was time consuming and findings the experts were also a difficult task. By the way, most of the respondents were not completely aware of the concept of media corporate entrepreneurship; however, they have already been involved in such activities.

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APPENDIX

I- Questionnaire

Part A:

Gender: Male Female

Experience: less than 5 years 5 to ten years 10 to 15 years more than 15 years

Education: High school diploma BSC MSC PhD or higher

Industry type: Production Service provider

Years of experience: 3 to 5 years 5 to 10 years more than 10 years

No. of new products/services: Less than 5 5 to 10 more than 10

No. of employees: Less than 50 50 to 100 more than 100

Part B:

Please determine the state of your company, based on the Likert scale (1: very low, 2: low, 3: moderate, 4: high, 5: very high).

1. High rate of new product/service introduction, compared to competitors
2. Emphasis on continuous improvement in methods of production and/or service delivery
3. Risk-taking by key executives in seizing and exploring growth opportunities
4. A very competitive 'undo-the-competitor' posture
5. Seeking of unusual, novel solutions by senior executives to problems, via the use of 'idea people'
6. A strong emphasis on R&D, technological leadership, and innovation
7. A bold, aggressive posture, in order to maximize the probability of exploiting potential when faced with uncertainty
8. Active search for big opportunities
9. Rapid growth as the dominant goal
10. Large, bold decisions, despite uncertainties of the outcome
11. Steady growth and stability as primary concerns
12. Number of new products introduced during the past five years
13. Number of product improvement or revisions introduced during the past five years
14. Comparison of new product introductions with those of major competitors
15. Level of significance of new methods or operational processes implemented during the past five years

Part C:

Please determine the state of your company, based on the Likert scale (1: very low, 2: low, 3: moderate, 4: high, 5: very high).

1. number of product changed to total product
2. change in sales (due to product change) to total sales
3. change in profit (due to product change) to total profit
4. number of process changes to total processes
5. change in overall productivity due to product change
6. percentage of expenditure on R&D to total sales
7. number of technologies adopted externally
8. number of patents developed internally

CORPORATE MEDIA ENTREPRENEURSHIP IN PUBLIC SERVICE BROADCASTS: AN EXPLORATORY STUDY OF IRIB USE OF EXTERNAL INNOVATIONS

EMPRENDIMIENTO CORPORATIVO DE MEDIOS DE COMUNICACIÓN EN LAS TRANSMISIONES PÚBLICO DE RADIOTELEVISIÓN: UN ESTUDIO EXPLORATORIO DEL USO DE INNOVACIONES EXTERNAS POR PARTE DE IRIB.

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ABSTRACT

In the age of Web 3.0 and abundance of user generated content, large media organizations are faced with the challenge of creativity. Their internal sources of creativity are limited and they face with many innovative ideas that are presented in social media freely and widely. For this reason, use of external sources of innovation is a key challenge for large media organizations, and particularly for public service media. This research addresses the challenge of IRIB, the Iranian public service broadcast, to acquire external sources of innovation. Theoretical framework of this research has been taken from the theory of efficient media markets, that proposes large organizations have advantage in resources, small enterprises on innovation, and facilitators on contracting. A series of interviews with selected IRIB managers conducted, and analysis of these data showed IRIB has no systematic approach to benefit from users' innovation to address the problem of scarcity of creativity. Some practical suggestions have been provided for IRIB in particular, while several of them might be generalizable to some other large media firms. The findings of this research contributes to corporate media entrepreneurship and how it is fostered by Web 3.0 and social media.

KEYWORDS

Media Entrepreneurship; Corporate Media Entrepreneurship; Creativity, Public Service Broadcast, public service media, efficient media markets, IRIB

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RESUMEN

En la era de la Web 3.0 y la abundancia de contenido generado por los usuarios, las grandes organizaciones de medios se enfrentan al desafío de la creatividad. Sus fuentes internas de creatividad son limitadas y se enfrentan con muchas ideas innovadoras que se presentan en las redes sociales de manera libre y amplia. Por esta razón, el uso de fuentes externas de innovación es un desafío clave para las grandes organizaciones de medios de comunicación, y en particular para los medios de comunicación públicos. Esta investigación aborda el desafío de IRIB, la empresa pública de transmisiones de radiotelevisión iraní, de adquirir fuentes externas de innovación. El marco teórico de esta investigación se ha tomado de la teoría de los mercados de medios de comunicación eficientes, que propone que las grandes organizaciones tengan ventajas en los recursos; las pequeñas empresas, en la innovación y los facilitadores, en la contratación. Se realizó una serie de entrevistas con gerentes seleccionados de IRIB, y el análisis de estos datos mostró que IRIB no tiene un enfoque sistemático para beneficiarse de la innovación de los usuarios para abordar el problema de la escasez de creatividad. Se han proporcionado algunas sugerencias prácticas para IRIB en particular, mientras que varias de ellas podrían ser generalizables a otras grandes empresas de medios. Los hallazgos de esta investigación contribuyen al emprendimiento corporativo de medios de comunicación y cómo se fomenta en la Web 3.0 y las redes sociales.

PALABRAS CLAVE

Emprendimiento de medios; emprendimiento corporativo de medios de comunicación; creatividad, radiotelevisión pública, medios de comunicación públicos, mercados de medios de comunicación eficientes, IRIB

INTRODUCTION

Media industry, like other creative industries, strongly depends on creativity (Malmelin and Virta, 2016; Dwyer, 2016; Mills, 2016; Virta and Lowe, 2017). Creative content is the cornerstone of success of media firms, and in a hypercompetitive industry, the role of creative content becomes more determining (Dekoulou and Trivellas, 2017). Advances in communication technologies and technology convergence has made the media industry hypercompetitive and some new players entered to the field. "In 2013, annual revenue of major media companies (with their parent conglomerates) were just 77.5% of what technological companies such as Netflix, Facebook, Apple, Google and Amazon have earned in the media market (249.69 Billion USD vs. 322.1 Billion USD)." (Cunningham et al., 2015:141). In such a tough competitive industry, that media organizations need to compete with technological firms, user-generated content is also another serious challenge. Technology made the equipment inexpensive so that individuals with a laptop and portfolio of software can act like a small studio of media content production and social media enabled the users to share their products easily and widely (Khajeheian et al., 2018). In such a competitive environment, media companies in general and public service broadcasts in particular have a difficult time to survive and to accomplish their missions.

Van den Bulck et al (2018:11-12) point on three fundamentally important challenges of public service media in the age of networked society and new media: 1) the mentality of mass media that is rooted in the broadcasting heritage, 2) the focus on domestic media services and lack of globalization, 3) the strong and increasingly influential push back from commercial media. McElroy and Noonan (2018) studied the digital innovation in public service media in the country of Wales.

They introduced four myths regarding public service media and networked society: Myth 1: digital distribution leads to end of linear television; Myth 2: public service broadcasts are redundant; Myth 3: power and control have shifted to audiences; and Myth 4: digital media offer universal access to all. (2018: 162-164). Nissen (2016), who was Director General of the Danish Broadcasting Corporation (DR) from 1994 to 2004, reflected the challenges of public service media managers to stay independent and accountable in the middle of civil society and state.

Also PSBs are expected to deal with the market failure (Steemers, 2017). Public service media are expected to deliver the content that commercial media normally decline to produce due to the insufficient demand (Vogel, 2018). Cunningham et al (2015) argue that government's support of Public Service Broadcasts such as BBC in UK, CBC in Canada, NHK in Japan, ABC in Australia and similar cases worldwide, is justified by the nature of public goods that they deliver. However, raise on internet and social media increased the access of ethnics to the contents they want, and some argue that the mission of public service media to provide different groups of society with the diverse content is now fulfilled with the internet. Cunningham et al (2015) show that commercial media and public service media are getting closer to their functions under the new environment of television ecosystem. In such situation, as Jauert and Lowe (2005) argue, the key question in the research on public service broadcasting is the degree of relevance of publicly supported broadcasters in the age of commercialization, convergence and globalization. Undeniably, the idea of participation and the democratic potential of public broadcasters providing ordinary citizens with a voice in the public space has always been a key element of PSB theory and practice (Thorsen, 2013). Several studies showed other functions of PSBs in serving the public interest, such as developing media entrepreneurship. For example, Khajeheian (2014) shows that national innovation systems impact on media entrepreneurship. He also emphasized on the importance of policy making in fostering of innovation and entrepreneurial activities in media industry (Khajeheian, 2016a). Public service broadcasts serve and support social norms (Frank et al, 2012), that positively effect on entrepreneurial actions (Emami and Khajeheian, 2019).

In Iranian context, Islamic Republic of Iran Broadcasting (IRIB) acts as the exclusive national broadcast. According to Principle 7 of Article 75 of the Constitution of the Islamic Republic of Iran, the national media of Iran belong to the entire nation and must reflect the life and circumstances of all the different ethnic groups of the country. In the 2025 vision of the Islamic Republic of Iran, the national medium (Resaneh Melli in Persian) refers to the IRIB organization that is obligated to save the public interest and must serve the public goals and values of the nation (Alavivafa, 2017).

Until last two decades, the major portion of content production in IRIB had been in-house. Huge investment in physical and human resources and vertical integration from production of news on the scene to terrestrial distribution of frequencies and signals, enabled this large organization to manage all production processes inside. Access to funds and small number of media alternatives, that were limited as

published media, made this large organization a favorable destination for creatives and it was easy to acquire innovative ideas by calls and also by hiring innovative people to create content. At the other side, limited alternatives for entertainment and information, make no choice for audiences unless watching IRIB programs.

However, in last two decades and due to severe competition from satellite television channels as well as internet and then mobile-based social media, audiences found more alternatives and choices to consume creative contents. For this reason, the organization acknowledges the need to cooperate with external sources of creativity to present novel and innovative content. From that time, the new structure for catch of external innovation implemented and outsourcing of production became as a routine. However, quick and diverse provision of content in social media encouraged creative talents to operate in social media (Burgess et al, 2006; Sigala and Chalkiti, 2015; Khajeheian, 2016b; Labafi and Williams, 2018) instead of being involved with static stricter and slow decision making processes of IRIB. As internal sources of creativity are limited (Khajeheian and Tadayoni, 2016; Khajeheian and Friedrichsen, 2017), the organization is in a severe need to acquisition of creative talents and innovative ideas. For this reason, the research problem of this paper is that “how IRIB can use external sources to feed creativity to serve the public audience?”

LITERATURE

The area of corporate media entrepreneurship has been studied rarely. Hang (2016) authored the only book in this subject and provided some cases about how a media organization can entrepreneurially manage the resources to create value. In 2019, the new launch *Journal of Media Management and Entrepreneurship (JMME)* contributed in developing this concept by three research articles: Tokbaeva (2019) studied the Russian media entrepreneurs and how they used the opportunities in an emerging market under digital media presence. Sreekala Girijia (2019) showed how digital news media enterprises in India employ commercialization and commodification as a business model to survive in the market. Finally, Horst and Murschetz (2019) discuss how strategic media entrepreneurship help media organizations to explore and exploit opportunities, to manage human resources, to build networks and to drive creativity.

At the other hand, the topic of creativity in IRIB has been studied in many researches. Roshandel Arbatani et al (2013) studied the challenges of creativity in this organization and proposed a model of human resource development. Karimi and Salavatian (2018) proposed use of gamification to get benefit of audience creativity as a competitive advantage for IRIB. Darvish and Nikbakhsh (2010) studied the relationship between social capital factors and knowledge sharing in research department of IRIB. Ghasemi (2013) studied the challenges and motivations of women in this organization. Ansari et al (2015) identified and ranked the factors that

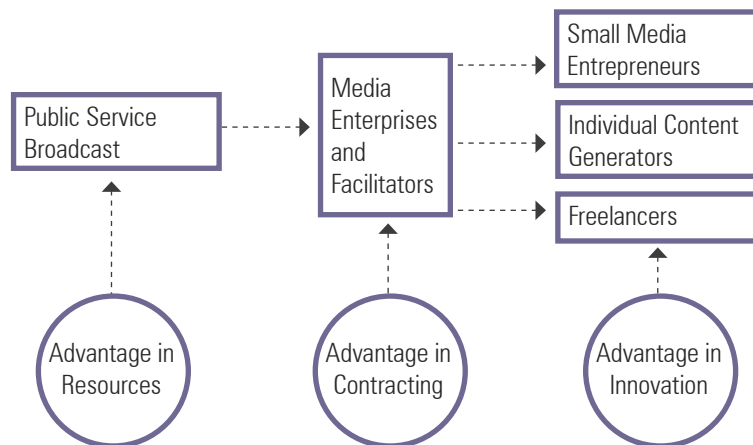
impact on creativity in advertising in IRIB's commercials. Darvish (2011) showed that entrepreneurial orientation impacts on employee empowerment in IRIB. Motaharrad et al (2014) examined the effect of in-service entrepreneurship training on the level of entrepreneurial activities of IRIB managers. Tahami and Nasirian (2016) proposed a model for human resources strategic management in IRIB and showed that human resource strategic management has a positive effect on innovation capacity as well as performance in this organization.

RESEARCH MODEL

The theoretical model of this research has been taken from Khajeheian and Tadayoni (2016) study of Danish PSB (DR) and how this organization can benefit from user innovation as an external source of creativity. Their model, that is in turn based on Eliasson and Eliasson (2005), suggests that PSBs enjoy from advantage of resources; users and small media entrepreneurs have advantage of innovation; and medium-size media enterprises that benefit from their advantage in contracting, facilitate and connect these two. Therefore, the strategic competency theory is developed as the model of Khajeheian and Tadayoni theory of efficient media market.

Current research is based on this theory of efficient media market and seeks to understand how IRIB can access to sources of innovation and creativity that are existed inside the Iranian public audiences, and in this regard how much Iranian media market is rich with media enterprises as intermediators and facilitators to connect IRIB to these sources.

Figure 1. Efficient Media Market as Theoretical Framework



Source: Khajeheian and Tadayoni, 2016

METHOD

This research is explanatory in nature; and therefore a qualitative approach has been selected. The sample of study consists of a number of top-ranked to middle-ranked managers of IRIB who accepted to participate in the interviews. They are selected by purposeful sampling, that helps the researchers to target the people who are rich sources of information. The means of data collection is in-depth interview, so that the researcher as interviewer defined the problem and asked some open questions about the process of innovation management. then based on the answers and expertise of interviewee, new questions generated and asked. Interviews recorded and then transcribed. To interpret and analyze the collected data from these interviews, theme analysis used as the method. Transcriptions coded in three levels of open, axial and selective codes, and then researchers extracted patterns of data to understand and analyze the way IRIB access to external sources of innovation.

The sample include the interviewees that is listed in Table 1.

	Interviewee	Title	Organization
1	E1	Senior consultant of innovation director	MCI
2	M1	Deputy of Nasim & Namayesh channels	IRIB
3	M2	Director of communication and international cooperation of Press-TV, Hispantv and Ifilm	IRIB
4	P1	Media producer of Ofogh channels	IRIB
5	M3	Head of center for information technology and digital media development	IRIB
6	M4	Head of Saba animation center	IRIB
7	M5	Information and planning director of Saba animation center	IRIB
8	M6	Director general of international affairs	IRIB
9	M7	Press-TV webmaster	IRIB
10	M8	Press-TV director of documentary production	IRIB
11	M9	Deputy of channel 2	IRIB
12	E2	Media entrepreneur	
13	M10	Deputy of channel 5	IRIB
14	M11	Press-TV production manager	IRIB
15	M12	Press-TV producer	IRIB
16	P2	Independent producer	
17	E3	Media entrepreneur	

FINDINGS

Analysis of interviews produced 60 codes. Researchers classified these codes into five major categories namely, external innovation, corporate entrepreneurship, facilitators, externally-sourced ideas, and co-creation. Interviews show that IRIB outsources a large portion of its content to external producers. For example, Channel 3 outsources about 80% of its programs and Channel Nasim, one of the most successful channels, almost outsources all its programs. Also two of most popular programs, namely *Khanevadeh* and *Dorehami*, are produced outside of the organization and the ideas behind them are also raised externally. The sample consensed on the need to actively interact with audiences to understand their ideas and even more, to allow them to participate in the production process of programs.

Category 1: External innovation

As table 2 shows, the involving factors in this category include two classes of user innovation and media enterprises.

Table 2. External innovation

External innovation	User innovation	Users (Audiences) are one of the most important sources of innovation
	Media enterprises	Innovator team, Small productions, Low credit,

i. User innovation

While creative ideas are the cornerstone for success of media companies in a hypercompetitive market, finding good ideas is becoming harder and harder. In such condition, external sources of ideas are a bless and audiences are such a source of creativity:

{10M5} The capital of each media organization is the audience; of course, an active audience that can provide ideas to the media.

IRIB acknowledges these ideas and have started to welcome the external ideas and to convert them to some real products:

{1M6} The channel Nasim treats all ideas and creations openly. The network is not limited to the internally generated ideas.

And:

{1M29} The most popular TV programs have taken their ideas from the creative sources that are out of the organization.

And:

{4M21} We are not a creativity crew. Our task is to be able to accomplish our mission in a limited time. For example: Kannon-e-Parvaresh-Fekri (the Children's and Adolescent Center for the Advancement of Innovations)

Also IRIB has a well-tied relationship with some external creative organizations, such as Kannon-e-Parvaresh-Fekri (the Children's and Adolescent Center for the Advancement of Innovations), or Ammar Film Festival as a source of external creativity for students and children.

{1p6} Popular productions such as the documentaries of the Ammar Film Festival have been able to fit into TV antennas in recent years on various topics.

And:

{3M27} PSB can be converted into a creative and postmodern media, if it uses external creative elements.

And

{7M30} Interactive TVs (IPTV) have pushed the PSB to move toward the PSM, which is the way to use external creativity.

ii. Media enterprises

Media enterprises, that are usually small firms that founded by creative teams, are identified as another source of creativity:

{1E7} These enterprises are able to turn their small ideas into a professional product.

And:

{2E11} We have such productions as teaser, short films and short films that have an idea from enterprises' teams.

And:

{1E25} As we (as media enterprise) have not the sufficient resources to produce the content from our idea, we rely on the credibility and resources of large media companies or government authorities such as the Ministry of Culture.

Category 2: Corporate Entrepreneurship

Table 3. shows the codes that are classified as Corporate Entrepreneurship

Corporate Entrepreneurship	Barriers to use creative ideas	Intra-organizational barriers, Outside organizational barriers
	The mechanism of using creative ideas	systematic , non-systematic
	Idea evaluation	experts inside and outside the organization
	Implementing Ideas	Outsourcing, Outsourcing Essentials

iii. Barriers of using creative ideas

The Barriers to the absorption and use of creative resources outside the organization are divided into two broad categories: Intra-organizational barriers and Outside organizational barriers. Intra-organizational barriers, including organizational bureaucracy, mechanical and very large organization, organization aging, Lack of managerial risk appetite, organizational, missions, lack of organizational culture to attract new ideas, financial constraints and time. The most important barrier is the lack of a regular mechanism for attracting ideas. Outside organizational barriers include the lack of culture of ideas in society and the missions of the sovereignty.

{1M1} IRIB is a large and static organization.

And:

{7M39} The average age of top managers is high, which is one factor for not using creativity. Successful media worlds like Google have an average age of managers and their employees under the age of 30.

And

{13M10} The financial problems of the organization have caused us to not pay enough for the outside ideas of the organization.

And:

{8M1} In the context of our news, we cannot trust the audience completely, they may not know the news or make false information and, as a result, reduce the credibility of the IRIB.

And:

{2M1} The organization is linked to the senior elements of the government, like the three forces of the system. Representatives are also involved in decision-making processes.

iv. The mechanism of using creative ideas

The mechanism for using creative ideas is twofold: systematic and non-systematic. In addition, each network has channels in the cyberspace and website that communicates with its users.

{4M20} The entrance to the plan section is open, via email, Intermediaries and websites, users can give us ideas.

And:

{10M30} Our communication with outside the organization is of two types: systematic and non-systematic. In a systematic way, ourselves, based on scientific methods, study a sample of society. We make targeted sampling that reflects the desire and need of the audience. In non-systematic, public relations, the organization always receives audience opinions

v. Idea evaluation

The evaluation of ideas is done through the experts inside and outside the organization. Experts are those who are aware of the missions and rules governing

the organization. They know the principles and rules of programming. They are aware of the priorities, capabilities, infrastructural and technical capacities of the media.

{8M7} We put forward ideas in the unit layout and network plan. Decisions about using ideas in the design unit occur.

And:

{4M9} We announce our production priorities in the beginning of the year. The relevant experts who are professional and who know the rules and priorities of the organization, comment on ideas.

vi. Implementing Ideas

Implementation of ideas in most cases occurs through outsourcing. In outsourcing, acceptable ideas are given to companies or individuals to come to the production stage. These people must have the characteristics, including the reputation, popularity, experience, technical skills, knowledge, financial capital, strong human links with individuals and institutions. Companies should also have the characteristics; familiar with the missions and rules of the organization, sufficient financial credit, have the necessary technical infrastructure, reliable and efficient human resources. Advantages of using creative ideas. If the user or the creative company has sufficient conditions, they can execute their plan.

On the whole, in few cases, the organization pays out the costs of producing creative resource ideas outside the organization unless it is able to cover one of the important missions of the organization:

{5M2} All our products are outsourced at Saba Center. Products are deposited with suppliers or private companies.

And:

{1M22} If the idea has a sponsor, we will be prioritized in our evaluation.

And:

{1P5} TV shows include news, documentaries, movies, inter-program and serials, with the exception of news in other cases, the possibility of outsourcing is high. Most outsourcing is in the midst of the program.

And:

{4M9} At the first step, we identify professionals. They should have the necessary equipment and expert staff.

And:

{12M8} When the innovator and producer of the program are the same. It has been cost effective for the organization. We do not have the money to produce. They produce and we play.

Category 3: Facilitators

Khajeheian (2013) expands the theory of strategic acquisition. He proposes that an efficient market provides the possibility of a match between large companies and

small ones by facilitators. Though enterprises have an advantage in innovation and large companies have competencies in operation and access to resources, facilitators converge these advantages and create new opportunities by bridging the small and large companies. In this theory, innovations come from small enterprises (including individuals and users) and develop to professional products by large companies.

The findings of this study showed two categories of facilitators: Suppliers and large media companies independent of the IRIB.

Table 4. Facilitators

Facilitators use innovation	Suppliers	Creative staff, Different performance evaluator, Visible to national interests, Leader, Familiar with the programming
	large media companies independent	Capitalist company, Validated, competition market

Suppliers are employees who, even if they are employees of the organization, are not evaluated like other employees of the organization. They are judged by their outcome and also do not have to spend their time in the organization as a creative workforce. They can freely communicate outside the organization with foreign creative resources and use the resources of these resources:

{1E8} The suppliers are a bridge between us and the IRIB.

And:

{7M16} If we can connect creative sources outside the organization to suppliers, we can expect that these innovations will quickly become a product.

And:

{7M18} The Supplier is the person who offers the project to the network, attracts it to the sponsor and receives it. Due to its connections in the network it can approve its design.

Subsequently, large media corporations are massive financial backers, like the Owj media organization:

{2E8} We sell our ideas and our media products to institutions or organizations that have access to IRIB.

Category 4: Externally Sourced-Ideas

The findings of this research show that the factors that make ideas outside the organization accept and produce both depends on the idea and on the one who gives the idea.

Table 5. External ideas

External ideas	Idea features	Not repeat, Matching missions of the organization, Not general
	innovator Features	Credit, Media reputation, Experience, Knowledge Popularity, High human communication, financial support, Awareness of the missions, structure and technical infrastructure of the organization

{1M21} *The ideas that are initiated are the chances of their being implemented.*

And:

{1P12} *Individuals can give ideas and produce, but they must have a background, especially if the organization wants to allocate a budget for their ideas and work.*

And:

{3M40} *To be successful media must use a competitive environment, but currently the PSB is known only to the Celebrities and directors.*

And:

{7M12} *Imagine if a student enters the organization and says that I have this idea, it's hard to get his idea to the focal point.*

Category 5: Co-Creation

Through co-creation, one can create a deep relationship with the audience

Table 6. Co-creation

co-creation

co-conception of ideas, co-production, co-outsourcing, co-promotion

{1M25} *Our network has a consistent relationship with successful private media companies out of the organization.*

And:

{1P11} *IRIB sponsors some of the ideas and in some cases allows production outside of the organization to be distributed from the television antenna.*

And:

{3M9} *Creative users are basically not big capital And they connect themselves to where they have capital and facilities. Media providers provide infrastructure and media makers create ideas. IRIB supports media makers in the virtual domain.*

And:

{4M21} We are a government employer and we are sponsoring intellectual supporters. At each stage, we have a representative who will help it with the foreign producer.

And:

{10M16} We produce ten percent of the 90 program in the organization, and

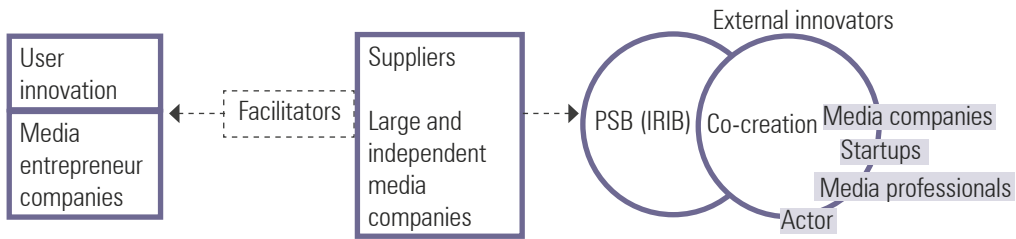
DISCUSSION

This exploratory research aimed to understand how a large media organization like IRIB uses the external resources to present value to its target audiences. The findings of this research confirm the results of a similar study that Khajeheian and Tadayoni conducted in Danish Pubic Service Broadcast (DR). in both cases, the organizations emphasize on professionalism of content and for this reason they rely on the internal production abilities. on the other hand, the major difference is that in the Danish Market there are some intermediaries such as nordiskfilm and metronome that facilitate use of external innovations. In contrast, Iranian market lacks such facilitators and IRIB needs to communicate directly with users and enterprises. This difference supports the idea of efficient media market, that implies existence of intermediaries with advantage in contracting helps the large and small organizations to get benefit of each other with lower transaction cost.

The findings also confirm the study of Khajeheian and Ebrahimi (2020) that showed social media of newsmidia can encourage audiences to participate in co-creation of value. It can be concluded that digital platforms such as Enterprise social media (Khajehean, 2018; Leonardi et al, 2013) are the tools that can be used for co-creation of value by stakeholders. the co-creation as an activity that can be perform not only between the organization and audiences, but also among the audiences, media enterprises and the organization.

Thus, the main contribution of this research is to confirm the theory of efficient media market, and to show that there are differences in the national environments that PSBs operate in. when a Public Service Broadcast operate in an efficient media market, it has the chance of access to the external innovations more easily. In contrast, operating in an inefficient media market, limits the access of PSB to external sources of creativity that are existed in the society. The results of this study emphasize on the need of media policy making to foster the creation and growth of intermediaries and to develop facilitators to make their operating media market more efficient.

Figure 6: A Depiction of a framework for IRIB's use of external sources of creativity



LIMITATIONS AND RECOMMENDATIONS

The findings of this research suggest the IRIB managers and policy makers to encourage some middle-level firms to conduct the role of facilitators. Such firms will connect with users and small media enterprises; identify and evaluate their innovations; and introduce the best ones to the large media organization for production. These firms can primarily be established as spin-offs and with support of IRIB, or can be picked from the existing small media enterprises with a social capital to growth as an intermediary.

This research is mainly limited to the sample and tools. The sample is limited because of the difficulty of access to top ranked managers for such a research. 17 managers are fewer than the required number to generalize the results of this study and it is recommended that in the next studies, researchers cover a larger sample. Another limitation is the means of data collection. interview has some limitations to extract the knowledge of interviewee and it is very depended on the skills of the interviewer. For this reason, the authors suggest the future researchers to use a combination of means to collect the data from a more diverse sample of respondents.

The followings are some suggestions for future researches to advance the subject of this study and contribute to the field:

- To study the proper structure for public service media to act entrepreneurially to use its resources for delivering value;
- To study the efficient process of identification of sources of creativity and exploiting them by PSBs;
- To research how the policy making can develop efficient media market;
- to study the incentives and motivations of media firm to undertake the role of intermediaries to connect the external innovation and PSBs.

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DIGITAL BRANDS AND WEB 3.0 ENTERPRISES: SOCIAL NETWORK ANALYSIS AND THEMATIC ANALYSIS OF USER ACTIVITIES AND BEHAVIORAL PATTERNS IN ONLINE RETAILERS

MARCAS DIGITALES Y EMPRESAS DE LA WEB 3.0: ANÁLISIS DE REDES SOCIALES Y ANÁLISIS TEMÁTICO DE LAS ACTIVIDADES DE LOS USUARIOS Y PATRONES DE COMPORTAMIENTO DEL COMERCIO MINORISTA EN LÍNEA

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ABSTRACT

Considering the importance of web 3.0 enterprises in online retailing, this article addresses how these enterprises operate in the Iranian context. DigiKala is an online retailer that has been one of the most successful Start-ups in Iran and has gained the 85-90% of the online retailers market of the country. This enterprise has started to evolve its value chain to a platform business. On the other hand, twitter as a free social networking microblogging has been one of the most important tools in the online market, as customers, especially on digital markets, share their positive and negative comments in regard with their purchase experience. In this research, firstly social network analysis (SNA) method used to understand the relationships and individual nodes in the network. Then, the thematic analysis method applied to analyze the sent tweets to achieve users' behavioral patterns. Using different social media, like Twitter, and sharing the feedback is also valid for Digikala as a web 3.0 enterprises. This research studied the network of tweets in a special event, namely Black Friday, which DigiKala offered considerable discounts for the customers. Some implications of our study are also presented at the end of this article.

KEYWORDS

Web 3.0 enterprise, Social Network Analysis, Thematic analysis, E-commerce, Customer Behavioral Pattern, Digikala, Online Shopping, Twitter

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RESUMEN

Teniendo en cuenta la importancia de las empresas Web 3.0 en el comercio minorista en línea, este artículo explica cómo operan estas empresas en el contexto iraní. DigiKala, es un minorista en línea que ha sido una de las empresas emergentes (*start-ups*) más exitosas en Irán y ha ganado entre el 85 y el 90% del mercado de minoristas en línea del país. Esta empresa ha comenzado a transformar su cadena de valor hacia un negocio de plataforma. Por otro lado, Twitter como *microblogging* de redes sociales gratuito, ha sido una de las herramientas más importantes en el mercado en línea, ya que los clientes, especialmente en los mercados digitales, comparten sus comentarios positivos y negativos con respecto a su experiencia de compra. En esta investigación, en primer lugar, se utilizó el método de análisis de redes sociales (SNA) para comprender las relaciones y los nodos individuales en la red. Luego, se aplicó un método de análisis temático para analizar los trinos (*tweets*) enviados para lograr los patrones de comportamiento de los usuarios. El uso de diferentes redes sociales, como Twitter, y compartir los comentarios también es válido para DigiKala como empresa Web 3.0. Esta investigación estudió la red de *tweets* en eventos especiales, a saber, el *Black Friday*, en el que DigiKala ofreció descuentos considerables a sus clientes. Algunas implicaciones de nuestra investigación también se presentan al final de este artículo.

PALABRAS CLAVE

Empresa Web 3.0 enterprise, análisis de redes sociales, análisis temático, comercio electrónico (*E-commerce*), patrón de comportamiento del cliente, DigiKala, compras en línea, Twitter

INTRODUCTION

Web 3.0 is empowered by technologies of co-creation (Ciasullo, Troisi, & Cosimato, 2018; Martínez-Cañas et al., 2016) and has characterized by enabling cooperation (Fuchs, 2017). This generation of web has evolved the linear businesses into platform businesses (Parker, Van Alstyne, & Choudary, 2016) in a way that different stakeholders exchange the value they are seeking for in the Web 3.0 enterprise platform (Reillier & Reillier, 2017). In such context retailers evolve from owning of resources to control of exchange (Choudary, 2015) and global online retailers such as Amazon adopt platform-based ecosystems (Reillier & Reillier, 2017). In such dramatically evolving business environment, there are many opportunities for digital retailers to act entrepreneurial action (Achtenhagen, 2017; Khajeheian, 2016; Labafi & Williams, 2018). To address niche markets (Khajeheian, 2017) that exchange of information, commodities, and content (Parker et al., 2016).

Web 2.0 (and 3.0) also characterized by feedback, that enabled and required companies to listen to their customers to get more information about their choices and interests (Cogburn & Espinoza-Vasquez, 2011; Thackeray et al., 2008). In such case, Social networks allow users to disseminate their opinion and feeling about brands and companies' services and products and also their purchase experience (Choi et al., 2014; Ibrahim & Wang, 2019; Maia, Almeida, & Almeida, 2008). They express their opinion in different ways such as tweet, retweet, mention, like and follow other users. In the age of e-commerce, these activities and behaviors about brands provide useful evidences and information for decision makers to discover the opportunities, solve their weaknesses and provide better customer services (Maia, Almeida, & Almeida, 2008). During an event like as Black Friday, the social media users' activities strangely

increases (Choi et al., 2014; Simpson et al., 2011). Digikala as a digital business in the online retail field is one of the Iranian most successful Start-up (Bagheri et al., 2018; Bakhshizadeh, Haji Jafar, & Nasiri, 2018) which holds Black Friday alongside the whole world. Black Friday in the USA is the day after Thanksgiving. Black Friday considers as the busiest day of the year for many sellers. Although North America is the main venue for this ritual, like many other rituals in the area, Black Friday has also spread to other countries such as Iran. Retailers and recently online stores are taking part in the event for making more profits. In this situation, the success of online stores depends on tracking social networks in which users share their feelings and opinions freely there. While the quantity of users' interaction about brands in twitter is enormous, our understanding of customers' perception is so limited. So, to identify users' activities and behavioral patterns, the researcher should be familiar with the methods of identifying the behavior of the users in social media (Maia, Almeida, & Almeida, 2008). To achieve this goal, the current research deployed the social network analysis to identify users' connections through gathering data from twitter between 7/11/2018 and 1/12/2018. So, the gathered data is used to compose the set of users who used #Digikala and have shared their social information with other users on Twitter. Additionally, we have used thematic analysis in order to extract the underlying layers of users' activities on Twitter during Black Friday about Digikala services before, during and after sales. Contributions of this research on one hand are to extract users' connections around #Digikala in Black Friday, which is the best way to identify the influencers and other users in emerging and forming of specific behavioral patterns and on the other hand, we have used thematic analysis method to analyze the users' activities and extract the underlying layers of their behavior.

LITERATURE REVIEW

Digikala is considered as a successful Iranian startup in e-commerce (Bagheri et al., 2018; Bakhshizadeh, Haji Jafar, & Nasiri, 2018). As this platform-based startup sells various electronic products, it provides a reliable way for many firms to sell their products. Digikala's market share in online retail business in Iran is 85-90% and it is considered as an Iranian equivalent of the "Amazon" (Bagheri et al., 2018; Malehmir, Maeen, & Jahangir, 2017) and is a widely visited online shop in the Middle East. Digikala's customers can refer to previous experiences of other customers at the time of purchase. Therefore, it is essential for firms to have a strategy to communicate with these users and make them loyal customers (Kaplan & Haenlein, 2010; Munger & Zhao, 2015). Surprisingly, in addition to registering their purchase experiences on the site, customers publish their feelings and experience on social networks as well (Chappuis, Gaffe, & Parvizi, 2011; Qualman, 2013). Choi et al. (2014) and Ibrahim and Wang (2019) argued that Social Network Services users tend to express their emotional status about specific events which provides information for other users. Choi et al. (2014) investigated the social influence among users in their communications. Their results showed that users during evening are happier

than afternoon times. It is clear that social media platform have appeared as a predominant digital communication tool on which customers can search and share information. Additionally, Social media offers the potential for generating awareness and passion by the viral or quick spreading of product and service experiences and ideas (Berger & Milkman, 2012). In conclusion, companies drive a proactive approach for engaging in new social media marketing strategies and plans (Marsh, Richardson, & Schmidt, 2009).

Simpson et al. (2011) studied the positive and negative behaviors that costumers demonstrated during the Black Friday shopping. Yadav et al. (2013) considered social network from a marketing perspective to create value for firms. Based on social commerce definition, researchers have developed a framework to assess marketing potential of social media for firms. Lennon, Johnson, and Lee (2011) investigated the misbehavior of Black Friday consumers in shopping which harmed other consumers and retailers. Moreover, the research surveyed the consumers' behavior in the real world, during their shopping experience. Hennig-Thurau et al. (2010) demonstrated that social media users similar to marketing agents have changed business models and also affected companies on understanding their customers' behavior and the way they can influence them. Hornikx and Hendriks (2015) by a quantitative content analysis of 1,920 Dutch tweets for 24 different brands showed that services received remarkably more negative sentiment tweets than products. Another research showed that negative information may alter brand perception and create negative word-of-mouth, with notably impact on future purchase intentions. (Chiosa & Anastasiei, 2017).

Hanna, Rohm, & Crittenden (2011) believed that companies' view on social media should be aligned and integrated with their other strategies and have the customers' experiences as a priority in this system. They emphasized that the nature of the interchanges between firms and their customers in web 3.0 is completely different with this relationship in web 2.0 approach and it is really common for customers to use their electronic devices as a tool to influence brand image of the companies and share their opinions on their purchase experiences.

Social networks users have become a vital player of the businesses and their interactions and activities about online purchases are inevitable (Maia, Almeida, & Almeida, 2008; Munger & Zhao, 2015). Customers additionally help businesses to improve their services, while exchanging information about the services or products. Social media have evolved the relationships between companies and customers. Users in social media share their comment-positive and negative- about products and services which boost the process of troubleshooting in businesses. Social media users communicate and exchanging information by creating content, like, inviting friends, sending message to other users and many other activities (Evangelopoulos, Magro, & Sidorova, 2012; Gallagher & Ransbotham, 2010; González-Ibáñez, Muresan, & Wacholder, 2011; Ibrahim & Wang, 2019; Kaplan & Haenlein, 2010; Munger & Zhao, 2015).

Social media allow consumers to easily share positive or negative information about a brand with other consumers and it may affect brand reputation of the businesses, and Twitter is among the priorities in this social media (Hornikx & Hendriks, 2015). Twitter as a popular social network service, provides a platform to express feeling and information sharing between users with no serious constraint (Choi & Kim, 2013). So, Twitter includes a set of positive and negative comments and streams regarding diverse events, like Black Friday. Recently, identification and analyze of the user's activities and behaviors related to significant events are attracting the attention of many researchers (Choi & Kim, 2013; Evangelopoulos, Magro, & Sidorova, 2012; González-Ibáñez, Muresan, & Wacholder, 2011). Among social networks, Twitter is distinguished as a social media which users can, write and publish opinion without censorship, and also unlimited activities such as communicating, tweet, retweet, mention, and using hashtags in making trends (Amati et al., 2016a) or forming Twitter streams (Amati et al., 2016b). The Twitter streams have the potential to affect the reputation of a business, and it provides evaluative information about brands (Amati et al., 2016b; Hornikx & Hendriks, 2015). User praise about a brand shines like a star in social network and users' critics remain on the Internet like a stigma (Kaplan & Haenlein, 2010).

The attitudes of social media users over advertisements are under the impression of the expressed opinions of other users in social communities (Chiosa & Anastasiei, 2017; Zeng & Wei, 2013). Users' web surfing produces a good understanding towards, sharing knowledge and interaction between them in which will have great effects on the businesses (Chiang, Hui Lo, & Wang, 2017).

Information, thoughts, and views of a product or service on social networks can be shared by social media users easily (Wang & Chang, 2013), when they communicate with each other which is being intensified by voluntary information gathering and sharing behaviors (Dholakia, Bagozzi, & Pearo, 2004; Marsh, Richardson, & Schmidt, 2009); and use of the platform can be resulted in more interaction with other users (Dholakia, Bagozzi, & Pearo, 2004). Chiosa and Anastasiei (2017) argued that, the connection between the customers' emotional trust for an online vendor and their intention to purchase from that vendor is moderated by Electronic word-of-mouth (eWOM). Chiosa and Anastasiei (2017) defined eWOM as "a consumer-generated information and idea about products and brands shared online (through social media, online communities, etc.)." Holding the major character that social media is playing in our life, people figured out a simple way to express negative word-of-mouth. Negative consumer-generated social media messages can play havoc on a company's brand image (Thomas et al., 2012). While Twitter supports e-WOM (Bulearca & Bulearca, 2010), Jansen et al. (2009) emphasized on the importance of twitter as a form of e-WOM in marketing strategies which needs to be tested in business context. Bulearca & Bulearca (2010) argue that misuse of social network, including Twitter impacts negatively on the effect of e-WOM.

METHODOLOGY

This research is aimed to understand the users' activities and behavioral patterns around DigiKala brand on twitter and during Black Friday.

Population and Sample

The population of this research is people who have tweeted #DigiKala both in English and Persian languages between 7/11/2018 and 1/12/2018 during a week after, before and on Black Friday event. For this reason, in the first stage researchers searched #Digikala to extract nodes which include the users who have used this hashtag and also to discover their relations with other Twitter users who tweeted this aimed hashtag (#Digikala).

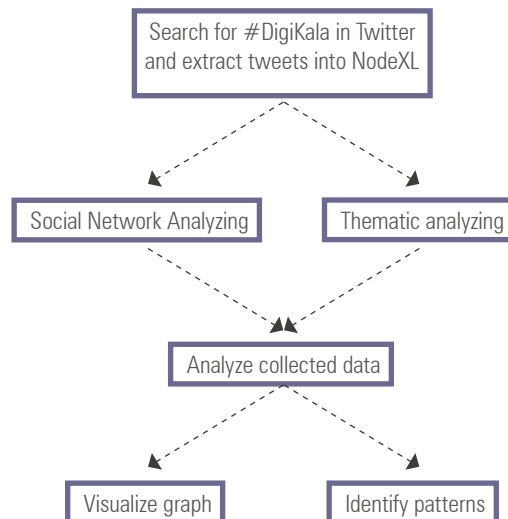
Data Analysis

To answer the main questions of this research, the "Thematic Analysis" and "Social Network Analysis" methods has been used. This research conducted by network analysis method. Social network analysis is a science of analyzing and studying the relationship between people, things or organizations (Smith et al., 2009). Twitter data is collected directly by using NodeXL to overcome the limitation of Twitter to collect it. Also for illustrating graph NodeXl is used. In the second stage with thematic analysis approach, tweets were encoded with the sampling capability based on the theoretical saturation rule with MAXQDA 2018 software in two stages: open and axial.

Research process

The process of research is shown in figure 1.

Figure 1. Research process

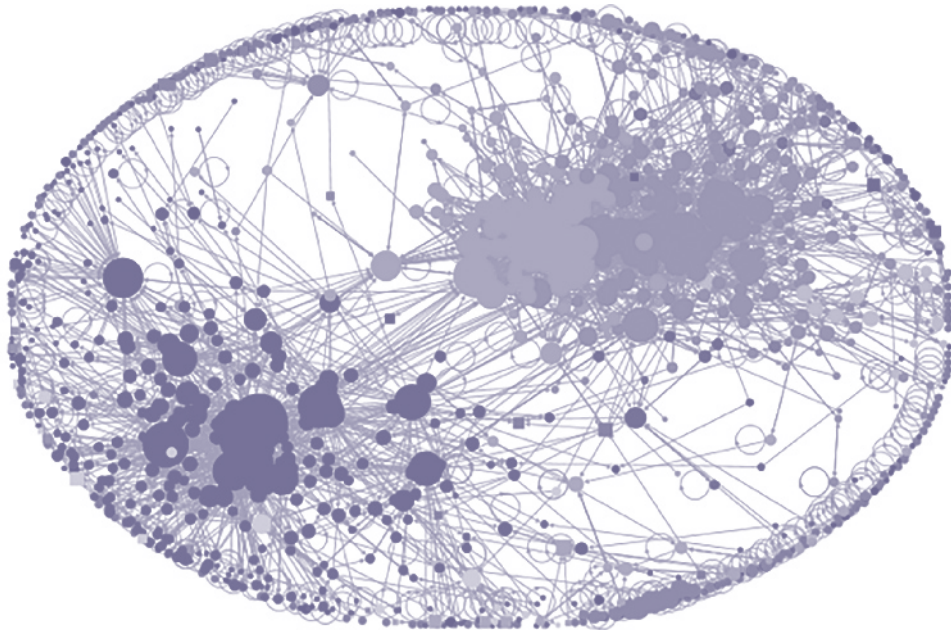


RESULTS

Social Network Analysis Results

Figure 2. shows DigiKala's network graph around Black Friday on Twitter. Each box shows the nodes which are in the same community and attributes. Node sizes are set up based on their degree. This graph is represented by Fruchterman Reingold algorithms. Nodes indicated the individual and the edges and links show the relationship between them.

Figure 2. The network graph of DigiKala around Black Friday on Twitter



Graph Metrics

As Shown in table 1, the graph network of DigiKala is formed by 1061 vertices and 4015 edges. The diameter of a connected graph is the maximum distance between two vertices. The eccentricity of a vertex is the maximum distance from it to any other vertex (Harary, 1994). There are 1872 Edges with Duplicates, and the graph type is undirected. Also, the diameter (Maximum Geodesic Distance) of the graph is 10 and its radial is 0. Therefore, the distance among the nodes is 10. The average path length is 3.926347. So the distance of each node from the next one is 3.926347.

Table 1. The graph metrics of DigiKala

Metrics	Value
Graph Type	Undirected
Vertices	1061
Unique Edges	2143
Edges With Duplicates	1872
Total Edges	4015
Maximum Geodesic Distance (Diameter)	10
Average Geodesic Distance	3.926347

Source. Made with NodeXL www.smrfoundation.org/nodexl/

The degree is the number of edges connected to the node. The average degree is 5.623. It means that on average, every node is connected to 5.623 edges. The graph density refers to the number of edges available to the number of possible edges, and it shows the level of internal connections of nodes. The density of this graph is 0.004, and it notes that it's not a very dense graph.

Closeness centrality is the average distance of a node from the rest of the graph's nodes. This is a node that can reach more nodes through shorter paths. Closeness centrality of this graph is 0.05. It shows that the closeness of nodes is high, so the distribution of information has occurred in a short time.

Betweenness centrality is the number of times a node or edge located on the shortest path among different nodes of the graph, and it indicates the location of the individual which can connect other nodes or groups (Smith et al., 2009). The betweenness centrality of the graph is 949.27. It pointed out that nodes can easily connect to potential nodes and share their information.

Eigenvector Centrality calculates the importance of nodes based on neighbor nodes. If a node is connected to significantly importance nodes, then it will be important too. The eigenvector centrality of the graph is 0.001.

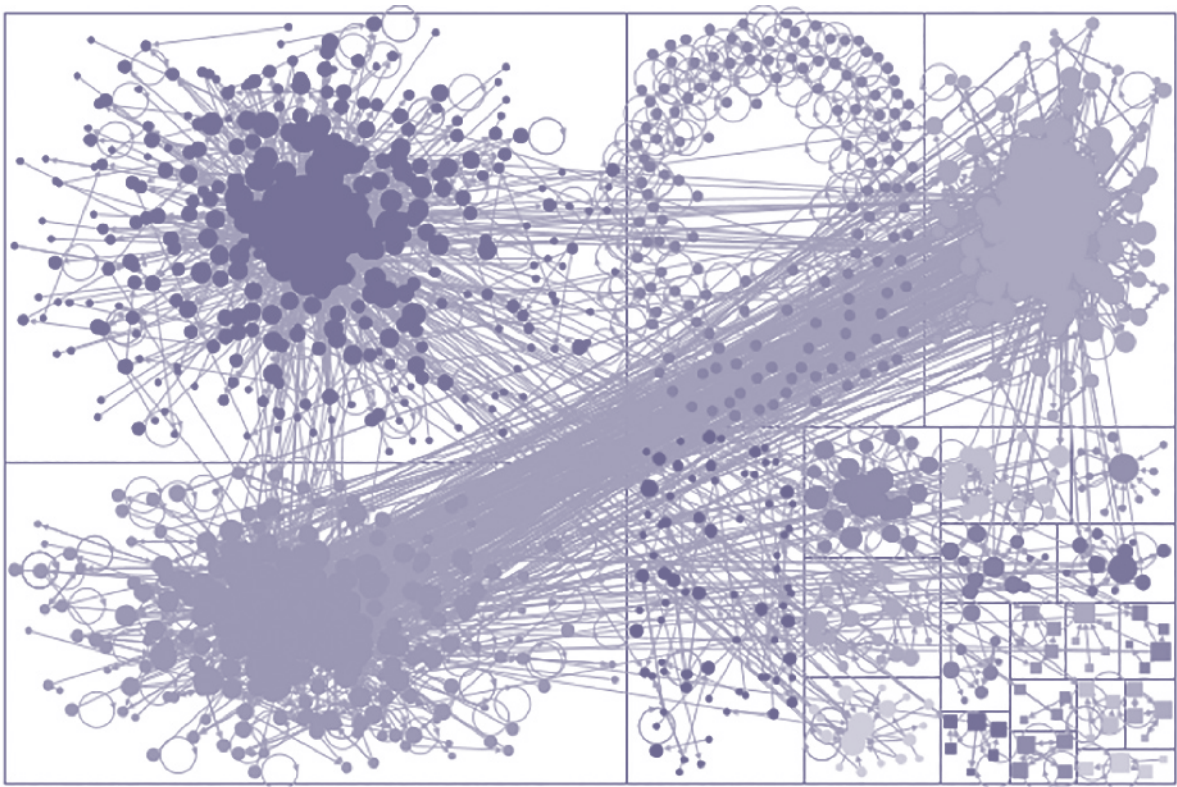
The clustering coefficient is a measure of connection of a person's friends to each other. The higher number means that the person is located in a more concentrate cluster and the people know their connections better (Yusheng, Shang, & Yang, 2017). The clustering coefficient of this graph is 0.177.

Detecting community of graph

Community discovery in the graph is one of the essential exploration issues in the graph, which has many uses in various areas such as network data analysis, social networking, and biological networking. "Communities are groups of nodes that have high connectivity within a group and low connectivity across groups. Communities roughly correspond to organizations and groups in real social networks" (Campbell, Dagli, & Weinstein, 2013).

The following picture shows the formation of nodes in the community. In this graph, 21 kinds of community are detected.

Figure 3. Main communities on the network



In fact, the similarity of the users in a community are based on the following: 1- followers 2- friends 3- hashtags 4- mentions 5- replying 6- overall similarity. By identifying communities, we can accurately analyze community development and identify users and audiences.

Thematic Analysis Results

In this study, a total of 14 main themes and 40 sub-themes were extracted from users' activities around the Digikala's brand in Twitter. Table 2 shows these themes. The analyses show that two main actors have played a role in relation to the Digikala brand at the time interval of research. The two actors were named "Critics of Digikala" and "Supporters of Digikala".

The themes extracted from the activity of “Critics of Digikala” included 10 main themes and 32 sub-themes, and the themes extracted from the activity of the “Supporters of Digikala” included 4 main themes and 8 sub-themes. The analysis performed to reach the theoretical saturation point showed that the activity of “Critics of Digikala” was more than that of supporters, so that of the 452 code frequency numbers, 87 percent belong to the repetition of the codes of the “Critics of Digikala” and 13 percent belonged to that of the “Supporters of Digikala”.

Table 2. Findings from Analysis of the tweets about Digikala brand

Main Users	Main theme	Sub-theme
Critics of Digikala	Pricing	<ul style="list-style-type: none"> · High prices · Price instability · False prices
	Discounts	<ul style="list-style-type: none"> · discontent with discounts · False discounts
	Advertising	<ul style="list-style-type: none"> · Over advertising · False Advertising · Proposals unrelated to the customer’s intention to Purchase
	Products	<ul style="list-style-type: none"> · Low quality of products · Selling fake products · Misinformation in product introduction · Unavailability of products · Broken products · Sell luxury products
	Sending orders	<ul style="list-style-type: none"> · Delay in sending orders · Failure to send orders · High cost of sending orders · Send wrong order
	After-sales service	<ul style="list-style-type: none"> · Weakness in support · Weakness in after-sales service
	Platform	<ul style="list-style-type: none"> · No training on using the platform · Lack of powerful site and server

Main Users	Main theme	Sub-theme
Critics of Digikala	Violation of individuals' rights	<ul style="list-style-type: none"> · Violation of citizenship rights · Failure to comply with intellectual property
	Being Profit-driven	<ul style="list-style-type: none"> · Absence of customer orientation · Not using reliable suppliers · Digikala scamming people · Digikala stealing from people · Importation with governmental currency, sales with free currency
	Customer rage	<ul style="list-style-type: none"> · Pursuing Digikala violations through Regulatory Systems · Digikala sanction · Dissatisfaction with Digikala
Supporters of Digikala	dealing with violators	<ul style="list-style-type: none"> · Digikala dealing with violating vendors
	Market authority	<ul style="list-style-type: none"> · Digikala authority in market pricing · Supply accordance with market conditions
	Pricing	<ul style="list-style-type: none"> · Cheaper prices compared to the market · Different models and prices · Pricing by sellers
	Customer Orientation	<ul style="list-style-type: none"> · Sending SMS about products to the customers · Publish customer reviews on the site

Based on our analysis, the critics of the Digikala are dissatisfied with the “pricing” of goods and products in this online store; about 22 percent of frequent repetition of all the codes is related to the pricing issues. This figure indicates that a large part of “Critics of Digikala” are dissatisfied with the pricing method. They not only believed that “prices are high,” but also criticized the “fluctuations in prices”; some of them are referring to “minute to minute” changes in price when commenting on the price fluctuations. In the area of “pricing,” another part of critics of Digikala believe that this online store had falsely increased prices before Black Friday, so that they could sell them at original price in Black Friday by offering “false discounts.” They believe that this process of “pricing” products represents “scamming people,” “Digikala stealing from people” and “lack of customer orientation.” They believed in some sort of link between the “pricing” and “being profit-driven” in Digikala, which is a part of the hidden pattern contained in the data of this research. A review of the relationship between codes based on the analysis of co-occurrence in MAXQDA software also showed this relationship. As another actor, “supporters of Digikala” on the contrary,

have supported the pricing mechanism in this online store. Some of them said that prices in Digikala are lower than other traditional stores. Supporters, in response to some critics who attributed the false price increases to Digikala managers, sought to attribute the pricing issue to those vendors who use the Digikala platform to sell their products. They claimed that Digikala sells the products supplied on the site in different models and at different prices and with this argument, they tried to justify the existence of “high prices” on this website.

“Discounts” were among the cases of objection for the main actors on Twitter, “Critics of Digikala”. Some critics of Digikala Commodity, in addition to being dissatisfied with the Black Friday discounts, criticized false discounts because of false price increases. 1% of discounts are another case of objection for “Critics of Digikala” and are mentioned in several tweets. The hidden pattern in this section is found by reviewing the relationship between codes based on the co-occurrence of code analysis in MAXQDA software; the findings shows that there is a connection between the main themes of “pricing” and “discounts” on one hand, and “discounts” and “advertising” on the other hand. The root of this connection between the main themes of “pricing” and “discounts” could be sought in the relation of “false price increase” code with the “false discounts” code and the relation of the “high prices” code with “dissatisfaction with the discounts.” There was also a link between the two sub-themes of “dissatisfaction with discounts” and “false advertising” about the two main themes of “discounts” and “advertising.” Indeed, it is inferred from this form of connection that Digikala, along with false price increases and false advertising for these discounts, has tried to attract customers, but customers are dissatisfied with this trend and have dubbed discounts as fake and small.

The code of “advertisements” is not the only code extracted about the theme of “false advertising”; In addition to the false advertising, which is seen as a factor in the “dissatisfaction with the Digikala”, and is confirmed by our findings of the link between codes, “critics of Digikala” were dissatisfied with the “Over advertising” and “suggestions that are not related to customers’ purchase intention. They believe that Digikala has sent a lot of commercials about Black Friday in the form of SMS; Receiving SMS at midnight hours was mentioned in some tweets and was referred to as “Violations of citizenship rights.” In fact, the main theme of “advertising”, in addition to relationship with the main theme of the “customer rage” that was rooted in the link between the two codes of “false advertising” and “dissatisfaction with the Digikala”, is also related to the main theme of “violation of rights of individuals.” Of course, the supporters of Digikala consider pre-mentioned commercials as a sign of respect to the customers by Digikala. They describe SMS messaging as a kind of “customer-orientation” by Digikala.

As you can see in the table 2, “products” is another point of interest for critics. Critics of Digikala believe that the quality of the products of this store has recently been dwindling, and another group of critics pointed to the breakdown of some shipped products. Another group of critics mentioned the sale of counterfeit goods

by the Digikala's online store; for example, a tweet warned that "Watch #counterfeit #products in #Digikala or #Digi_kala." Also, some of the critics of Digikala displayed false information in the introduction of the product with the release of tweets. For example, a user released a photo intended to introduce a product whose weight was a few grams but was registered as a 100-gram product. The sale of luxury products in the online store is also criticized; Critics of Digikala are also complaining about the lack of products; however, supporters of Digikala, believe that Digikala has authority in the market, reminded the appropriateness of supply with market conditions to this bunch of critics. The main theme of "products" is related to the themes of "after-sales service," "being Profit-driven," and "customer-rage." Critics of Digikala believe that the violations of this company in selling counterfeit products should be pursued through regulatory agencies; some of them described selling counterfeit products and low quality of products as "lack of customer orientation in Digikala," and their tweets mentioned mere focus on high profits as a reason. Another group of critics of Digikala complained about the "poor after-sales service" regarding the products; they criticized the low quality of products or counterfeit products or weaknesses in problem-solving by Digikala support. Supporters of Digikala, however, believe that the company would deal with all violators; in which by violators they meant vendors selling counterfeit or poor quality goods through Digikala platform.

The analysis of tweets of "Critics of Digikala" shows that they are also dissatisfied with "sending orders." Some criticize delays in sending orders in their tweets and others criticize the failure to send orders. Along with these two themes, sending the wrong order and high shipping costs are also observed. A user tweeted about himself ordering a product in black but receiving the product in another color. The theme of "sending wrong order" is related to the theme of "poor after-sales service" and one can deduct that even in case of sending wrong goods, Digikala has not provided proper support for its customers and has not been able to keep them satisfied. Also the theme of "high cost of shipping" is related to the theme of "Digikala scamming people". Some critics of the Digikala believe that the high cost of sending a product would be a kind of scamming people and is done solely to make more profit.

"After-sales service" is another major theme cited by the critics of the Digikala. After-sales service is mainly meaningful about other pre-described themes; as another example, review of the relationship between the codes based on the analysis of co-occurrence of code in MAXQDA software shows that "poor support" is related to "not using reliable suppliers." In this regard, a user tweeted: "I've been a customer of Digi_kala for several years and can't deny that their support has weakened; once they were using reliable suppliers, but now..." These users believe that people's discontent with this online store has increased due to Digikala's poor support. This is also reflected in the relationship between the codes of "after-sales service" and "customer rage."

The "customer rage" is, in fact, the main theme whose sub-themes represents the major discontents about Digikala; themes such as the judicial pursuit of Digikala,

sanctioning the company and the widespread dissatisfaction can defeat this business. Although some supporters of Digikala have mentioned its “customer-orientation” and “dealing with violators” in their tweets and believe that Digikala always publishes customer comments on the site, the critics of the Digikala accuse this store of being profit-driven whose result is “customer rage.” “Being profit-driven” is a theme in which some critics criticize issues like the lack of customer orientation, importation with governmental currency and sales with free currency, scamming people, and stealing from people.

“Platform” and “failure to observe individual rights” are two other main themes that show our findings of dissatisfaction in critics of Digikala. They believe that Digikala must boost its site and server to avoid problems that had happened at previous Black Fridays due to high traffic on the website. They called for allocating a share of high advertising costs to boost the server and site. About the theme of “failure to observe individual rights,” in addition to the pre-mentioned issue of violation of citizenship rights due to SMS advertisements, there are tweets which show that Digikala sometimes did not comply with the intellectual property of the designs published on the site. A user published a photo and tweeted: “Two days ago, one of my friends sent me a Digi_kala post, and I noticed that they had used my design without mentioning my signature and logo. I’m sorry to say that they have stolen my design ... (They have added their logo too, how interesting!)”.

DISCUSSION AND CONCLUSION

In this research, the formatting of the community graph is shown, and it illustrates the personal connections. The graph of DigiKala describes the patterns of inter-personal relations and social communication of people on twitter. By analyzing centralities metrics, the speed of sharing and distribution of information are recognized and as the graph metrics shows the information had been distributed in a short time. The clustering coefficient shows that people of the network are not familiar together so it is not the Homophilic network and 21 types of the communities are detected. Although the vertex belongs to a community of Iranian people, the different type of community in graph network indicated the different behavioral patterns of people in the same culture in social media. The SNA shows users’ e-WOM patterns, and by the structure of the graph, the categories of customers’ opinion around DigiKala’s Hashtag has demonstrated. Contrary to the past, social media (in our research, twitter) exposed the users’ opinion and felt for firms which breathe in the e-commerce age. Users whom some of them have shopping experiences have share their experiences around brand services on the internet. In result, the attention of firm’s should be focused on enlisting of social media as a new marketing strategy to engage the users with their services, goods and eventually their brand (Jansen et al., 2009). Based on this evidence, it can be seen that to hold the future events, Digikala managers should monitor social media such as Twitter to identify their weakness in pre, after

and during service periods which may harm their brand if not paid attention to (Hornikx & Hendriks, 2015). In Twitter, based on Hornikx and Hendriks (2015) works and sharing economy theory (Puschmann & Alt, 2016), users shared their positive and negative experiences around brands which affects the purchase decision of costumers. In our research, most of the users who used #Digikala showed their dissatisfaction from Digital's goods and services by tweet and other related activities during the Black Friday event. The impact of these activities, which negative direction constituent a large scale of them, can be destructive on Digikala's reputation. Based on Chiosa and Anastasiei (2017), this scale of dissatisfaction largely impacts the customers behavior which firstly triggers the brand rejection and finally leads to sales reduction and brand decadence. Also, negative interpretation on a business, as argued by Zarantonello et al. (2016), might lead to brand hate. The findings show that the first criticisms against the Digikala have acted as a spark and the subsequent inadequate performance of Digikala has led to a massive set of negative comments of the Twitter users. Cheung and Lee (2008) interpret it as negative e-WOM. They argued that negative e-WOM has a greater impact than positive e-WOM. Reviewing of user activities such as tweets around Digikala during Black Friday, indicate that among users negative e-WOM was superior to positive e-WOM. On the other hand, we need to have in mind that twitter users are usually more desired to share negative experiences than positive ones (Hornikx & Hendriks, 2015).

Hornikx and Hendriks (2015) claimed that tweets about service brands are more negative than product brands. But, in our research, based on thematic analysis of tweets, both services and products have received mostly negative respond of users; Probably, the cause of this issue rooted in holding Black Friday without previous preparation or unpredictable visit of the customers to the website for online shopping.

IMPLICATIONS

The aim of the research was to identify sharing features of #DigiKala in twitter and behavioral patterns of users around Digikala's brand. The answer to this question is critical for online business such as Digikala (as a successful Iranian startup in e-commerce) which deal with customers who are equipped with social networks to express their opinions and feelings. Based on our analysis, during previous Black Friday, Digikala has experienced a Twitter stream in which Digikala critics were more than the supporter.

The obtained results indicate that criticisms begin before Black Friday and gradually rise, and even the support team's responses to criticisms have not affected the stream. The tweets sent by the critics were so varied that the support team was unable to respond them all. These criticisms include false pricing, false discounts, fake goods, non-responses, profits, and violations of individual rights. The finding show that, Digikala managers should be detailed on social media and extract the useful information which provides a useful guideline to their business. The analyze

of the twitter information around previous Black Friday is a good evidence that Digikala had an enormous issue in every stage of service provision, from the network notification in pre-service to customer response in after service. In this research, we have clarified each of them which Digikala practitioners can solve their problems by referring to information extracted based on users' activities in Twitter. It is also suggested to other businesses to follow the same approach in their businesses and get benefitted from this valuable tool and improve their services according to the opinions of their customers.

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DIGITAL FOOTPRINT IN WEB 3.0: SOCIAL MEDIA USAGE IN RECRUITMENT

HUELLA EN INTERNET EN LA WEB 3.0: USO DE REDES SOCIALES EN EL RECLUTAMIENTO

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ABSTRACT

Social media plays important role in many aspects of organizational life, and have become increasingly important in recruitment decisions. The purpose of this study is to understand the key issues in the use of digital footprint in recruitment, by using theme analysis as the research method, 10 managers of human resource department at Iranian banks who were responsible for recruiting of employees were interviewed. Nine themes emerged from the analysis: (a) Digital footprint usage enhances the complexity of employment processes, (b) The use of digital footprint in employment processes leads to the optimization and acquiring visions with regard to job applicants, (c) The impact and significant positive role of social media on maintaining employees, (d) Connecting networks available on social media lead to detection of reciprocal opportunities and bridging among job applicants and employers, (e) The role and desired implication of social media in post-employment processes, (f) The need for updating the knowledge of HR managers with respect to the continuous changes in environmental conditions, (g) The necessity of offering an opportunity to job applicants in high level posts within an organization to explain the negative results of information collected from applicant's digital footprint on cyber space, (h) The need for measuring the accuracy of information collected from social media, (i) The necessity of educating, culture-building and creating the essential infrastructures for social media use in the society and among employees. The results of this study provide insight to effects of digital footprints on recruitment decisions, reduction of disciplinary actions and firing of employees.

KEYWORDS

Digital Footprint, Social media, Recruitment, Human Resource Management.

RESUMEN

Los medios sociales desempeñan un papel importante en muchos aspectos de la vida organizacional y se han vuelto cada vez más importantes en las decisiones de reclutamiento de personal. El propósito de este estudio es comprender los asuntos clave en el uso de la huella en Internet en el proceso de reclutamiento, mediante el análisis del tema como método de investigación, se entrevistaron 10 gerentes del departamento de recursos humanos de bancos iraníes que fueron responsables del reclutamiento de

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empleados. Nueve temas surgieron del análisis: (a) el uso de la huella en Internet aumenta la complejidad de los procesos de empleo; (b) el uso de la huella en Internet en los procesos de empleo conduce a la optimización y la adquisición de visiones con respecto a los solicitantes de empleo; (c) el impacto y el importante papel positivo de las redes sociales en el mantenimiento de los empleados; (d) la conexión de las redes disponibles en las redes sociales conduce a la detección de oportunidades recíprocas y a la construcción de puentes entre los solicitantes de empleo y los empleadores; (e) la función y la implicación deseada de las redes sociales en los procesos posteriores al empleo; (f) la necesidad de actualizar el conocimiento de los gerentes de recursos humanos con respecto a los cambios continuos en las condiciones ambientales; (g) la necesidad de ofrecer una oportunidad a los solicitantes de empleo en puestos de alto nivel dentro de una organización para explicar los resultados negativos de la información recopilada a través de la huella en Internet del solicitante en el ciberespacio; (h) la necesidad de medir la precisión de la información recopilada de las redes sociales; (i) la necesidad de educar, construir cultura y crear las infraestructuras esenciales para el uso de las redes sociales en la sociedad y entre los empleados. Los resultados de este estudio proporcionan información sobre los efectos de las huellas en Internet en las decisiones de reclutamiento, la reducción de las medidas disciplinarias y el despido de empleados.

PALABRAS CLAVE

Huella en internet, redes sociales, reclutamiento, gestión de recursos humanos.

INTRODUCTION

Social media, as products of Web 2.0 (White, 2016; Brengarth and Mujkic, 2016) and Web 3.0 (Fuchs, 2017), are pervasively penetrated in our every-day lives. From health (Vaterlaus et al., 2015; Paul, et al., 2016; Naslund et al., 2016; De Angelis, et al., 2018; Khajeheian et al., 2018) and romance (Valkenburg and Petter, 2007; Reed et al., 2016; Van Ouytsel et al., 2016; Sumter et al., 2017) to Internal organizational communications (Khajeheian, 2018; Labafi et al., 2018), and marketing (Hajli, 2015; Hajli, et al., 2017; Alalwan et al., 2017; Ramanathan et al., 2017) and Customer relationship (Rodriguez et al., 2015; Hudson et al., 2016; Baumöl et al., 2016; Kamboj et al., 2018), are different types of social media use.

Currently, employers are increasingly using social media in human resource management (HRM) such as the recruitment process (Jacobs, 2009; Jobvite, 2012; McDonnell, 2012; Gibbs et al., 2015; Topolovec-Vranic and Natarajan, 2016; Rutter et al., 2016), not just for announcing the vacancies, but to access information about candidates, that is called digital footprint (Wang et al., 2016; Azucar et al., 2018). It can be said that digital footprint can provide information to achieve applicant's organizational fit (Grasz, 2012), the applicant's personality (Back et al., 2010), skills, and abilities (Black et al., 2012). With the increasing popularity of digital technology, evidence suggests that the growing use of online data affects practices related to recruitment of employees (Brown & Vaughn, 2011). Employers can use information obtained from employees and potential employees on the Internet to examine and manage these employees and job candidates (Miller, 2013; O'Shea, 2012). Nevertheless, accessing to digital footprint becomes more difficult, partly because users are becoming more aware of their digital footprint; 47% have searched

information about themselves online, Compared to 22% five years ago (Medden et. Al, 2007). Moreover, employee terminations resulting from the misuse of digital footprint either with improper digital profiles and inappropriate information have promoted the increase of tracking employee online activities by companies (Hidy & McDonald, 2013). Despite the fact that more than a decade passed after the boom of Internet access in the early 2000s and Internet resources has affected almost every aspect of sociality, still few studies directly focus on this issue. So far, in decisions related to recruitment, there is little knowledge of digital footprint. Use and misuse of digital footprint play an increasing role in decisions related to employment (Hidy & McDonald, 2013).

Digital footprint provides some consequence for organizations. These consequences include more frequent contact with current employees and future job applicants, more targeted advertising, more beneficial collaborative practices, and increased transparency (e.g., Kaplan & Haenlein, 2010). As such, researchers are seeking to identify strategies of digital footprint implications for companies (Weidner et al., 2015). As a result, the issue addressed in this research is the use of digital footprint in decision-making processes by human resource managers and its impact on social capital for current and potential employees. Since digital footprint is not a valid tool for screening purposes, it's not clear whether its usage can lead to a proper identification of job-related characteristics that lead to recruitment of a better employee. The purpose of this research is to understand how social media such as digital footprint is used by HR managers. So, the first question of research is "what are the most important issues facing organizations with regard to the usage of digital footprint to make decisions about recruitment?" And second question of research is "what are the most important issues facing organizations with regard to the usage of digital footprint to make decisions about maintaining and evaluating employees?"

LITERATURE REVIEW

Social media are web-based services that allow users to create profiles, share connections with others, and view the profiles and connections of other individuals (Melanthiou et al., 2015). Social media are changing human interactions and the way in which people access personal information in the developing online environment (Gibbs et al., 2015).

Employers have acknowledged that the information available on social media sites had, at least, some effect on human resource decisions including recruitment, training, promotion, and termination (Brown & Vaughn, 2011). Furthermore, 70% of the surveyed recruitment managers have rejected job applicants because of an unreliable online reputation (McGrath, 2012). This finding clarifies the importance of a respectable online reputation. Nagendra (2014) explained how social media can impact various types of HR functions across the life cycle of an employee. In

particular, social media impacts attraction and recruitment of employees (Colao, 2012), onboarding (Willyerd, 2012), collaboration (Byrne, 2015), and employee retention (Coy, 2013). Furthermore, the use of social media and digital footprint for recruitment is increasing greater than other areas of potential expansion concerning digital human resource practice (Pais & Gandini, 2015). However, an online job search is not an alternative practice, but a complement to traditional ones.

In a research titled as “What is a digital footprint?” (Hamles, 2014), it has been stated that digital footprint is the records and traces that we leave behind when using the Internet. Your digital footprint can be beneficial or harmful, but it’s never irrelevant. The digital footprint can affect your online records and even your credibility. However, a digital footprint is visible to the organizations that you are not related to, their interests are in conflict with you, and you do not have any control over them. As studies have shown, the information we provide to others (even when considered to be private) are out of control. In short, the digital footprint is an income-generating asset, but the income is rarely presented to you. Davison et al. (2016) considered the most important issues related to digital footprint use in HRM to involve legality, standardization, reliability, and job-relevance (i.e., validity). However, it must be noted that the use of social media such as digital footprint in a human resource framework contains several weaknesses (Gibbs et al., 2015). Precisely, negative elements may include legal and ethical issues, lack of formal policies, and reliability of information obtained from social media (Gibbs et al., 2015). However, organizations should not abandon conventional recruitment channels, operations, and metrics without a careful analysis of their strategy (Dutta, 2014). Social media may not be practical for active recruitment at all levels and positions. It is essential to specify the appropriate goals related to social media implementation for talent acquisition before entering the social media realm.

RESEARCH METHOD

This study aimed to identify themes representing key issues in the use of digital footprint in recruitment. As a starting point, we conducted a content analysis to inductively identify themes that were present in the data (Neuendorf, 2002). Two Iranian banks that are located in cities of Tehran and Shiraz were selected as the cases and 10 managers of HRM who are in charge for the recruitment in these two banks were selected as the population of study. To verify the association of participants with knowledge of recruitment practices, they passed a pre-screening process (i.e., background data acquired from the organization’s web pages).

In-depth interviews were used as the means of data collection. The interview guide assured that same questions were asked from each participant during the interview.

Interviews with open-ended items were appropriate for the exploratory purpose of this study (Farrell & Petersen, 2010; Graebner et al., 2012). The preliminary part of interviews consisted of three questions confirming the background of the research participants to obtain more demographic data which assure that participants are significantly involved in the recruitment process. Most of the participants had more than 10 years of work experience. The interviews duration was equal to 45 and 70 minutes, respectively. All of the interviews were conducted at settings preferred by participants. Participants' academic educations included Master's and Ph.D. degrees, and most of them were graduated in fields related to HRM. The next part included eight items focused on the use of digital footprint while making HRM decisions. Five of these questions were related to the use of digital footprint decision-makings regarding recruiting and sustaining employees. Two questions included the protocol of giving notice to current and future employees when beginning a digital search, also on the obtaining of negative information found from online searches. The final component was an open-ended question in order to collect supplementary opinions and points that the participants were possibly willing to share on the subject of relevant job traits. The interviews were digitally recorded and transcribed. When the interview process was completed, participants received a summary of their own responses to approve that responses are registered correctly. Another opportunity was given to the participants to review and provide feedback about their responses. This adds to the internal validity of the research.

To analyze the collected data, thematic analysis was used. Thematic analysis is a method for identifying, analyzing, and reporting patterns (themes) within data. The largest volume of analytical text was generated by participant 1 with a number of 1000 codes, and the lowest one was generated by participant 5 with a number of 280 codes. Also, in this section, 115 concepts were created, most of which were related to participant 1 with 17 concepts. Finally, 9 themes created. Bellow shown coding pattern.

RESULTS

The data coding pattern is shown in Table 1. In the first column on the left, the meaningful statements derived from research data is mentioned. The corresponding participant's code is specified in the second column. The code for each meaningful statement is mentioned in the third column. And in the fourth column, the concept derived from the corresponding meaningful statement is indicated. It should be noted that, derivation of meaningful statements and coding process were reviewed with an interval of 1 to 2 weeks during which the titles assigned to some of the codes have been modified.

Table 1. Data coding pattern.

Meaningful statement	Participant's code	Code	Concept
The use of social media can be exploited and deceitful at the same time, people might be presenting a different image of themselves so any information on social media should first be validated.	P1	P111	The need for validation of information obtained from social media in order to reduce the negative impact on decision-making process of job applicants
When using the Internet for employment, we must use a mixed method; the information and data should not be merely used for selection purposes, they should rather be integrated with face-to-face interviews and tests.	P2	P28	The need to integrate the results of interviews, tests and the Internet in order to obtain a fair and authentic view

Eventually, these initial concepts were reduced to 36 categories based on their semantic differences and similarities. The coders then combined these Categories into broader themes that accounted for conceptual overlap between topics. Next, nine themes shaped. The results are shown in Table 2:

Table 2. Major themes and constituent codes

No.	Nine major themes of the study and the subset concepts
1.	Digital footprint usage enhances the complexity of employment processes.
1.1	More complexity added to the recruitment processes with respect to multiple personalities of job applicants in cyberspace and in the real world
1.2	The need for simultaneous use of local research, interview and digital footprint due to more complexity of individuals
1.3	The possibility of exaggerating about abilities, skills, and knowledge by job applicants on social media
1.4	Provide help to make decisions based on social media
1.5	An increase in the risks of decision-making based on social media
2.	The use of digital footprint in employment processes leads to the optimization (of time, work force, costs, etc.) and acquiring visions (better understanding of morals, manners, thoughts, etc.) with regard to job applicants.
2.1	Facilitate the determination of target sample from a large number of job applicants by informing the employment advertisement...on social media
2.2	Provide help for initial screening of job applicants by reviewing the resumes available on social media prior to subsequent employment processes

No. **Nine major themes of the study and the subset concepts**

- 2.3 Facilitate the identification of interests, thoughts, morals of job applicants based on their digital footprints found on social media
- 2.4 Assist in face-to-face purposive interviews with respect to the initial recognition of job applicants based on their digital footprints on social media
- 2.5 Reducing the duration of identifying skills and knowledge of job applicants in the target sample based on social media
- 2.6 Provide help to identify job applicants whom are aligned with ethical, political, social, and other values of the organizations based on their digital footprint founded on social media
- 3. The impact and significant positive role of social media on maintaining employees (e.g. to reward, punish, motivate, and etc.)**
-
- 3.1 Reduction in employees wish to quit their jobs
- 3.2 Provide help to make reward and punishment decisions based on the type and manner of social media usage by employees
- 3.3 Assist in motivating employees by using the capabilities of social media
- 3.4 Assist in making the necessary decisions to maintain employees by understanding employees' intellectual orientations on social media
- 4. Connecting networks available on social media lead to detection of reciprocal opportunities and bridging among job applicants and employers.**
-
- 4.1 Reduce in the gap between job applicants and employers using social media
- 4.2 Access to valuable resources of job applicants on social media
- 4.3 Access to extensive resources of online job opportunities available on social media
- 5. The role and desired implication of social media in post-employment processes**
-
- 5.1 Provide help for recruitment of job applicants who are more aligned with the considered norms of an organization
- 5.2 Provide help for security and governmental institutions to select job applicants subsequent to other employment processes
- 5.3 Provide help to attract more qualified job applicants
- 6. The need for updating the knowledge of HR managers with respect to the continuous changes in environmental conditions (particularly social media)**
-
- 6.1 The need to pay attention to social media in employment processes
- 6.2 The need to pay attention to social media in the discussion of maintaining employees
- 6.3 The need to pay attention to social media in other organizational issues
- 7. The necessity of offering an opportunity to job applicants in high level posts within an organization to explain the negative results of information collected from applicant's digital footprint on cyber space**
-
- 7.1 The need to provide opportunities for the job applicants who possess valuable abilities and knowledge

No.	Nine major themes of the study and the subset concepts
7.2	The need to provide opportunities for the job applicants who performed well on the test and interview
7.3	The need to provide opportunities for the job applicants who are candidates for high-level posts
7.4	Unnecessity of providing opportunities for the job applicants who are candidates for lower-level posts
8.	The need for measuring the accuracy of information collected from social media
8.1	Reducing the negative impact of using social media in employment processes
8.2	The possibility of finding hacked and faked social pages on social media
8.3	The possibility of changes in thoughts, tastes, knowledge, etc. of job applicants over time
8.4	Provide help to maintain a fair view with regard to job applicants
9.	The necessity of educating, culture-building and creating the essential infrastructures for social media use in the society and among employees.
9.1	The increased probability of success at work (even on lower-level posts) in case employees are familiar with the use of social media
9.2	The need for building culture in the society regarding social media use in order to reduce conflicts
9.3	The need for building culture and training employees regarding social media use in order to increase productivity
9.4	The need to create the essential infrastructure regarding the usage of social media in order to increase the penetration rate

Once the themes were counted, the narrations related to each of these themes were described. Three themes, for instance, will be explained in the following:

First theme: Enhance in the complexity of employment processes due to implication of digital footprint.

The first theme shows that use of digital footprint adds to the complexity of employment processes. This theme refers to the difficulties faced in employment processes due to the changes of various fields in the present era, such as social media. It also refers to the need for integrating all the tools available in this process for decision making, and points out the risks of decision making in employment processes which are merely based on either traditional or new tools. Moreover, considering two aspects of job applicants' personality - real-world personality and personality on social media-, decision making in the recruitment process requires careful consideration to tangibly figure out the actual personalities and abilities of job applicants. In this regard, participant 1 noted the following:

“...The existence of cyberspace and social networks does not exonerate us from the virtual world's rules; on the contrary, it makes our job even harder. We often have to face

multiple personalities of an individual while recruiting new applicants; therefore, the functions of human resource managers have become more complicated..”

As a result, it is necessary to use local research, interviews and digital footprint simultaneously. It means that in order to determine the true characteristics of job applicants (in terms of personality aspects, ability, knowledge, etc.), amalgamation of all selection tools is needed and HR managers must try to integrate the results of all tools so that to make an appropriate choice.

Furthermore, social media allow job applicants to exaggerate their abilities, skills, knowledge, and so on. In an attempt to minimize the negative effects related to recruitment decisions, one should refer to the other existing tools. Participant 7 noted that:

“...One of the negative effects related to recruitment decisions that comes to my mind is the possibility of overstated expertise and knowledge by an individual..”

Examining social media of job applicants, a rough judgment can be made about the applicants but one cannot make a decision based on such judgments. The high risk of decision-making based on social media suggests that if we simply decide on the basis of information collected from job applicant’s social media, the probability of making obvious mistakes is very high.

Second theme: the optimization (of time, work force, costs, etc.) and acquiring visions (better understanding of morals, manners, thoughts, etc.) with regard to job applicants.

The second theme in this study refers to the optimization and gaining of visibility. In order to examine the existing codes, this was achieved by examining the applicants’ digital footprint. Employing in social media, jobseekers find an overview of the applicant. It is very promising in other recruitment processes and can be optimized. Recruitment processes. HR managers, by announcing job opportunities in online social media, provide resumes by job applicants who meet the needs of the organization (in terms of expertise, knowledge, ability, etc.) and send out a bunch of resumes that maybe They do not match their needs and save time for reviewing these resumes. It saves time to review these resumes. The primary screening of job applicants is another benefit of using social media in the recruitment process. For example, the participant with the P6 code points out that (online social media is one of the ways to inform. Receive a resume of applicants and screening seekers only by studying the resumes before Recruitment interviews.) recruiting applicants is to study the traces of those people in the media. Social is online, so that by reviewing the blog, the Telegram Channel, the Instagram, and ... the applicant himself, and the sites and profiles he follows, can be considered as part of the fields of thinking, morale, Also, by examining the digital footprint of applicants for online social media recruitment and initial screening and target community assignment, more time is available to recruitment managers in future recruitment processes, which will require more time to identify skills, knowledge, and more. Applicants provide

employment. Employee managers by examining the digital footprint of recruiters in social media (by reviewing channels, blogs The networks and the networks they are members of or publish in their social media) stem from moral, political, social, etc. The slave invites those recruiting applicants to the next stages of the recruitment process. Which conforms to the norms and values of the organization or after other hand-hired processes.

Third theme: Social media have a significant role in maintaining employees (e.g. rewards, punishment, motivations, and etc.)

Reviewing the social media of other organizations (especially those of competitors), human resource managers can discover the reward processes provided for employees in those organizations and compare these processes with their own. If needed, HR managers can take actions to improve the conditions in their organizations and in doing so, they create a sense of loyalty among employees and reduce employee turnovers. In this regard, participant 1 stated the following:

“...In cyberspace, an individual might acquire some information about the benefits, salaries, etc. that business competitors offer their personnel which might possibly increase employees’ desire to quit their jobs because some might believe they are being treated unfairly...”

Checking employees’ Internet surfing during work hours, human resource managers can make decisions about rewarding or punishing their employees. Employers use CCTV cameras, security networks, and other tools to control their employees, and if employees use social media during work hours in line with assigned duties, they will be rewarded; otherwise disciplinary actions will be made, that is in case of negligence and attending personal activities during work hours. In security or specialized organizations and agencies, release of confidential documents by employees will result in intensive disciplinary actions. In this regard, participant 2 indicated the following:

“...about Internet surfing, we can track the timing of an employee’s posts on the Internet. If the contents are posted during work hours, the employee should be punished accordingly...”

Through creation of organizational social media, organizations are able to engage in motivational actions such as selecting and encouraging well-performed employees or establishing various cultural, athletic, and scientific groups; therefore, some psychological needs of employees are met and they are motivated. Participant 8 stated the following:

“...Currently, we have created different groups on social media such as cultural, athletic, etc., and we try to place employees in distinct groups based on their interests in order to motivate them...”

Through reviewing digital footprint of employees on social media, one can discover their intellectual orientations, interests, needs and political, cultural, and ethical orientations. If these orientations contradict the norms of an organization,

necessary decisions should be made for the recruitment of those employees in the organization. Participant 5 stated the following:

“...The use of virtual spaces and social media is important for making decisions to keep current employees, but not fully, can be used as a helping tool to better understand the employees’ morale and needs...”

DISCUSSION

Many researches have studied the role of digital profiles in HRM (Akdere, 2005; Kligiene, 2012; Lin & Lu, 2011; Sun & Shang, 2014) and considering the increasing use of social media, it is very possible that more personal information will be shared in social platforms and to be accessible for HR managers. This research conducted with the aim to identify the main issues that HR managers are faced with implication of digital footprint in recruitment of new employees. For this reason, two main research questions, answered. To answer the first research question, the following themes were identified:

The first theme showed that using digital footprint enhances the complexity of employment process. The second theme indicated that the use of digital footprint in employment processes leads to the optimization (of time, work force, costs, etc.) and acquiring visions (better understanding of morals, manners, thoughts, etc.) with regard to job applicants; the third theme showed that the role and impact of digital footprint on post-recruitment processes is important; the fourth theme reflected that use of digital footprint to recruit applicant for top-level positions of organizations may have negative results on cyberspace. Finally, it is required to update the knowledge of HR managers due to the rapid changes of environmental conditions (particularly social media).

It should be noted that understanding how employees use online information can contribute to personnel selection practices, and its outcomes may affect organizational productivity, employee satisfaction (Ployhart & Weekley, 2010) and the assessment of an applicant’s fit (Berkelaar et al., 2015) in various roles (Narayan et al., 2012). Due to the growth of computer-mediated communication (CMC) and new media, screening of employees via social media prior to their recruitment has conveyed new methods of traditional approaches to the world (Ramirez et al., 2002).

The following themes might be noted to answer the research questions: **themes** indicate that social media have a significant role in maintaining employees (e.g. to reward, punish, motivate, and etc.). Thus, the necessity of educating, culture-building and creating the essential infrastructures for social media use in the society and among employees seems fairly essential. **also themes** involve the necessary to update the knowledge of HR managers with respect to the rapid changes of environmental conditions (particularly social media).

While use of new media and social networks is increasingly growing, accordingly the legal and ethical issues will continue to grow and develop (Cavico et al., 2013). While social media is the main source of talent hunting for companies and

employment and is viewed as a powerful and positive aspect of employment-related decisions (Narayanan et al., 2012), improper use of social media by current employees leads to disciplinary actions (Hidy & McDonald, 2013).

CONCLUSION

The results revealed nine main themes, including: (a) Digital footprint usage enhances the complexity of employment processes, (b) The use of digital footprint in employment processes leads to the optimization and acquiring visions with regard to job applicants, (c) The impact and significant positive role of social media on maintaining employees, (d) Connecting networks available on social media lead to detection of reciprocal opportunities and bridging among job applicants and employers, (e) The role and desired implication of social media in post-employment processes, (f) The need for updating the knowledge of HR managers with respect to the continuous changes in environmental conditions, (g) The necessity of offering an opportunity to job applicants in high level posts within an organization to explain the negative results of information collected from applicant's digital footprint on cyber space, (h) The need for measuring the accuracy of information collected from social media, (i) The necessity of educating, culture-building and creating the essential infrastructures for social media use in the society and among employees.

The conclusion shows the notion that employers, using a mixture of growing information, including new technologies, make judgements about job candidates which in turn affects employment relations, career management, and communicative characteristics (Berkelaar, 2015). All of the above-mentioned matters affect evaluations and their subsequent recruitment decisions (Case, 2012). In fact, the power of the Internet and social media as a part of it, is increasingly enhanced by human resource functions for recruitment, selection, training, and interaction and engagement with current and potential employees (Dutta, 2014). A typical thread identified during interviews was that a professional digital profile might have positive and negative impacts on recruiting and maintaining employees. Particularly, sometimes hiring managers check social media searching for reasons not to hire a job applicant. Finally, it must be noted that employment-related decisions based on social media which are under compilation requires more academic and practical investigation and analysis.

Improper and irresponsible use of social capital convey significant risks for users, employees, and organizations (Nyangeni et al., 2015). In this case, negative perceptions and effects of these perceptions are avoided. These perceptions resolve which in turn minimizes damages to individuals' professional and career images (Peluchette et al., 2013). Recruitment managers monitor social media more than ever in order to screen job applicants with worrying online behavior (Hidy & McDonald, 2013). Hence, social media is pertinent to employment decisions. Consequently, job candidates should be aware that sharing information across the Internet might have negative consequences on searching or sustaining employees (Bergeson, 2011; Kietzmann et al., 2012).

It should not be neglected that online data are usually available for free, easy to gather, and enormous in amount in comparison to the data accessible through traditional processes. In fact, the results of the current research will increase the awareness of digital footprint use by companies in the context of decision-making acts related to recruitment employees. Better awareness of employers and employees about the fact that social media data may be useful in recruitment and employment decisions can result in less disciplinary actions and terminations.

LIMITATIONS AND SUGGESTIONS

The main limitation of the present research is associated with the natural limitations of qualitative researches in generalizability of results and findings to other cases. Accordingly, results of the current study may not easily generalizable to other areas of study. The second limitation is the sample size, as well as the number of cases that are obtained from two banks only. It is suggested that future researches cover larger samples from different industries.

Future research should be conducted based on the classification whether companies use such media for recruitment purposes or they are more focused on contacting the customers through social media. In addition, if the organizational use of social media directly relates to the quality of results obtained from implications, this matter is worth examining. For instance, organizations with a more active media presence may gain a wider access to job applicants, as well as a wider range of applicants attracted to their organization.

Further research is needed to understand the conditions under which these findings were derived. By doing so, researchers can conclude whether the effects of screening practices examined in this study depend on factors such as appropriate or professional level of social media sites of job applicants or not, and what modifications should be made by users to adjust their privacy settings on social media.

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A MODEL FOR IMPLEMENTATION OF INTELLIGENT BUSINESS SOLUTIONS ON THE BASIS OF THE LEVEL OF BI MATURITY: AN IRANIAN EXPERIENCE

UN MODELO PARA LA IMPLEMENTACIÓN DE SOLUCIONES EMPRESARIALES INTELIGENTES CON BASE EN EL NIVEL DE MADUREZ EN INTELIGENCIA DE NEGOCIOS: UNA EXPERIENCIA IRANÍ

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ABSTRACT

The purpose of this research is to provide a basis for choosing the approach to implementing business intelligence systems based on the maturity of the organization.

This research not only recommends considering the level of business intelligence maturity while planning for the implementation, but also recommends the use of IT governance levers in order to increase the level of efficient usage of such systems.

In this research, while analyzing the subject by experts in the Delphi Fuzzy method, these ideas have been reviewed and verified in nearly 109 organizations responding to the questionnaires. The result of this research is a fuzzy inference engine that suggest the best execution package required, by entering data on the size and maturity of the organization. Packages containing the appropriate implementation methodology, products at that maturity level and, consequently, IT governance processes and requirements to that level of maturity.

KEYWORDS

Business Intelligence Implementation, Business Intelligence Maturity, Information Technology

RESUMEN

El propósito de esta investigación es proporcionar una base para elegir el enfoque para implementar sistemas de inteligencia de negocios basados en la madurez de la organización. Esta investigación

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A Model for Implementation of Intelligent Business Solutions on the Basis of the Level of BI Maturity: An Iranian experience

no solo recomienda considerar el nivel de madurez de la inteligencia de negocios a momento de planear la implementación, sino también el uso de instrumentos de política pública de tecnologías de la información (TI) para aumentar el nivel del uso eficiente de dichos sistemas. En esta investigación, al analizar el tema por expertos en el método Delphi Fuzzy, estas ideas han sido revisadas y verificadas en casi 109 organizaciones que respondieron a los cuestionarios. El resultado de esta investigación es un motor de inferencia difusa que sugiere el mejor paquete de ejecución requerido, al ingresar datos sobre el tamaño y la madurez de la organización. Los paquetes que contienen la metodología de implementación adecuada, los productos en ese nivel de madurez y, en consecuencia, los procesos y requisitos de gobierno de TI a ese nivel de madurez.

PALABRAS CLAVE

Implementación de inteligencia de negocios, madurez de la inteligencia de negocios, tecnologías de la información

INTRODUCTION

Presenting a model in order to select the most appropriate method for implementing intelligent business solutions in organizations with different dimensions and maturity is the basic idea in this research. Basically, business intelligence can only be valuable when properly employed by organizations. There is a relationship between the optimal use of business intelligence, the performance and features of organizations. better access to data has no effect on a company's performance, though the quality of using data by the company has a direct effect on their performance.

Whatever are the features of intelligent business solutions in the organization, they should be tailored to the organization's readiness in employing the solutions. The research hopes to increase the positive effects of employing the intelligent business solutions in the organization and reduce the failure of such projects in line with increasing the proportionality of selecting the methods for implementing intelligent business solutions through conceptualizing and presenting a fuzzy model between the organization's characteristics and the expected benefits of intelligent business solutions.

Presenting a model in order to select the best method for implementing intelligent business projects in organizations tailored to the maturity and readiness of those organizations constitutes the main idea in this research. The present research comes in two quite distinct, sequential sections. The former deals with presenting a model to select the implementation method of intelligent business systems based on the organizational maturity, and the latter tests the model and presents the test results.

This is an applied research in terms of purpose and is considered a field research in terms of situation. It is a retrospective study in terms of time and is based on the past data of the organizations surveyed and it is a survey (contextual) research in terms of research method.

The model is proposed by investigating the problems and implementation issues of the projects for the deployment of intelligent business systems in the companies in the country, and developing idea of how to prevent or solve these problems and

the output model, includes 5 different implementation packages, proposed and designed per 5 levels of intelligent business maturity.

First, experts were interviewed to confirm the initial assumptions of the research, during which the main assumptions were confirmed. In the second step, the data collection regarding the elements of the research model was conducted as desk study and the data on various maturity models, implementation methodologies and governance frameworks were identified and integrated and were proportionated and tailored to the research. Third, the governmental implementation model, which is the main purpose of the research is initially designed and presented, and reviewed and modified by the experts. Fourth, to test the model validity, the developed questionnaires were sent to a number of banks and financial and credit institutions, subsidiary companies and payment service companies as well as manufacturing, service and government companies. After testing the validity and reliability of the questionnaire, the characteristics of organizations questionnaires were sent to the experts and their comments about the maturity and the proper executive package were asked. Fifth, the data obtained from companies and institutions, along with the opinions and comments of experts on those institutions were investigated by MATLAB software, and the data of 80% of these companies and institutions were inferred and fuzzy rules were extracted, and the results were tested in the remaining 20% companies and institutions. The results of the model test were investigated with mean square error (MSE), root mean square error (RMSE), mean absolute percentage error (MAPE), and regression coefficient R^2 . Eventually, in the sixth step, considering the indices mentioned, the fuzzy method was measured by other conventional methods in order to identify the best package for each maturity level, the results of which are presented in the following.

LITERATURE REVIEW

A large body of materials has been presented considering the problems and issues of the implementation of intelligent business solutions in organizations. Based on the research literature, multiple studies were conducted on the causes of the problems and implementation issues of these types of projects, which generally include issues, namely, strategic issues, problems with project or program management, problems with system quality and security, issues of infrastructure and suppliers, issues related to employee and how information and data are used in the organization, and eventually financial issues. The following Table categorizes and combines the problems that were identified and collected in the implementation of intelligent business solutions in previous studies, which were repeated in different research with different meanings and interpretations. The following Table indicates the summary of issues.

Table 1. the summary of BI implementation Issues

#	Item	Ref's.
1	Lack of Strategic Approach to BI Implementation	(Rouhani and Rabiee Savoji Spring 2016), (Nazari Salari, Khadivar and Abdolvand Summer 2016), (Aghae, Aghaei and Aghaei Spring 2016), (Rahmanimanesh, et al. Winter 2018), (Abbaspour Spring 2017), (Rouhani and Zare Ravasan Autumn 2013)
2	Project Management Problems	(Rouhani and Rabiee Savoji Spring 2016). (Aghae, Aghaei and Aghaei Spring 2016)
3	Quality and Security of Systems	(Aghae, Aghaei and Aghaei Spring 2016), (Abbaspour Spring 2017), (Alinezhad and Hakimian Spring 2003), (Rahmanimanesh, et al. Winter 2018)
4	Infrastructure Problems	(Rouhani and Rabiee Savoji Spring 2016), (Nazari Salari, Khadivar and Abdolvand Summer 2016), (Abbaspour Spring 2017)
5	Suppliers Issues	(Rouhani and Rabiee Savoji Spring 2016), (Abbaspour Spring 2017)
6	Training problems	(Nazari Salari, Khadivar and Abdolvand Summer 2016), (Abbaspour Spring 2017)
7	HR Problems	(Rouhani and Rabiee Savoji Spring 2016), (Aghae, Aghaei and Aghaei Spring 2016), (Nazari Salari, Khadivar and Abdolvand Summer 2016), (Rahmanimanesh, et al. Winter 2018), (Abbaspour Spring 2017)
8	The Problems with Data, Information, Decision Making Style and Inference in Organizations	(Rouhani and Rabiee Savoji Spring 2016), (Aghae, Aghaei and Aghaei Spring 2016), (Nazari Salari, Khadivar and Abdolvand Summer 2016), (Rouhani and Zare Ravasan Autumn 2013)
9	Organization Structure Problems	(Rouhani and Rabiee Savoji Spring 2016), (Nazari Salari, Khadivar and Abdolvand Summer 2016), (Rahmanimanesh, et al. Winter 2018)
10	ROI Issues	(Rouhani and Rabiee Savoji Spring 2016), (Abbaspour Spring 2017), (Nazari Salari, Khadivar and Abdolvand Summer 2016)

The problems that were repeatedly mentioned in various sources indicate the fundamental issues of the implementation of these projects in the country. In line with solving these problems, the present research presented and tested a model based on the intelligent business maturity.

Using strategies that enhance the success of the development, acceptance, and comprehension of intelligent business systems in the organization is the main idea behind this research. The main idea and initiative in this research is firstly the application of executive packages tailored to the maturity of intelligent business in the organization, and secondly, using IT governance levers in the process of developing intelligent business systems in the organization. In studying the research

literature, in other articles, the significance of these two solutions is mentioned which is presented and summarized in the following Table.

Table 2. the solutions in previous researches

The Solutions	Ref's.
BI Maturity as a predecessor of BI systems implementation	(Elbashir, Collier and Davern 2008), (Clavier, Lotriet and van Loggerenberg 2012), (Cosic, Shanks and Maynard 2012), (Lahrmann, et al. 2011), (Jiang, et al. 2004), (Popovič, et al. 2012), (RANJAN 2009), (Rajterič 2010), (Raber, Wortmann and Winter 2013), (Sledgianowski and Luftman 2005), (Saghafi and Fasanghari 8-2010), (Mehrabi, Mahmoudi and Alihosseyni Spring 2016), (Bakhshandeh and Rahmati Spring 2016), (Manian, Mosakhani and Zare Mirakabad Summer 2013), (Khadivar and Abasi Autumn 2016), (Taghva and Hajizadeh 2010), (Dastranj Mamaghani and Akhavan 7-2011), (Rezaeemanesh, Mohammadnabi and Mohammadnabi 2012)
BI/IT Governance as a predecessor of BI systems implementation	(Wixon and Watson 2001), (van der Raadt 2010), (Ribbers, Peterson and Parker 2002), (Sambamurthy and Zmud 1999), (Wu, Straub and Liang June 2015), (Peterson 2004), (Wixon and Watson 2001), (van der Raadt 2010), (Ribbers, Peterson and Parker 2002), (Sambamurthy and Zmud 1999), (Wu, Straub and Liang June 2015), (Peterson 2004), (Tabatabaei and Chaharsooghi 12-2016), (Hashemi, et al. Autumn 2017), (Hasanzadeh, Namdarian and Elahi spring 2012), (Hossein Ronaghi and Mahmoudi Autumn 2015), (Raeis Safari, Ghazanfari and Fathiyan 1-2009), (Ghazanfari, Fathiyan and Raeis Safari Spring 2011), (Toghyani, Rajabzadeh and Anvari Rostamy Summer 2016), (Azar, et al. Spring 2015), (Raeesi Vanani and Ganjalikhan Hakemi Spring 2015)

Considering the previous research, it seems that attention to maturity, as well as increased governance of information technology or business intelligence, could be potential solutions to improve the implementation of intelligent business systems within the organization.

In order to provide a proper model, while defining the *pre-assumptions*, it is necessary to limit the scope of applications and the use of intelligent business systems to narrow the target population and allow for sampling to test the model.

The first *pre-assumption* is the paradigm used in intelligent business by the organization. The definitions provided for business intelligence can be categorized into three main metaphorical paradigms. The first paradigm; BI as an architecture of monitoring and management of business processes. The second one is BI as a set of technical artifacts and the third one is BI as a strategic system for decision making. The target paradigm in this research is the third one; BI as a strategic system.

The second *pre-assumption* is based on the development of intelligent business systems in the organization. The researcher believes in the distinction between different types of development and launch of systems, who is inspired by the theorization of Burns and Stalker. This distinction means that there are two main

practices in developing intelligent business systems: the first is the organic strategy, which means endogenous development, based on creativity, innovation, often with no integrated, local, and coherent architecture with the tasks of units and individuals, and implemented by individuals within the organization, taking place by the promoting levers of education, innovation and entrepreneurship. The second approach is the mechanical approach in the development, which is contrary to the organic approach and the development enjoys a consistent and integrated architecture, methodology and organizational determination to develop an intelligent business system in an organization based on the project plan, investigation of contractors and external suppliers and precise calculations of critical success factors and key performance indices. (Burns and Stalker 2012)

However, because the research intends to achieve a road map appropriate to the status of the organization by describing these dimensions in the implementation of intelligent business solutions in an organization, and also the implementation of the requirements and procedures of IT governance take place primarily to increase the mechanical levels of the organization, therefore, in the present research, organizations that develop their intelligent business development in an organic way basically are out of the scope of this research, and only the focus and attention of research is on the mechanical methods of development.

The present research activated in two main sections: first, the construction of the model and, second testing it. In order to develop the model, the model mentioned will be presented based on the general principles and pre-assumptions in the previous section. To this aim, primarily, one of the intelligent organization maturity models must be selected as the base model, and then methodologies tailored to each maturity layer are identified and, subsequently, the processes and methods within the IT governance frameworks are identified and discussed for each maturity layer. Eventually, five executive packages are proposed for five layers of intelligent business maturity and are approved by experts and presented for testing.

In investigating the maturity models, these models are compared and the final model is selected.

In such comparison, the CMMI model is selected by the experts which have the most proportionality in application in the research.

Following the selection of the basic model in measuring the intelligent maturity in organizations, according to the researcher's resource or mapping, the constructs and the intelligent business tools and tools in each maturity layers were mapped. This mapping on 5 CMMI maturity layers enables us to describe each of the constructs on each level of intelligent business maturity levels.

The same study was also conducted on common executive methodologies in implementing intelligent business projects, which means that we can measure and compare different methodologies based on the degree of intelligent business maturity and achieve to the most appropriate methodology at each maturity level. In library studies, a relationship was found between project size and project duration

as well as a relationship between maturity level and project management method and implementation methodology previously stated by the US Data Warehouse. (TDWI Team 2010) Based on the above findings, the proposed methodology is proposed for each project size.

Eventually, it is necessary to complete the processes and procedures for the governance of information technology requirements on maturity levels mapped in order to complete the implementation packages to provide the necessary recommendations in the development of intelligent business systems in each implementation package.

The COBIT, ITIL, ValIT, RiskIT, and ISMS governance frameworks were investigated. Not all processes and procedures of these requirements will be used in the development of intelligent business systems. Thus, it is necessary to select only the desired process among the processes and methods considering the problems identified in the studying the research literature. In order to select the methods and processes of governance requirements investigated, and the processes involved in the executive steps, the proposed models were added to each of the maturity levels and proposed packages, which are not mentioned in the article due to the breadth of the Tables, and in the beginning maturity layer, two processes of one ValIT and the other of RiskIT were briefly added. In the managed maturity layer, 4 processes of ITIL and 6 processes of COBIT and a process of ValIT were added. In the defined maturity layer, 13 processes of ITIL, a process of RiskIT and two processes of ValIT to the implementation package were added. In the quantified maturity layer, 4 processes of ITIL, 10 processes of COBIT and one process of the ValIT process were added, and eventually, in the optimization maturity layer an ITIL process, a process of ValIT, and a process of RiskIT were added to the executive package.

Considering the information presented in this section, the designed packages including methodology, governance processes, implementation guidance, and permitted implementation tools were developed at each maturity level. In this section of the research, five executive packages were developed for five maturity layers. Now, this model should be tested, this test is done with a fuzzy method in terms of the research method.

METHODOLOGY

The intended statistical population in the present research comprised the companies that satisfactorily use the intelligent business systems, and that are satisfied with the function and application of their intelligent business systems, and at least realized part of their expected goals in developing intelligent business systems, i.e. the target population in this research is the companies in which attempts are made to use intelligent business systems and have a kind of enjoyment and satisfaction with the implementation of these systems during the research.

Such definition does not guess the total population of the sample, obviously there should be no statistics of these types of companies, therefore the number of these

companies cannot be guessed in the country. Thus, due to the lack of statistics or databases from companies that implement and use successful intelligent business projects, the sampling strategy is selected through the combination of both “targeted sampling” and “network sampling.”

In a purposeful sampling, the researcher tries to select the desired sample through the judgment, personal and expert judgment, and thought-out effort which is as representative of the population as possible. In such sampling, which is known as the dominant method in grounded theory, samples are selected in a way that contribute to the creation of the theory, and is used in situations where determining the whole population under study is impossible or costly, or when sampling should be made from specific cases. Both conditions are met in the present study, however, it should be noted that in this method sampling is biased and cannot represent the population. In the network method, a member of the social network introduces another member and that member introduces another member which leads to the chained and network sample size selection. The steps for theory development are as follows.

RESULT

A fuzzy Delphi method has been considered by the researchers to test this research in investigating the research literature, which seems adequate for this study considering the nature of the present research. The Fuzzy Delphi method was introduced since 1980 by Kauffman and Gupta. In this method, the experts are provided with the linguistic variables. (Cheng and Lin 2002) Numeric values of linguistic variables are also expressed in the form of fuzzy numbers. Then, in each step, the fuzzy average of each question is calculated and compared with the average of the previous step. Also, in another study conducted by Akhavan et al., which is more similar to the present thesis, the surveyed method and expert survey was used with fuzzy Delphi technique. (Akhavan, Philsoophian and Karimi Gavareshki Winter 2017)

Testing the model developed in the organizations studied with the rule-based fuzzy inference system method is *Takagi-Sugeno* in this thesis. (L. Zadeh 1975) In this research, all types of data required include training data, evaluation data and test data. (Shafia, Manian and Raeesi Vanani Spring 2013) The data was collected using questionnaire and the opinion of experts. The fuzzy Delphi method is based on the views and opinions of the experts, which follows all the principles and rules of the Delphi method. (Ludwig and Starr 2005)

Factors such as sample size and executive power of the group determine the number of experts, and the number of experts is considered appropriate between 10-20 people. (Skulmoski, G., J, F. T. Hartman and j. Krahn 2007)

Two distinct questionnaires were sent to the companies to conduct the test. First, the questionnaire of systems used by intelligent business and the circumstances of the utilizing organization, which was a researcher made questionnaire based on

compulsory multiple choice. The validity of these questionnaires was tested by the experts and the method of face, content and construct validity. Testing the reliability was only possible through test-retest which was measured by repeated sampling of a sample questionnaire. However, the second questionnaire, which was the maturity rate of organization questionnaire, was a formal and highly valid CMMI organization questionnaire that was tested by a group of experts in terms of validity, however, their reliability was investigated by Cronbach's alpha coefficient to measure reliability.

The experts in this study included 15 intelligent information and business activists who were selected based on the research's previous acquaintance and each investigated at least three samples and provided their comments. In this section, considering the education level, four out of fifteen experts had a Ph.D. degree, one had an undergraduate degree, and the remaining ten had a master's degree. In terms of the field of study, one person completed his studies in electrical and electronic engineering, one in system management, two in industry and system engineering, two in executive management, three in the management of information technology and six in computer engineering- software. The team of experts in this research is rated among the teams with appropriate conditions in terms of the work experience and the empirical background. The possibility of deviation in the votes of these experts is negligible.

The selected samples were selected sufficiently from the banking and electronics industries to avoid bias and deviation in the research results of these industries. Although the other selected organizations are not sufficient samples of the entire country's companies, in terms of the type of industry or size of the business, according to the experts in the field of intelligent business system development, almost the most important organizations that use strategic intelligent business systems in the country have been surveyed in this research, however, in general only in the banking and electronic industries the results and lack of model bias can be confirmed.

A number of 109 institutions and firms were studied. Considering the number of samples per industry, the following diagram illustrates that 38 banks and financial and credit institutions approved by the central bank were analyzed, which indicates lack of bias in the results obtained in the banking sector of the country. Also, 13 payment service providers were investigated, which indicates a lack of bias in this sector and the generalizability of the results to the entire industry.

Among the samples, 29% belong to the public sector and 71% to the private sector. Such combination is not significant by itself, however, if the research results are accepted, then it can be argued that there is no specific bias in this case and the results obtained can be generalized in all public and private sectors. However, it is noteworthy in this section that the existence of 24 samples out of the 109 samples investigated in this study on the list is known as IMI 100 the Industrial Management Organization, which listed the top 100 companies in 2017, meaning that approximately one-quarter of the top 100 companies in the country were investigated in this study. Moreover, 13

sample investigated in this study are listed on the top 20 IMI100, which can indicate the research results among companies successful and prominent in the country.

The organizational maturity questionnaires, where answers to the questions take place at different levels through the language variables, were sent to the organizations and their validity and reliability were evaluated after completion of the study. The validity of the study was evaluated through face, content and construct validity by experts, and reliability was calculated by Cronbach's alpha. Considering the calculation results, the questionnaire is quite trustworthy.

Figure1. Test Results

Case Processing Summary				Reliability Statistics	
		N	%	Cronbach's Alpha	N of Items
Cases	Valid	101	92.7	.931	36
	Excluded ^a	8	7.3		
	Total	109	100.0		

a. Listwise deletion based on all variables in the procedure

Then, we asked for the opinion of experts for each company, meaning that the first questionnaire on the extend and method of using the company of the intelligent business systems which was completed and sent were investigated by experts, and each company was provided by two types of points, first, the level of maturity intended by the expert, and second, the similarity of the executive method to the designed packages. Each company was also investigated by three experts.

The information completed in the organizational questionnaire and the scores provided by the experts, altogether were analyzed using MATLAB software. Eighty percent of samples were considered for training and 20% of them were considered for testing. Data were tested by fuzzy method and error indices were calculated.

In the fuzzy method, once as single variable for each organizational maturity variable and the executive package calculations were conducted, and once as bivariate the studies were conducted and error indices were calculated. Also, in order to identify the desired radius, the study was conducted in every 10 radius and the radius 0.01 is known as the best radius.

Table 3. Fuzzy bivariate results including execution package and maturity level

Radius	R2	MAE	MAPE	RMSE	MSE
0.01	0.811026	0.209037	0.120757	0.17375	0.030189
0.11	0.766654	0.27814	0.130385	0.207823	0.043191
0.21	0.768412	0.275906	0.129912	0.207106	0.042893
0.31	0.771069	0.273283	0.129484	0.205904	0.042397
0.41	0.767995	0.268668	0.130666	0.204973	0.042014
0.51	0.777452	0.257935	0.130485	0.200509	0.040204
0.61	0.773722	0.257462	0.135603	0.198102	0.039245
0.71	0.762957	0.265648	0.139947	0.197612	0.03905
0.81	0.773706	0.246286	0.135938	0.19444	0.037807
0.91	0.761877	0.251785	0.141521	0.195172	0.038092

Based on the results, the best prediction is made by the radius 0.01. Based on error indices and if the criterion is considered the regression index, the best performance is obtained in the radius 0.01. It seems that the decision-making model of the quality of implementing projects of intelligent business works correctly based on the maturity degree.

However, for more certainty, the data are compared with other methods, including:

1. A bivariate fuzzy method (described in the previous table)
2. Fuzzy hybrid method and genetic metaheuristic algorithm
3. Fuzzy hybrid method and PSO metaheuristic algorithm
4. Dual output neural network method
5. Hybrid neural network and genetic metaheuristic algorithm
6. Hybrid neural network and PSO metaheuristic algorithm

The results of studies and comparisons are as follows:

Table 4. Fuzzy bivariate results including execution package and maturity level

Method	R2	MAE	MAPE	RMSE	MSE
Fuzzy Method (R:0.01)	0.811026	0.209037	0.120757	0.17375	0.030189
Fuzzy & Genetics Algorithm	0.8817	0.055193	0.11198	0.13289	0.01766
Fuzzy & PSO Algorithm	0.14214	0.21825	0.39687	0.27814	0.077361
Neural Network (30 Neurons)	0.63205	0.1398	340.37	0.2559	0.06552
Neural Network & Genetics Algorithm	0.16	0.32624	0.46883	0.40912	0.16738
Neural Network & PSO Algorithm	0.07	0.28225	0.47116	0.360	0.1298

In order to conclude, it should be noted that the model tested was confirmed and the fuzzy method enjoys the necessary efficiency for modeling. Consequently, it is argued that the implementation of intelligent business systems, methodologies used, and intelligent business constructs in any organization should be compatible with the maturity level of its intelligent business, also using the required IT governance processes and methods during the implementation of intelligent business projects added to the success of these projects, and these processes and methods are related to the level of intelligent business maturity of organizations. The above results can be certainly proved in the banking and e-payment industries and, in the opinion of the experts, these relationships can be investigated in the number one organizations of the country.

CONCLUSION

There are two reasons beyond unwelcoming intelligent business solutions in organizations. First, the application of these solutions and, in brief, data-based decision-making in the organization requires intelligent business maturity, and if any organization has not reached the intended maturity level, it cannot accurately use the intended tool. Second, even if the organization enjoys sufficient maturity to use intelligent organizational tools, but the organization lack sufficient power to dominate the application in the organization, staff and managers continue to ignore using the reproductions of intelligent business systems of the organization in the process of adopting basic decisions.

Considering the findings of the present research, the roots of the general acceptance of intelligent business applications in the organization are, first, adapting the intelligent business construct and related applications to the degree of organizational maturity in its use, and second, the presence of the necessary driving force in the organization for the business intelligence governance. This research also plays the role of the idea of a mutual relationship in this application, i.e. the existence of an intelligent business maturity leads to the general acceptance of its applications. Similarly, the governance of the intelligent business tools in the organization leads to the increase of the maturity of the intelligent business.

By and large, applying IT governance processes and methods relies on thinking about some arrangements in the organization, which will result in the correct use of the information and IT infrastructure in the organization, in the case of intelligent business solutions, also the application of methods and processes of IT governance is used to consolidate the use of this tool in the organization, as in strategic intelligent business applications, this application does not go beyond decision-making based on organizational data. If the IT governance processes and methods are institutionalized in the organization, a kind of requirement to change in the decision-making process in the organization is created based on the data and information processed in intelligent business systems, and the well-known organizational decisions will find a kind of technical attachment that will be required with the decision in the decision-making automation system in the organization.

If the requirements of IT governance are considered when developing intelligent business applications in an organization, the result is that in practice, a mechanism and decision-making process is produced during the production of systems alongside the original systems. Meaning that the outputs of intelligent business systems are organizationally and formally used in the organization, and the information processing chain, which were produced up to the dashboard level and multiple reports, but ignored by the users, is suddenly considered, and this chain continues with decision-making automation. To this aim, developing intelligent business systems together with the requirements of the governance together allow the organization to consider its mechanism and automation and plan it.

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PROPOSING A METHOD FOR ASSESSMENT OF BRAND IMITATION FACTORS

PROPUESTA DE UN MÉTODO PARA EVALUAR LOS FACTORES DE IMITACIÓN DE MARCA

ABSTRACT

Brand imitation is an approach for new brands to be successful in the market; on the other hand, it can be destructive for developed brands by incurring heavy financial losses. Many studies have investigated imitation and its effective factors. The present paper studies effective factors of imitation and also ranks them through expert judgments. We use rough numbers properties to rank the factors. In so doing, three groups of experts, based in Iran, were asked to rank the factors that affect brand imitation. The ranking process was implemented by Rough-TOPSIS method. Also, the authors apply Fuzzy-TOPSIS method and findings were compared. This study recognizes important factors that affect brand imitation and rank them according to the significance level. Results emphasize that legislation is the most important factor that can prevent brand imitation and counterfeit. This ranking helps companies to improve specifications in order to obtain security for their brands.

KEYWORDS

Brand imitation, Effective imitation factors, TOPSIS Rough

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Proposing A Method for Assessment of Brand Imitation Factors

RESUMEN

La imitación de marca es un enfoque para que las nuevas marcas tengan éxito en el mercado; por otro lado, puede ser destructiva para las marcas desarrolladas al incurrir en grandes pérdidas financieras. Muchos estudios han investigado la imitación y sus factores de efectividad. El presente artículo estudia los factores de efectividad de la imitación y también los clasifica a través de juicios de expertos. Usamos propiedades de números aproximados para clasificar los factores. Al hacerlo, se pidió a tres grupos de expertos, radicados en Irán, que clasificaran los factores que afectan la imitación de la marca. El proceso de clasificación fue implementado a través del método Rough-TOPSIS. Además, los autores aplican el método Fuzzy-TOPSIS y se compararon los resultados. Este estudio reconoce los factores importantes que afectan la imitación de marca y los clasifica según el nivel de significación. Los resultados enfatizan que la legislación es el factor más importante que puede prevenir la imitación de marca y la falsificación. Esta clasificación ayuda a las empresas a mejorar las especificaciones con el fin de obtener seguridad para sus marcas.

PALABRAS CLAVE

Imitación de marca, factores de efectividad de la imitación, TOPSIS Rough

1. INTRODUCTION

Brands are being made by peoples. They are the results of relationships between Peoples who build them and the individuals who purchase them (Harris 2007). Branding affects all aspects of a company and involves customers and employees. A company that makes a brand shapes all the things related to the business (King and Grace 2008). Branding is an effort to integrate all the things pertinent to a product or service in order to make customers remember them (Walvis 2008). Brand personality is a key factor that shows condition of a brand. Successful branding results in success in making eligible brand personality (Keller and Richey 2006). After success in branding the companies may face a new problem, called brand imitation. Being similar to a leading brand can help new products to remain competitive. For example, “if you don’t have access to your favorite drinking like Redbull, you’ll probably prefer the drinking which name is similar to it” (van Horen and Pieters 2012).

Although imitating a brand is a technique for mimicking developed brands’ success but it makes financial losses to the leading brands in long term (Zaichkowsky 2006). This prevalent technique may imitate a brand at least in color, size, and shape in addition to name and logo (Scott Morton and Zettelmeyer 2004). “Imitation in similar packaging can confuse two thirds of buyers and mislead on third of them” (Le Roux, Bobrie et al. 2016). Brand imitation can also decrease customer satisfaction of luxury brands because copycat brands cannot often please customers for their lack of quality. Therefore, it will mentally affect people who avoid buying imitated brands. This process will erode people’s confidence in those brands and make financial losses to them. Copycats, first, find the specification of a leading brand. For this purpose, they focus on name, logo, color, size, or shape of a product. “They also may mimic meaning or theme of a specified brand for instance, the wild cat theme of the puma or the traditional family-produced olive oil theme of the Bertolli brand” (Van Horen and Pieters 2013).

In studying brand imitation, it is necessary to recognize the factors that affect imitation. These factors are important because we must know which factor affects imitation more in order to prevent imitation process. In this study, we try to recognize these factors and rank them. For this purpose, we need to identify these factors by conducting a literature review. Then we ask experts to judge about the selected factors. We must assign a weight coefficient to each factor and then ranking process will start. Ranking will be performed by using TOPSIS-Rough method. Also, the authors rank the effective factors by use of TOPSIS-Fuzzy method. This is useful because we can compare the findings of the employed methods and study the results. Therefore, this paper recognizes brand imitation constructs and deals with two important questions: (1) what are the provoking qualities which give rise to brand imitation? And (2) how important are these effective qualities in preventing imitation? These questions display the main ideas behind this study and answering them fills the gap in the previous works. This paper adds to the literature in several aspects. First, this is the first study in collecting and ranking imitation factors while previous studies just developed and tested the stimulating factors. Second, we employ a ranking method based on TOPSIS-Rough. This method consolidates the potencies of rough set theory in tackling vagueness and the capacity of TOPSIS in modeling multi criteria decision making to achieve robust results in existing research, but most studies do not consider this approach. Finally, we compare the results obtained by TOPSIS-Rough with those of TOPSIS-Fuzzy approach to check the strength of the applied method.

The reminder of the paper is organized as follows. In section 2 a review of imitation brand, its definition, especial aspects, and related works are presented. The proposed method based on TOPSIS-Rough is described in section 3. An empirical experiment is carried out using TOPSIS-Rough method in section 4. A TOPSIS-Fuzzy analysis is performed in section 4 to recalculate the ranking of the effective factors and evaluate the results' robustness of the proposed method by a comparison presented in section 5. Finally, section 6 concludes the paper.

2. LITERATURE REVIEW

2.1. Defining imitation

Imitation is different from counterfeit. We define imitation as "product or service, though not identical, (which) is viewed as similar in substance, name, shape, form, meaning or intent to an acknowledge and widely known product or service currently in the market place"(Lai and Zaichkowsky 1999). In other words, imitated products are those that look similar to other branded products, but are not identical (Le Roux, Bobrie et al. 2016). For defining lookalikes we refer to Balabanis and Craven (1997) to define it as "a new generation of own brand products that have similar packaging characteristics to leading brand products" (Le Roux, Bobrie et al. 2016). Imitation is similarity in shape, logo, theme, appearance to a popular or accepted product or service (Lai and Zaichkowsky 1999).

2.2. Imitation aspects

After knowing about imitation the important thing is to understand whatever can be imitated. Researchers have defined multitude aspects of imitation. They have listed the aspects of products or services that can be imitated. “Copycats imitate the name, logo, and/or package design of a leading national brand to take advantage of the latter’s positive associations and marketing efforts” (Femke van Horen and Pieters 2012). Although everything that is important to success of a product can be imitated, feature is most accessible aspect of a product to imitate. Name, logo and package that are mentioned above belong to feature.

2.3. Effective imitation factors

Similarity to a leading brand is the most common strategy for copycat brands (Fazio 1986). “An important precondition for efficient brand imitation strategy is similarity to the leader brand. Connection and relevance to the leader brand are pivotal keys for evaluation imitating. (Fazio 1986, Van Horen and Pieters 2013). In this paper, we aim to investigate the effective imitation factors. This seems important to know why some brands are more imitated than others. For this purpose, first, the authors seek the effective factors which reveal how leading brands can protect themselves from imitation. Name, appearance, place, and price are important factors that may affect imitation. We can use feature, as an important factor, instead of name because feature also includes name. Appearance signifies the figure of product such as packaging feature. Place represents where product is sold. Product price is also a significant quality (Le Roux, Bobrie et al. 2016).

Theme copycat is mainly varied from feature copycat. Theme is the background of brand feature (van Horen and Pieters 2012). “Brand specific and feature specific factors are hypothesized to influence speed. Brand specific factors include the brand’s category market, share, and the brand’s sponsorship-whether it’s a national or a store brand. Feature specific factors subsume the price premium charged for the new feature and the use of new technology to introduce a new feature. Research shows that an inverted U-Shaped relationship captures the relationship between share and imitation speed. (Sinapuelas 2007). High share and low share brands tend to imitate slower than intermediate share brands. High category share brands tend to wait and see until uncertainties are resolved and consumers accept the new feature, while low share brands are slow to imitate because of the lack of resources to imitate fast.

According to Porter’s five forces theory bargaining power of suppliers, bargaining power of buyers, threat of new entrants, threat of substitutes, and industry rivalry are the cardinal factors that affect attractiveness of an industry. These factors also affect brand imitation because attractiveness of an industry can affect attractiveness of a leading brand in that industry. Also, legislation is another factor that influences the attractiveness of an industry. Therefore, legislations and the level of intellectual property rights impact imitation. The threat of new entrants by spread of technology is also another effective factor. Moreover, brand value is an cardinal factor. By having

category market share we don't need to write industry rivalry. In summary, Factors that affect imitation are showed in Table 1.

Table 1. Factors that affect imitation

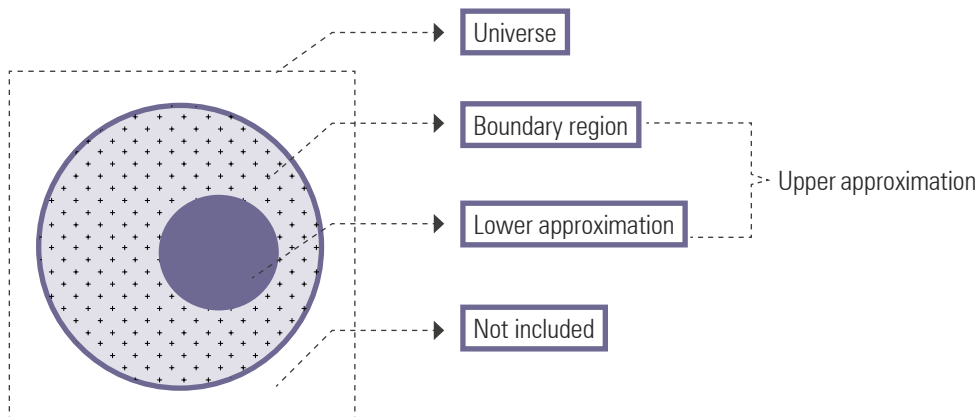
Shown in calculation as	Factors	Description	Reference
F1	Feature	Affection of brand feature and theme	(Le Roux, Bobrie et al. 2016), (Femke van Horen and Pieters 2012)
F2	Place	Place where products are sold	(Le Roux, Bobrie et al. 2016), (Femke van Horen and Pieters 2012)
F3	Price	Product's Price	(Le Roux, Bobrie et al. 2016), (Femke van Horen and Pieters 2012)
F4	Market Share	Category Market Share	(Sinapuelas 2007), (Wilbur and Farris 2014)
F5	Finance	Brand's sponsorship	(Sinapuelas 2007), (Harris 2007)
F6	Value	Brand value	(Sinapuelas 2007), (Chehab, Liu et al. 2016), (de Oliveira, Silveira et al. 2015)
F7	Suppliers	Bargaining power of suppliers	Porter's five forces theory, (Dessain and Fishman 2017), (Wu, Tseng et al. 2012)
F8	Buyers	Bargaining power of buyers	Porter's five forces theory, (Dessain and Fishman 2017), (Wu, Tseng et al. 2012)
F9	Technology	Spread of technology	Porter's five forces theory, (Dessain and Fishman 2017), (Wu, Tseng et al. 2012)
F10	Substitutes	Threat of substitutes	Porter's five forces theory, (Dessain and Fishman 2017), (Wu, Tseng et al. 2012)
F11	Appearance	Affection of appearance	(Le Roux, Bobrie et al. 2016), (Zaichkowsky 2006)
F12	Legislations	Legislations and the level of intellectual property rights	Porter's five forces theory, (Dessain and Fishman 2017), (Wu, Tseng et al. 2012)

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2.4. Rough number based on rough set theory

The process of project risk and network analysis confronts uncertainties. Therefore, adopting methods with the capability of modeling uncertainties, such as fuzzy logic, seems appropriate for initial judgments. In addition, this study uses ordered pair numbers that needs a particular model to draw a comparison between them. If conventional mathematical logic is used, it will be necessary to apply desk comparisons or stable comparison sort. This kind of sorting has a great disadvantage because it demands large amount of memory. Since data of this filed have high-volume, the above methods are not applicable for this problem and rough numbers system is employed instead. This is an appropriate tool for dealing with inaccurate data based on expert opinions. The rough set theory was first proposed by (Pawlak 1982). This is an efficient mathematical tool for dealing with subjective and inaccurate data with no need for excessive assumptions and additional revisions. In this theory, the concept of vagueness is shown by a pair of upper approximation and lower approximation, based on accurate concepts (Pawlak 1991). The lower approximation of set S is the set of all elements that are certainly included in S while the upper approximation includes elements whose attachment to S is uncertain. Fig. 1 shows the primary logic of rough set theory.

Figure 1. Primary logic of rough set theory (Lee et al, 2012)



Source: Lee, C., Lee, H., Seol, H., & Park, Y. (2012). Evaluation of new service concepts using rough set theory and group analytic hierarchy process. *Expert Systems with Applications*, 39(3), 3404-3412.

2.4.1. Rough numbers and standard mathematical operations

Let us assume U is a world encapsulating all things. The boundary region of S in U is composed of elements that are neither an element of the target set nor excluded from the set (Greco, Matarazzo et al. 2001). Zhai, et al.(2008) argued that upper approximation, lower approximation, and boundary region can be used against human inaccurate and subjective judgments. Assume a set of n groups of human

judgments $R = \{J_1, J_2, \dots, J_n\}$ as sorted as $J_1 < J_2 < \dots < J_n$ where Y is an arbitrary object of U . In this case, the upper and lower approximations of J_i and boundary region is determined as follows:

$$\text{Lower approximation: } \underline{\text{Apr}}(J_i) = \cup \{Y \in U/R(Y) \leq J_i\} \quad (1)$$

$$\text{Upper approximation: } \overline{\text{Apr}}(J_i) = \cup \{Y \in U/R(Y) \geq J_i\} \quad (2)$$

$$\begin{aligned} \text{Boundary region: } \text{Bnd}(J_i) &= \cup \{Y \in U/R(Y) \neq J_i\} \\ &= \{Y \in U/R(Y) > J_i\} \cup \{Y \in U/R(Y) < J_i\} \end{aligned} \quad (3)$$

Therefore, human subjective judgments and preferences, J_i , can be displayed by a rough number determined by its lower limit, $\underline{\text{Lim}}(J_i)$, and the upper limit, $\overline{\text{Lim}}(J_i)$. Interval of boundary region indicates the degree of accuracy. A rough number with the small interval of boundary region is interpreted as a more accurate number. Human judgment and the interval of boundary region are expressed by the following equations:

$$\text{Rough number: } \text{RN}(J_i) = [\underline{\text{Lim}}(J_i), \overline{\text{Lim}}(J_i)] \quad (4)$$

$$\text{Interval of boundary region: } \text{IBR}(J_i) = \overline{\text{Lim}}(J_i) - \underline{\text{Lim}}(J_i) \quad (5)$$

Interval analysis operations for rough numbers are applied as Equations (6) to (8):

$$\text{RN}_1 \oplus \text{RN}_2 = (L_1, U_1) + (L_2, U_2) = (L_1 + L_2, U_1 + U_2) \quad (6)$$

$$\text{RN}_1 \otimes K = (L_1, U_1) \times K = (KL_1, KU_1) \quad (7)$$

$$\text{RN}_1 \otimes \text{RN}_2 = (L_1, U_1) \times (L_2, U_2) = (L_1 \times L_2, U_1 \times U_2) \quad (8)$$

Where, $\text{RN}_1 = (L_1, U_1)$ and $\text{RN}_2 = (L_2, U_2)$ are two rough numbers and K is a non-zero constant.

2.4.2. Comparison of rough numbers and converting into crisp values

Rough set-based rating, pursued by this study, follows its own rules. In summary, there are three general rating rules (Zhai, Khoo et al. 2008). Let us assume U_A and U_B are the upper limit of numbers A and B , and L_A and L_B are the lower limit of rough numbers A and B , respectively. There are three possible alternatives:

$$\text{if } U_A > U_B \text{ and } L_A \geq L_B \text{ or } U_A \geq U_B \text{ and } L_A > L_B \text{ then } A > B \quad (9)$$

$$\text{if } U_A = U_B \text{ and } L_A = L_B \text{ then } A = B \quad (10)$$

$$\text{if } U_A > U_B \text{ and } L_A < L_B \text{ or } U_A < U_B \text{ and } L_A < L_B \text{ then calculate } M = \frac{U + L}{2} \quad (11)$$

In Equation (11), rough numbers are compared via the following rules after the calculation of M:

$$\text{if } U_A > U_B \text{ and } L_A < L_B \text{ and } M_A \leq M_B \text{ then } A < B \quad (12)$$

$$\text{if } U_A > U_B \text{ and } L_A < L_B \text{ and } M_A > M_B \text{ then } A > B \quad (13)$$

$$\text{if } U_A < U_B \text{ and } L_A > L_B \text{ and } M_A \leq M_B \text{ then } A < B \quad (14)$$

$$\text{if } U_A < U_B \text{ and } L_A > L_B \text{ and } M_A > M_B \text{ then } A > B \quad (15)$$

Following the calculation of rough numbers, a set of rough numbers should be converted to crisp values in order to sort their rank. Let L_A and U_A be the upper approximation and the lower approximation of rough number \tilde{A} and $\lambda (0 \leq \lambda \leq 1)$ be the optimism index. Therefore, the equation for converting the rough number to a crisp value (Song, Ming et al. 2013) will be as follows:

$$A = (1 - \lambda)L_A + \lambda U_A \quad (16)$$

3. PROPOSED METHOD

The proposed method is accompanied by two assumptions. First, assume that there are k DMs and their opinions contributing to the final decision with the same importance ($k = 1, \dots, k$). Second, assume that there are m selection alternatives ($i = 1, \dots, m$). The proposed method consists of eight steps as follows.

$$F_{ij}^k = \begin{pmatrix} f_{11}^k & f_{12}^k & \dots & f_{1n}^k \\ f_{21}^k & f_{22}^k & \dots & f_{2n}^k \\ \vdots & \vdots & \ddots & \vdots \\ f_{m1}^k & f_{m2}^k & \dots & f_{mn}^k \end{pmatrix} \quad (17)$$

Where f_{ij}^k is the value of the i^{th} alternative in the j^{th} criterion of expert's opinion according to the k^{th} expert. Then, group decision matrix is formed as matrix (18).

$$\tilde{F} = \begin{pmatrix} \tilde{f}_{11} & \tilde{f}_{12} & \dots & \tilde{f}_{1n} \\ \tilde{f}_{21} & \tilde{f}_{22} & \dots & \tilde{f}_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ \tilde{f}_{m1} & \tilde{f}_{m2} & \dots & \tilde{f}_{mn} \end{pmatrix} \quad (18)$$

So that:

$$\tilde{f}_{ij} = \{f_{ij}^1, f_{ij}^2, \dots, f_{ij}^k, \dots, f_{ij}^m\}$$

Step 2: converting \tilde{f}_{ij} array of matrix \tilde{F} to a rough number in order to constitute the rough group assessment matrix F using equations (19) and (20).

$$\text{Lower approximation: } \underline{\text{Apr}}(f_{ij}^k) = \cup \{Y \in U/R(Y) \leq f_{ij}^k\} \quad (19)$$

$$\text{Upper approximation: } \overline{\text{Apr}}(f_{ij}^k) = \cup \{Y \in U/R(Y) \geq f_{ij}^k\} \quad (20)$$

Thus, f_{ij}^k can be displayed as a rough number determined by its lower limit, $\underline{\text{Lim}}(f_{ij}^k)$, and upper limit, $\overline{\text{Lim}}(f_{ij}^k)$, in which:

$$\underline{\text{Lim}}(f_{ij}^k) = \left(\prod_{m=1}^{N_{ijL}} x_{ij} \right)^{\frac{1}{N_{ijL}}} \quad (21)$$

$$\overline{\text{Lim}}(f_{ij}^k) = \left(\prod_{m=1}^{N_{ijU}} y_{ij} \right)^{\frac{1}{N_{ijU}}} \quad (22)$$

x_{ij} and y_{ij} are the lower approximation and the upper approximation components of f_{ij}^k , respectively. N_{ijL} and N_{ijU} are the number of components placed in the lower approximation and upper approximation of (f_{ij}^k) , respectively. Now, rough number $RN(f_{ij}^k)$ can be displayed as Equation (23):

$$RN(f_{ij}^k) = [\underline{\text{Lim}}(f_{ij}^k), \overline{\text{Lim}}(f_{ij}^k)] = [f_{ij}^{kL}, f_{ij}^{kU}] \quad (23)$$

where f_{ij}^{kL} and f_{ij}^{kU} are the lower limit and the upper limit of rough number $RN(f_{ij}^k)$ in the k^{th} pairwise comparison matrix, respectively. Then, it is possible to formulate the sequence of rough numbers as Equation (24):

$$RN(\tilde{f}_{ij}) = \{[f_{ij}^{1L}, f_{ij}^{1U}], [f_{ij}^{2L}, f_{ij}^{2U}], \dots, [f_{ij}^{mL}, f_{ij}^{mU}]\} \quad (24)$$

In addition, mean rough intervals are defined as Equations (25), (26) and (27):

$$\overline{RN(\tilde{f}_{ij})} = [f_{ij}^L, f_{ij}^U] \quad (25)$$

$$f_{ij}^L = \left(\prod_{k=1}^m f_{ij}^{kL} \right)^{\frac{1}{m}} \quad (26)$$

$$f_{ij}^U = \left(\prod_{k=1}^m f_{ij}^{kU} \right)^{\frac{1}{m}} \quad (27)$$

where f_{ij}^L and f_{ij}^U are the lower limit and the upper limit of rough number $[f_{ij}^L, f_{ij}^U]$, respectively. m is the number of experts. At this point, it is possible to form the rough group decision matrix, F , as matrix (28):

$$F = \begin{bmatrix} [f_{11}^L, f_{11}^U] & [f_{12}^L, f_{12}^U] & \dots & [f_{1n}^L, f_{1n}^U] \\ [f_{21}^L, f_{21}^U] & [f_{22}^L, f_{22}^U] & \dots & [f_{2n}^L, f_{2n}^U] \\ \vdots & \vdots & \ddots & \vdots \\ [f_{m1}^L, f_{m1}^U] & [f_{m2}^L, f_{m2}^U] & \dots & [f_{mn}^L, f_{mn}^U] \end{bmatrix} \quad (28)$$

Step 3: Generating the positive ideal solution (PIS) and negative ideal solution (NIS) based on the characteristic of each criterion. Obviously, for the benefit criterion,

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its PIS value and the NIS are the largest and the lowest values that it may take, respectively. The PIS and NIS are formulated in Equation (29).

$$\begin{aligned} f^+(j) &= \left\{ \max_{i=1}^U(f_{ij}^U), \text{ if } j \in B; \min_{i=1}^L(f_{ij}^L), \text{ if } j \in C \right\} \\ f^-(j) &= \left\{ \min_{i=1}^L(f_{ij}^L), \text{ if } j \in B; \max_{i=1}^U(f_{ij}^U), \text{ if } j \in C \right\} \end{aligned} \quad (29)$$

Where $f^+(j)$ and $f^-(j)$ are PIS and NIS values with respect to criterion j . B and C represent benefit criterion and cost criterion, respectively.

Step 4: calculating the deviation coefficient. The deviation coefficient (in the form of rough numbers) is calculated using the distance between the rough number and its PIS and NIS values as follows:

$$\begin{aligned} d_{ij}^{+L} &= f^+(j) - f_{ij}^U = \max_{i=1}^U(f_{ij}^U) - f_{ij}^U, & \text{if } j \in B \\ d_{ij}^{+U} &= f^+(j) - f_{ij}^L = \max_{i=1}^U(f_{ij}^U) - f_{ij}^L, & \text{if } j \in B \end{aligned} \quad (30)$$

$$\begin{aligned} d_{ij}^{+L} &= f_{ij}^L - f^+(j) = f_{ij}^L - \min_{i=1}^L(f_{ij}^L), & \text{if } j \in C \\ d_{ij}^{+U} &= f_{ij}^U - f^+(j) = f_{ij}^U - \min_{i=1}^L(f_{ij}^L), & \text{if } j \in C \end{aligned} \quad (31)$$

$[d_{ij}^{+L}, d_{ij}^{+U}]$ represents the distance between a rough number and its PIS. d_{ij}^{+L} and d_{ij}^{+U} denote the lower and upper limits, respectively. Now, we can establish the deviation coefficient matrix D^+ as follows:

$$D^+ = \begin{bmatrix} [d_{11}^{+L}, d_{11}^{+U}] & [d_{12}^{+L}, d_{12}^{+U}] & \cdots & [d_{1n}^{+L}, d_{1n}^{+U}] \\ [d_{21}^{+L}, d_{21}^{+U}] & [d_{22}^{+L}, d_{22}^{+U}] & \cdots & [d_{2n}^{+L}, d_{2n}^{+U}] \\ \vdots & \vdots & \ddots & \vdots \\ [d_{m1}^{+L}, d_{m1}^{+U}] & [d_{m2}^{+L}, d_{m2}^{+U}] & \cdots & [d_{mn}^{+L}, d_{mn}^{+U}] \end{bmatrix} \quad (32)$$

$$\begin{aligned} d_{ij}^{-L} &= f_{ij}^L - f^-(j) = f_{ij}^L - \min_{i=1}^L(f_{ij}^L), & \text{if } j \in B \\ d_{ij}^{-U} &= f_{ij}^U - f^-(j) = f_{ij}^U - \min_{i=1}^L(f_{ij}^L), & \text{if } j \in B \end{aligned} \quad (33)$$

$$\begin{aligned} d_{ij}^{-L} &= f^-(j) - f_{ij}^U = \max_{i=1}^U(f_{ij}^U) - f_{ij}^U, & \text{if } j \in C \\ d_{ij}^{-U} &= f^-(j) - f_{ij}^L = \max_{i=1}^U(f_{ij}^U) - f_{ij}^L, & \text{if } j \in C \end{aligned} \quad (34)$$

$[d_{ij}^{-L}, d_{ij}^{-U}]$ represents the distance between a rough number and its NIS. d_{ij}^{-L} and d_{ij}^{-U} denote the lower and upper limits, respectively. Now we can establish the deviation coefficient matrix, D^- , as follows:

$$D^- = \begin{bmatrix} [d_{11}^{-L}, d_{11}^{-U}] & [d_{12}^{-L}, d_{12}^{-U}] & \cdots & [d_{1n}^{-L}, d_{1n}^{-U}] \\ [d_{21}^{-L}, d_{21}^{-U}] & [d_{22}^{-L}, d_{22}^{-U}] & \cdots & [d_{2n}^{-L}, d_{2n}^{-U}] \\ \vdots & \vdots & \ddots & \vdots \\ [d_{m1}^{-L}, d_{m1}^{-U}] & [d_{m2}^{-L}, d_{m2}^{-U}] & \cdots & [d_{mn}^{-L}, d_{mn}^{-U}] \end{bmatrix} \quad (35)$$

Step 5: Normalizing the deviation coefficients of alternatives and obtaining the normalized deviation coefficient matrices, D^{+} and D^{-} , as follows:

$$d_{ij}^{+L} = \frac{d_{ij}^{+L}}{\max_{i=1}^m \{\max[d_{ij}^{+L}, d_{ij}^{+U}]\}}, d_{ij}^{+U} = \frac{d_{ij}^{+U}}{\max_{i=1}^m \{\max[d_{ij}^{+L}, d_{ij}^{+U}]\}} \quad (36)$$

$$D^{+} = \begin{bmatrix} [d_{11}^{+L}, d_{11}^{+U}] & [d_{12}^{+L}, d_{12}^{+U}] & \dots & [d_{1n}^{+L}, d_{1n}^{+U}] \\ [d_{21}^{+L}, d_{21}^{+U}] & [d_{22}^{+L}, d_{22}^{+U}] & \dots & [d_{2n}^{+L}, d_{2n}^{+U}] \\ \vdots & \vdots & \ddots & \vdots \\ [d_{m1}^{+L}, d_{m1}^{+U}] & [d_{m2}^{+L}, d_{m2}^{+U}] & \dots & [d_{mn}^{+L}, d_{mn}^{+U}] \end{bmatrix} \quad (37)$$

d_{ij}^{+L} and d_{ij}^{+U} represent the lower and the upper limits of normalized deviation coefficients between a rough number and the PIS.

$$d_{ij}^{-L} = \frac{d_{ij}^{-L}}{\max_{i=1}^m \{\max[d_{ij}^{-L}, d_{ij}^{-U}]\}}, d_{ij}^{-U} = \frac{d_{ij}^{-U}}{\max_{i=1}^m \{\max[d_{ij}^{-L}, d_{ij}^{-U}]\}} \quad (38)$$

$$D^{-} = \begin{bmatrix} [d_{11}^{-L}, d_{11}^{-U}] & [d_{12}^{-L}, d_{12}^{-U}] & \dots & [d_{1n}^{-L}, d_{1n}^{-U}] \\ [d_{21}^{-L}, d_{21}^{-U}] & [d_{22}^{-L}, d_{22}^{-U}] & \dots & [d_{2n}^{-L}, d_{2n}^{-U}] \\ \vdots & \vdots & \ddots & \vdots \\ [d_{m1}^{-L}, d_{m1}^{-U}] & [d_{m2}^{-L}, d_{m2}^{-U}] & \dots & [d_{mn}^{-L}, d_{mn}^{-U}] \end{bmatrix} \quad (39)$$

d_{ij}^{-L} and d_{ij}^{-U} represent the lower and upper limits of normalized deviation coefficients between a rough number and the NIS.

Step 6: Calculating the separation measure S_i^{+} and S_i^{-} (weighted normalized deviation) of each alternative as follows:

$$S_i^{+} = [S_i^{+L}, S_i^{+U}] = \sum_{j=1}^n [w_j \times d_{ij}^{+U}] \quad (40)$$

$$S_i^{-} = [S_i^{-L}, S_i^{-U}] = \sum_{j=1}^n [w_j \times d_{ij}^{-L}] \quad (41)$$

Separation measures S_i^{+} and S_i^{-} represent weighted normalized deviation of alternative i from its PIS and NIS values, respectively. w_j is the weight of the j th criterion obtained from expert's opinion.

Step 7: Transforming the separation measures S_i^{+} and S_i^{-} into a crisp value with the optimistic indicator α ($0 \leq \alpha \leq 1$). If decision makers are more pessimistic, they select a smaller value for α ($\alpha < 0.5$). If decision makers are more optimistic, they can select α with a bigger value ($\alpha > 0.5$). If decision makers keep a realistic and moderate attitude, in other words, neither very optimistic nor very pessimistic, they give α value of 0.5. The transformation calculation is as follows:

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$$S_i^{+*} = (1 - \alpha)S_i^{+L} + \alpha S_i^{+U} \quad (42)$$

$$S_i^{-*} = (1 - \alpha)S_i^{-L} + \alpha S_i^{-U} \quad (43)$$

S_i^{+*} and S_i^{-*} represent the crisp value of rough number S_i^+ and S_i^- , respectively.

Step 8: Calculating the distance closeness coefficient (CC_i) of all alternatives for their priority rankings.

$$(CC_i) = \frac{S_i^{-*}}{S_i^{-*} + S_i^{+*}} \quad (44)$$

Then, the author prioritize the data sequences based on the CC_i . An alternative with a larger CC_i is a better choice because it is probably closer to the PIS and farther from the NIS.

4. CASE STUDY

In this study, three groups of brand experts were asked to rank the brand imitation factors through questionnaires. One group included brand experts with academic career. The second group consisted of experts with practical experiments, and the third group was formed with peoples who were expert in academic and practical aspects of brand studies, simultaneously. Each group included 5 experts. The weight factor for advices of group 1 and 2 was 0.4 and it was 0.7 for group 3. Factors are shown in Table (1). Ranking Steps are classified as follows:

Step 1: Forming individual decision-making matrix, as shown in Table (2), using the opinion of three groups of brand experts derived from questionnaire. The rows of this matrix stand for alternatives i.e. the factors that affect brand imitation whereas the columns stand for criteria i.e. Expert's opinion.

Table 2. individual decision-making matrix

Group 1	DM 1	DM 2	DM 3	DM 4	DM 5
F1	9	4	8	2	7
F2	4	9	7	5	8
F3	3	5	5	7	4
F4	5	9	9	7	6
F5	4	6	7	9	7
F6	8	5	6	7	7
F7	5	4	9	3	3
F8	3	5	8	5	5
F9	7	9	5	7	8
F10	7	9	6	7	2
F11	7	9	8	9	6
F12	9	7	9	7	8

Then, group decision matrix is formed (F), as presented in Fig. 2.

Fig.2. Group decision matrix based on experts' opinion

F	9, 4, 8, 2, 7	7, 2, 8, 6, 5	5, 3, 4, 5, 7
	4, 9, 7, 5, 8	1, 3, 5, 4, 3	3, 5, 5, 1, 3
	3, 5, 5, 7, 4	7, 2, 2, 5, 7	5, 1, 5, 1, 5
	5, 9, 9, 7, 6	5, 2, 3, 7, 5	7, 2, 7, 5, 2
	4, 6, 7, 9, 7	5, 2, 2, 3, 8	7, 1, 7, 3, 6
	8, 5, 6, 7, 7	7, 2, 6, 6, 7	7, 4, 8, 9, 8
	5, 4, 9, 3, 3	3, 1, 5, 4, 5	1, 1, 2, 1, 8
	3, 5, 8, 5, 5	5, 3, 6, 5, 5	1, 3, 2, 1, 8
	7, 9, 5, 7, 8	7, 3, 8, 7, 6	5, 2, 9, 5, 8
	7, 9, 6, 7, 2	7, 5, 5, 2, 4	6, 6, 8, 1, 9
	7, 9, 8, 9, 6	1, 3, 8, 7, 9	7, 5, 7, 3, 6
	9, 7, 9, 7, 8	7, 5, 8, 1, 6	8, 7, 8, 9, 4

Step 2: Transforming the group decision matrix to rough numbers for forming rough group decision matrix as presented in Table (3).

Table 3. Rough group decision matrix

Factors	Group 1	Group 2	Group 3
F1	[3.498, 7.348]	[3.556, 6.702]	[3.837, 5.536]
F2	[5.084, 7.708]	[1.974, 3.852]	[2.067, 4.063]
F3	[3.837, 5.536]	[2.795, 5.453]	[1.785, 3.865]
F4	[6.036, 8.149]	[2.996, 5.308]	[2.795, 5.453]
F5	[5.327, 7.509]	[2.446, 4.942]	[2.328, 5.857]
F6	[5.849, 7.207]	[3.905, 6.377]	[5.738, 8.081]
F7	[3.434, 5.798]	[2.079, 4.324]	[1.157, 2.789]
F8	[4.174, 5.884]	[4.127, 5.260]	[1.320, 2.371]
F9	[6.206, 7.965]	[4.671, 7.062]	[3.623, 6.988]
F10	[3.927, 7.303]	[3.210, 5.447]	[2.931, 7.153]
F11	[6.937, 8.499]	[2.368, 6.965]	[4.313, 6.408]
F12	[7.431, 8.497]	[2.591, 6.518]	[5.738, 8.081]

Step 3: Positive and negative ideal solutions are defined as presented in Table (4).

Table 4. Positive and negative ideal solutions

	Group 1	Group 2	Group 3
Positive ideal solutions	8.498885	7.061609	8.081353
Negative ideal solutions	3.433573	1.973596	1.156688

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Step 4: Calculating the deviation coefficients (distance of each criterion from the PIS in table (5) and from the NIS in table (6)).

Table 5. deviation coefficients from PIS (D^+)

	Group 1	Group 2	Group 3
F1	[1.151, 5.001]	[0.360, 3.506]	[2.545, 4.245]
F2	[0.791, 3.415]	[3.210, 5.088]	[4.018, 6.014]
F3	[2.962, 4.662]	[1.609, 4.266]	[4.216, 6.296]
F4	[0.350, 2.462]	[1.753, 4.066]	[2.629, 5.286]
F5	[0.990, 3.172]	[2.119, 4.615]	[2.224, 5.753]
F6	[1.292, 2.650]	[0.685, 3.156]	[0, 2.343]
F7	[2.701, 5.065]	[2.738, 4.983]	[5.292, 6.925]
F8	[2.614, 4.324]	[1.802, 2.935]	[5.710, 6.762]
F9	[0.534, 2.293]	[0, 2.390]	[1.093, 4.458]
F10	[1.196, 4.572]	[1.614, 3.852]	[0.928, 5.150]
F11	[0, 1.562]	[0.097, 4.694]	[1.673, 3.767]
F12	[0.002, 1.068]	[0.543, 4.470]	[0, 2.343]

Table 6. deviation coefficients from NIS (D^-)

	Group 1	Group 2	Group 3
F1	[0.065, 3.915]	[1.582, 4.728]	[2.680, 4.380]
F2	[1.650, 4.275]	[0, 1.878]	[0.911, 2.907]
F3	[0.403, 2.103]	[0.8\sqrt{22}, 3.479]	[0.628, 2.708]
F4	[2.603, 4.715]	[1.022, 3.335]	[1.639, 4.296]
F5	[1.893, 4.075]	[0.473, 2.969]	[1.172, 4.700]
F6	[2.415, 3.774]	[1.932, 4.403]	[4.581, 6.925]
F7	[0, 2.364]	[0.105, 2.350]	[0, 1.633]
F8	[0.741, 2.451]	[2.153, 3.286]	[0.163, 1.214]
F9	[2.773, 4.532]	[2.698, 5.088]	[2.466, 5.831]
F10	[0.493, 3.870]	[1.236, 3.473]	[1.774, 5.996]
F11	[3.503, 5.065]	[0.394, 4.991]	[3.157, 5.252]
F12	[3.998, 5.064]	[0.618, 4.545]	[4.581, 6.924]

Step 5: Normalizing the deviation coefficients of alternatives in tables (7) and (8).

Table 7. Normalized deviation coefficients from PIS (D^{+})

	Group 1	Group 2	Group 3
F1	[0.227, 0.987]	[0.071, 0.689]	[0.368, 0.613]
F2	[0.156, 0.674]	[0.631, 1]	[0.580, 0.868]
F3	[0.585, 0.920]	[0.316, 0.838]	[0.609, 0.909]
F4	[0.069, 0.486]	[0.345, 0.799]	[0.380, 0.763]
F5	[0.196, 0.626]	[0.417, 0.907]	[0.321, 0.831]
F6	[0.255, 0.523]	[0.135, 0.620]	[0, 0.338]
F7	[0.533, 1]	[0.538, 0.979]	[0.764, 1]
F8	[0.516, 0.854]	[0.354, 0.577]	[0.825, 0.976]
F9	[0.105, 0.452]	[0, 0.470]	[0.158, 0.644]
F10	[0.236, 0.903]	[0.317, 0.757]	[0.134, 0.744]
F11	[0, 0.308]	[0.019, 0.923]	[0.242, 0.544]
F12	[0.0003, 0.211]	[0.107, 0.879]	[0, 0.338]

Table 8. Normalized deviation coefficients from NIS (D^{-})

	Group 1	Group 2	Group 3
F1	[0.013, 0.773]	[0.311, 0.929]	[0.387, 0.632]
F2	[0.326, 0.844]	[0, 0.369]	[0.132, 0.420]
F3	[0.080, 0.415]	[0.162, 0.684]	[0.091, 0.391]
F4	[0.514, 0.903]	[0.201, 0.655]	[0.237, 0.620]
F5	[0.374, 0.804]	[0.093, 0.583]	[0.169, 0.679]
F6	[0.477, 0.745]	[0.380, 0.865]	[0.662, 1]
F7	[0, 0.467]	[0.021, 0.462]	[0, 0.236]
F8	[0.146, 0.484]	[0.423, 0.646]	[0.024, 0.175]
F9	[0.547, 0.895]	[0.530, 1]	[0.356, 0.842]
F10	[0.097, 0.764]	[0.243, 0.683]	[0.256, 0.866]
F11	[0.692, 1]	[0.077, 0.981]	[0.456, 0.758]
F12	[0.789, 0.9997]	[0.121, 0.893]	[0.662, 1]

Step 6: Computing the separation measure S_i^+ and S_i^- , as shown in table (9).

Step 7: Transforming the separation measures S_i^+ and S_i^- into crisp values with the optimistic indicator as presented in table (9).

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Step 8: Calculating the relative closeness to the ideal solution and ranking the alternatives. The rank results can be seen in table (9). The rank of criteria is as follows:
 $F_{12} > F_9 > F_{11} > F_6 > F_4 > F_1 > F_5 > F_{10} > F_2 > F_8 > F_3 > F_7$.

Table 9. Separation measure, their crisp form and final rough ranking

NO	S+	S-	S+ crisp	S- crisp	CCi Rough	Rank
F1	[0.334, 1.212]	[0.866, 1.166]	0.773	0.727	0.485	6
F2	[0.594, 1.219]	[0.730, 0.906]	0.907	0.593	0.395	9
F3	[0.779, 1.343]	[0.705, 0.721]	1.061	0.439	0.292	11
F4	[0.338, 0.965]	[0.876, 1.161]	0.652	0.848	0.566	5
F5	[0.432, 1.134]	[0.871, 1.068]	0.783	0.717	0.478	7
F6	[0.232, 0.750]	[0.938, 1.268]	0.491	1.009	0.672	4
F7	[0.894, 1.492]	[0.754, 0.606]	1.193	0.307	0.205	12
F8	[0.833, 1.219]	[0.673, 0.667]	1.026	0.474	0.316	10
F9	[0.137, 0.762]	[0.960, 1.363]	0.450	1.050	0.700	2
F10	[0.346, 1.232]	[0.873, 1.154]	0.789	0.711	0.474	8
F11	[0.104, 0.803]	[0.958, 1.396]	0.453	1.047	0.698	3
F12	[0.043, 0.634]	[1.027, 1.457]	0.339	1.161	0.774	1

5. COMPARISON AND DISCUSSION

For comparison, TOPSIS method was implemented with fuzzy numbers. According to the resulted, shown in Table (10), the ranking is as follows:

$F_{12} > F_{11} > F_6 > F_9 > F_4 > F_5 > F_1 > F_{10} > F_2 > F_7 > F_3 > F_8$.

In both methods F12 (Legislation) is the most important factor. Both Rough and Fuzzy numbers describe similar mathematical concepts. Both applied methods describe vague information and recognized the range of ambiguity through fuzzy and rough limit measures. Mathematical operations of both rough and fuzzy groups are based on ranges. Rough theory is similar to fuzzy, evidence, and grey theory but this approach is independent.

Table 10. Fuzzy ranking

Criteria	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
CCi	0.514	0.472	0.448	0.551	0.532	0.597	0.459	0.435	0.595	0.511	0.610	0.660
Fuzzy												
Rank	7	9	11	5	6	3	10	12	4	8	2	1

TOPSIS rough method shows priorities in experts' judgments. Although TOPSIS fuzzy operates like a logical method for ranking in a fuzzy condition, there are several limitations. One limitation is individual membership function that needs more information and investigation. Furthermore, fuzzy range, indicating individuality and ambiguity, is a constant dependent to the membership function. For instance, in decision matrix the related scores for expert's advice are 7, 7, 6, 5, and 8 that are in the constant distance range of triangular numbers of (8,6), (8,6), (5,7), (6,4), and (9,7), respectively. Geometric mean of collective advices of experts is (5.501, 7.529) but the fuzzy mean range is not suitable for a real experiments because the distance that shows approximation range in ranking differs when we have experts with different sciences and experiments. In TOPSIS Rough collective ranking approach, the mentioned numbers are converted to more flexible and smaller ranges as (8, 6.517), (6.517, 5), (6.964, 5.477), (7.174, 6.192), and (7.174, 6.192). The fuzzy collective mean range is (5.846, 7.207) that is smaller than fuzzy range. Similar results are derived from other arrays of matrix. Large distances show more ambiguities that are not acceptable in risk rankings. Therefore, rough numbers provide higher level of significance than fuzzy numbers.

With TOPSIS Rough collective method change in expert's priorities can be recognized because of rough number's capability for determining limitations based on total expert's priorities. If experts in previous example alter their judgments to 4, 7, 6, 4, and 7, then Fuzzy ranges will change as these: (3, 5), (6, 8), (5, 7), (3, 5), and (8, 6). Also, rough ranges will change to these: (4, 5.426171), (5.426171, 7), (4.578857, 6.66494), (4, 5.426171), and (5.426171, 7). It is clear that fuzzy modified ranges also have the constant distance that is equal to 2. This constant distance is not real because change in advices cannot be recognized in this method. This will affect decision and ranking in affair.

This study is an effort to rank imitation using rough numbers' specifications. Comparing the results of this method with Topsis-Fuzzy, according to brand imitation literature, reveals that which method can be more useful for this purpose. The result derived from Topsis-Fuzzy method is similar to TOPSIS-Rough method but not the same. The important thing is that legislation is the most important factor that affects imitation in both methods. In rough method, technology is more important. This finding seems to be true because high technology can prevent imitation while the appearance attracts imitators. In Topsis-Fuzzy method, in addition, value is more important than technology that is not really true because if a company decides to imitate a product with high brand value and it will not be able to copy technology and manufacture the product it can't imitate it. This means the TOPSIS-Rough method has gave us more logical answers.

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6. CONCLUSION

Brand imitation can result in deep failures for businesses. To prevent this, we must first know what brand imitation is and recognize brand imitation factors. These factors are collected from literature. The second step is to rank these factors. In this paper, we employed TOPSIS-Rough method to rank the factors and compared the results with TOPSIS-Fuzzy. By comparison of two mentioned methods, it is clear that the most important factor that affects imitation is legislation. Thus, the act of laws for preventing imitation can be emphasized. The second effective factor is technology. Technology is influential in two ways. It can be effective by preventing new entrants according to Porter's theory. It also can avoid imitation by making it difficult for rivals. It means that if we want to stop brand imitation, we must codify law to stop them. Also imitation occurs usually in cases that lack of high technology is observed. Laws and technology are two cardinal factors that can prevent brand imitation and counterfeit. According to the findings, appearance is the third factor. Attractiveness of appearance and also easiness of appearance imitating can be effective. Brand value is the fourth factor which shows prosperity of a brand. Imitators are eager to select brands with high value to imitate. Following the effective factors are adduced with their significance priority:

TOPSIS FUZZY :

Legislations > Appearance > Value > Technology > Market share > Finance > Feature > Substitutes > Place > Suppliers > Price > Buyers

TOPSIS ROUGH :

Legislations > Technology > Appearance > Value > Market share > Feature > Finance > Substitutes > Place > Buyers > Price > Suppliers

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BEHAVIORAL ECONOMY AND PUBLIC STATE AIDS: WHY IRANIANS REFUSED TO GIVE UP ON GOVERNMENT SUBSIDY RECEIPT? (A MULTIPLE PRISONER'S DILEMMA GAME)

ECONOMÍA DEL COMPORTAMIENTO Y AYUDAS PÚBLICAS DEL ESTADO: ¿POR QUÉ LOS IRANÍES SE NEGARON A RENUNCIAR AL RECIBO DEL SUBSIDIO GUBERNAMENTAL? (UN JUEGO MÚLTIPLE DEL DILEMA DEL PRISIONERO)

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ABSTRACT

This article uses the game theory, more specifically multiple prisoner's dilemma game, to analyze why Iranians refused to give up on receiving public subsidies in April 2014, in spite of frequent requests of the government. Sample of study consists of two main groups: the ones who were not dependent on government subsidy but were applying for it; and the ones who did not depend either but had fraudulently pretended to depend on government subsidy. Some suggestions are presented such as to define chicken game and not prisoner's dilemma game as the main game.

KEYWORDS

Subsidy reform scheme, Prisoner's dilemma game, Refusal to give up on subsidy receipt, Lie, Iran

RESUMEN

Este artículo utiliza la teoría de juegos, más específicamente el juego múltiple del dilema del prisionero, para analizar por qué los iraníes se negaron a renunciar a recibir subsidios públicos en abril de 2014, a pesar de las frecuentes solicitudes del gobierno. La muestra de estudio consta de dos grupos principales: los que no dependían del subsidio del gobierno, pero que lo solicitaban; y los que tampoco dependían, pero habían fingido fraudulentamente depender del subsidio del gobierno. Se presentan algunas sugerencias, tales como definir el juego de la gallina y no el juego del dilema del prisionero como juego principal.

PALABRAS CLAVE

Esquema de reforma del subsidio, juego del dilema del prisionero, Negativa a renunciar al recibo del subsidio, Mentira, Irán

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Behavioral Economy and Public State Aids:

Why Iranians Refused to Give Up on Government Subsidy Receipt? (A Multiple Prisoner's Dilemma Game)

INTRODUCTION

The 10th administration of the Islamic Republic of Iran started implementing a subsidy reform scheme in the form of monthly cash handouts (IRR 45,000 per person) in 2010. The second phase of the subsidy reform scheme stipulated that the government would continue paying cash handouts exclusively to needy people. To that effect, the 11th administration in April 2014 started registering applicants for government subsidy on the website www.refah.ir where every applicant was required to a. make clear whether or not he owned a residential unit; b. specify his household average income ranking among five groups starting from below IRR 6,000,000 million to over IRR 25,000,000 (the average income of all household members); c. fill out the forms only if he was in need; d. have supporting documents to produce if need be; e. accept to reconstitute cash received and pay fines equaling up to three times the sums received in case of fake information; and f. have his record recognized as the basis for financial capacity in receiving banking facilities.

The government initially expected deciles with higher incomes to not register as they had housing and high income to free up money to be paid to needy deciles. But in reality it did not happen². Of 77 million Iranians, only 2.4 million (3.1%) withdrew their application for government subsidy. In other words, if we consider each household to have four members and parents have a final say, approximately 1.2 million Iranian adults dropped their application for monthly cash handouts. Therefore, the problem may be stated as follows: "Why did a large segment of people, who were not dependent on government subsidy, register despite government expectations (at least 10 million withdrawals)?"

More precisely, the three following parameters were involved in the application of such large numbers of people for government subsidy.

First is economic deterioration and widespread poverty in Iranian society in the years leading to 2013 as opinion polls highlight people's discontent with the economic situation;

Second is government-people difference in the definition of wealth, specifically from the standpoint that ownership of a residential unit does not necessarily imply wealth and cannot indicate owner's affordability;

Third is "mental welfare" or people's self-assessment of their status of life (Ghaffari, 2014; 97) as people, despite running an honorable life, still consider themselves to depend on government subsidy. Such "excessive demand" and "irregular avarice and acquisitiveness", which must be distinguished from entrepreneurship, was a direct impact of wealth show in the society (television serials and films as well as bank prizes) and the previous administration's indiscreet pledge to give each Iranian household a 1,000-square meter villa. Therefore, one may have honestly declared

² There is evidence of lack of cooperation with the 10th administration, but no reliable data was found.

his income, but contrary to government's view, considers himself to depend on government subsidy³.

These three aspects provide only partial answer to the problem. The question in this article is not about withdrawal or non-withdrawal of application for government subsidy; rather, it targets a lie expressed by people regarding their ownership of housing and monthly salary of over IRR 25 million when registering on the website. There is not clear information available on data entered by people. However, 50% of applicants had reportedly declared not having a residential unit while according to the National Statistic Center in 2011, only 26.6% of Iranians live in rented houses and 70% of Iranians have their own private housing or live gratuitously in a residential unit which is not theirs. Furthermore, an MP, asked about people's registered data, had said: "According to available information, 90% of people have declared their monthly income below IRR 10 million, 60% of whom setting their income at below IRR 6 million."

On this basis, people may be classified under five categories:

- Affluent people who gave up on subsidy receipt
- Affluent people who registered but honestly declared their income data
- Affluent people who registered and provided fake data
- Needy people who registered
- And maybe needy people who gave up on subsidy receipt (This category may sound unreasonable and unlikely, but there is such record in Iranian society in the years leading to the Islamic Revolution and also during the 1980-1988 war with Iraq)

Here we ignore the second, fourth and fifth groups. The second group have honestly declared their income, but tried their chance for possible subsidy receipt without having any genuine expectation. The fourth and the fifth groups were really in need, and therefore they are not the subject of our study.

The main focus of our study is the third group, who must be distinguished from the first and the second groups, who registered despite government expectations but were honest. However, the third group did not declare their real income and claimed to receive below IRR 25 million and have no private housing. Economically

³ In a poll conducted by Iranian Student Polling Agency (ISPA) on April 28, 2014, 11.5 percent of respondents said they had withdrawn their application for monthly cash handouts, but the interesting point was that 7.8% said their registration failed. For 26.9% of the interviewees, the reason for registration was inflation and financial needs while another 26.9% highlighted people's overall needs. For 10%, the reason was officials' unnecessary expenditures and 5% said they did not trust government officials. Only 3.5% said their registration was for avarice and 60% agreed to the elimination of cash subsidy for high-income households. The important point is that six months before the poll was conducted, about 69% of respondents in Tehran had agreed to the elimination of subsidy for high-income families, which was down to 60% when the poll was conducted. It seems that after it was announced that in the second phase of subsidy reform plan, high-income families would be eliminated, some people who feared being placed on the list of high-incomes switched to opposition to the elimination of government subsidy for high-income households and consequently the number of proponents dropped. According to the poll, the self-styled low-income, middle-income and high-income individuals were not divided on agreement to the elimination of subsidy for high-income classes

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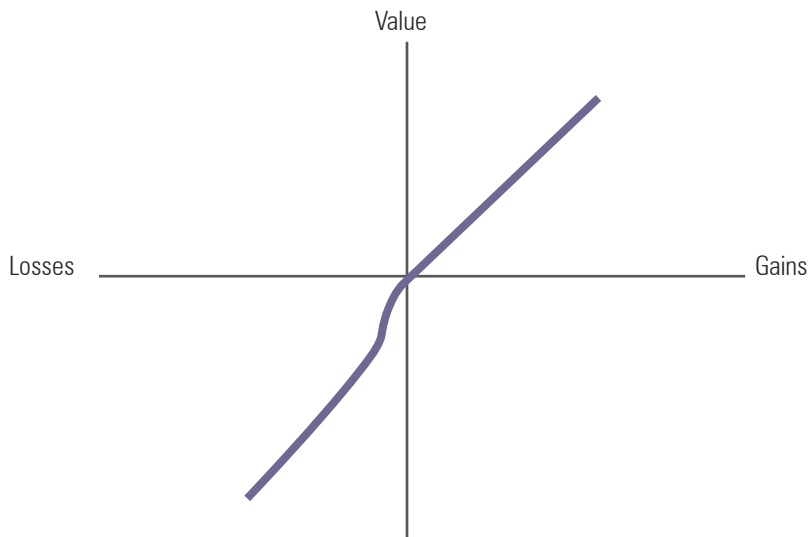
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speaking, the first group has suffered maximum loss and the third group has made maximum gain. Therefore, the main question in this article is to know "what has been the methodology of decision-making by the third group (affluent people with fake data) based on the game theory?"

METHOD

This research followed a behavioral economy approach. This approach values psychological effect of men on the decision they will make. Among various methods, the prospect theory that proposed by Kahneman and Tversky (1979) has found applicable to this research. In a study of risky choices, they modeled how people make decisions based on their valuation of losses and gains. Kahneman (2003) depicted the value function as figure 1 and proposes that this value function is "characterized by three features: 1) it is concave in the domain of losses, favoring risk aversion, 2) it is convex in the domain of losses, favoring risk seeking and 3) this function is sharply kinked at the reference point, and loss-averse steeper for losses than for gains by a factor." (page 1456)

Figure 1: A Schematic Value Function for Changes (Kahneman, 2003)



Source: Kahneman, D. (2003). Maps of bounded rationality: Psychology for behavioral economics. *American economic review*, 93(5), 1449-1475.

As it has been pointed out at the beginning of this paper, multiple prisoner's dilemma game has been used as the method to investigate the reasons of responses to refuse to give up. To have a correct understanding, it is necessary to know

the prediction of people on the possible benefit and loss of this decision. Such understanding is the foundation of the matrix of profit-loss on the basis of game theory, and will help to know the reasons of such decision.

To do this, an ethnographic research provides a ground to empathically catch the deep emotions and mindsets of sample of the research (Khajeheian, 2018). The researcher addresses the third group of people, the ones who lied about their economic situations to receive the direct financial aid. By use of two methods of available sampling and purposeful sampling, a number of such people were identified and get interviewed. Also the researcher, as a sociologist as well as an Iranian person who lives inside the society, used his experience and knowledge to systematically observe the people's behaviors as well as to interview with them on the periods of registration to collect the required data.

FINDINGS

Individual Economic Behavior Analysis Based on Profit-Loss Projections

Regardless of government behavior, some minor elements are involved in decision-making by people, which may be analyzed based on the model of rational choice and game theory. In this model, the assumption is that people assess profits and losses of every behavior in order to choose an option that would benefit them the most. In order to better understand people's behavior, first we produce a profit and loss account from the two behaviors of registration and non-registration for subsidy receipt. Table 1 is for those who applied for subsidy and Table 2 is for those who withdrew application for subsidy.

In general, within the framework of the classic game theory, i.e. prisoner's dilemma, individual decision-making based on others' behavior may be classified as follows in terms of cooperation and defection:

- **Punishment:** In this state, neither of subjects is cooperator and therefore both are deprived of advantages of cooperation and hence punished in one way or other. It is known as P or Dd (defection-defection). (Square 1)
- **Temptation:** In this stage, one subject is defector and the other is cooperator. From a personal interest and economic rationality standpoint, this option is the best for any subject because it does not cooperate while benefiting from advantages of cooperation. That is known as free-riding because it is always intertwined with temptation and seduction. It is known as T or Dc (defection-cooperation). (Square 2)
- **Sucker:** In this stage, one subject is cooperator but the other subject is defector and even misuses the cooperator. The first subject is accused of being sucker. Therefore, this option is known as S or Cd (cooperation-defection). (Square 3)
- **Reward:** In this stage, both subjects are cooperator and benefit from rewards of cooperation. This option is named R or Cc (cooperation-cooperation). (Square 4)

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Table 1. Profit and Loss Account (Registering for Subsidy)

Profit	Loss	People's Assessment of Loss
IRR 455,000 per person IRR 655,020,000 for four-person household (at least until next presidential election)	Commodity prices grow after more subsidies scrapped	Prices will grow under any circumstances.
	No use of public resources and formation of resources for development in Iran	<ul style="list-style-type: none"> • Mistrust of others' cooperation • Our money will never be spent on development. The government spends extravagantly every time it has more money.
	I will be labelled as needy or greedy.	<ul style="list-style-type: none"> • When money is valuable per se and not its acquisition this issue is not significant at all. • Half a loaf better than nothing. This cash handout is enough for alms.
	We will be fined and have to retribute the money.	Everyone is doing so and the government is not able to counter people.
	Lying	Studies show that religious issues rarely impact political and social life and people often justify their lies.
	Non-receipt of loan or economic facilities	It is very unlikely to be implemented, just like all other state decisions to take action against economically corrupt persons.

Table 2. Profit and Loss Account (Withdrawal of Application for Subsidy)

Loss	Profit	Assessment of Loss and Profit
Losing IRR 60 million for at least three years		Highly likely and even certain
Naivety and sucker feeling		<ul style="list-style-type: none"> • We just lose money. • The result is vendetta and opportunism in future occasions based on tit-for-tat strategy.
	Contribution to national development	<ul style="list-style-type: none"> • This money is practically squandered by managers. • The role of this money in national development is unclear and nobody knows where the saved money is spent⁴.
	Economic Incentives	No assessment provided by government
	Peace of mind	Such satisfaction wears out as feeling of naivety dominates.
	Honesty	Self-satisfaction and afterworld reward

Source: Authors' work

Although classic game theories often view a subject's strategic behavior in interaction with "another subject", in social games a subject may be seen in interaction with "other subjects". Therefore, in a multiple prisoner's dilemma where a subject is required to make decisions based on projections of decisions adopted by

⁴ A group of 24 artists, 80 economists and 24 sociologists (including author of this article) signed a letter to President Hassan Rouhani on March 3, 2014 (one month before registration), withdrawing their own application for subsidy and demanding that revenue from withdrawals be spent on education of children in underprivileged areas; alas, it did not happen.

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other subjects (and not a single subject), or specifically in our case, whether or not register in www.refah.ir, whether or not provide wrong data or not (applying or not applying for subsidy receipt), Table 3 shows profit and income statement.

Table 3. Relationship between Region and Business Performance

		Other Subjects' Behavior	
		Defection: Other subjects receive subsidy	Cooperation: Other subjects withdraw decision to receive subsidy
Subject's Behavior	Defection: receives subsidy	1 (punishment): bad economic conditions (shared loss) Dd	2(temptation): personal profit +improved economic conditions (shared profit) Dc
	Cooperation: withdraws from subsidy receipt	3(sucker): personal loss + bad economic conditions (shared loss) Cd	4(reward): improved economic conditions (shared profit) Cc

Source: Authors' work

Based on individual profit and loss calculations shown in Tables 1 and 2, a subject decides about registering or not for subsidy based on how other subjects behave. Preferences of a typical subject (Table 3) is about choosing to register for subsidy receipt while imagining that others are doing so (Square 1), in which case, the product is a collective loss because the government has to pay big sums in subsidy, which would inflict losses on everyone. But if this subject holds out the possibility that others may choose to withdraw their application for subsidy but deciding to register (Square 2), his assessment will be such that after other subjects' withdrawal, economic conditions will improve while he would be able to benefit individually from this collective profit, which means gaining profits bigger than others.

When a subject holding out the possibility of registration by others chooses to withdraw his application (Square 3) he will suffer collective loss because everyone has registered for subsidies. Furthermore, he suffers an individual loss because he is the only one to withdraw his application and has effectively lost subsidy. And finally if a subject withdraws application for subsidy and others do the same (Square 4), the released resources will be spent on national development and improving economic conditions. By ignoring a short-term profit, everyone will gain a bigger social profit.

Naturally the best option for everyone in the society would be a situation in which both a subject and others withdraw their application for subsidy receipt (Square 4), but in game theory-based elucidations if subjects consider themselves involved in the prisoner's dilemma, Square 4 will no longer be sustainable equilibrium and everyone based on the "free-riding" logic will seek a way to receive the subsidy while others will withdraw their application (Square 2). Under such circumstances, everyone will register to receive subsidy (Square 1). Of course that is not the worst result because alongside us, others have also suffered losses. That is a shared loss and continuation of bad economic conditions, known as social dilemma. The worse option will be when a subject thinks he has been fooled into withdrawing from receiving subsidy while everyone else has registered for subsidy receipt. It means that a subject prefers to be D no matter others are c or d. therefore, DC or Dd is the choice of a subject when others become defector. The result will be Dd, which implies collective loss. In other words, by applying prisoner's dilemma model and based on weak economic calculations, the dominant strategy will be the registration of majority of subjects in the society because all of them feel involved in a prisoner's dilemma and not other games in which cooperation is more likely.

This model is efficient on the grounds that it has been able to elucidate the behavior of majority of subjects in the society. In other words, the vast majority of people registered despite the government's projections. In the final days of the deadline, the registration rate was higher because the last digit in national ID numbers has a normal distribution. The upward trend in the final days of registration stemmed from a change every subject felt in other subjects' behavior, which convinced them to change their own behavior⁵. When the dominant atmosphere in the society is mutual trust and cooperation, others will be encouraged to be cooperator. But when they feel they suffer losses due to cooperation they become defector. (JavadiYeganeh, 2009)

The issue of shared profit and loss may be assessed under the title of "not losing the national asset", which means safeguarding the existence of a collective asset or a common source or non-deterioration of the economy and slow-paced inflation, or opportunity for investment in a better future for public good. In this context, giving up on profit may be seen as investment in the development of a public good.

Until this section, my focus was on why subjects registered instead of responding positively to the government's request and withdraw their application for subsidy. I also focused on economic calculations made by ordinary people who had registered because others had done so. Based on the dominant strategy in the prisoner's dilemma game, it would be in the interest of a subject to be defector (in this case, registering for subsidy receipt) regardless of how others behave.

This is part of behavioral corruption in the prisoner's dilemma conditions, which result in collective loss while everyone was seeking maximum profit.

⁵ There is no data available on the trend of registration, but this possibility is held out based on figures announced for withdrawal during the first days of registration (7% to 10%) because the final rate of withdrawal was 3% and therefore withdrawal accelerated.

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Why Some Chose to Lie

The issue that triggered a tumult in the society was not the fact that most subjects in the society registered to enjoy profits from subsidy receipt. In a market society, the dominant rationale is maximum profit and any expectation of sacrifice from people is misplaced. In a society where wealth is practically praised and money is a solution to all problems, economic corruption and acquisitiveness by government employees are unveiled on a daily basis and embezzlements are in the order of billions.

As I noted at the beginning of the article, when I speak about people in this study I do not mean those who need to receive government aid, rather I mean those who are considered as rich in conformity with government criteria and had been asked by the government to forego subsidies. Those rich persons who, despite the government's request, were still applying for subsidy were behaving like Square 2 and those who forwent subsidies were behaving like Square 3 in the foregoing table.

Avarice, excessive demand and seeking profit are not bad per se and are among characteristics of modern society in which, profits, jealousy and wrath have been rehabilitated in the form of wealth, political rivalry, violent sport matches and army. Profiteering, avarice and excessive demand have historical background in some segments of Iranian society. There is historical evidence on the extent of this issue.

Therefore, those who had assessed themselves as rich based on government criteria and registered for subsidy receipt and of course entered real income data did not do any wrong act although they showed their greed. They are rich but they claim to need subsidies; however they did not lie.

But the main issue is lying to gain profits. By lying we mean entering wrong data. We mean those who announced their income wrongly or refused to declare they owned a residential unit in the hope of making higher income⁶. Such an issue is expected to worry the moral conscience of the society because of the extent of such a big lie.

The subject of this article is not to elucidate the reasons of lying in the Iranian society. Some pundits (Mohaddesi, 2009) have divided lies into three categories: lying as social grease to please others and facilitate relations with others in social interactions; lying as a way to escape punishment; and lying as a trap and arm for gaining profits. Iranian society is replete with the first and the second category, also known as white lie. Nonetheless, the lie uttered with regard to subsidy receipt was of the third category; lying in expressing income data for the intention of bigger profits and receipt of subsidy.

Unfortunately lying is rife in Iranian society. Historical evidence is indicative of spread of lying due to insecurity and dictatorship. However, at the present time, most people believe that others are lying. In a recent opinion poll about social issues in Iran, which was conducted in April 2014 by the Iranian Students Polling Agency

⁶ As it was mentioned, 50% of applicants had reportedly declared not having a residential unit while according to the National Statistic Center in 2011, only 26.6% of Iranians live in rented houses and 70% of Iranians have their own private housing or live gratuitously in a residential unit which is not theirs. Furthermore, an MP, asked about people's registered data, had said: "According to available information, 90% of people have declared their monthly income below IRR 10 million, 60% of whom setting their income at below IRR 6 million."

(ISPA), affiliated with the Academic Center for Education, Culture and Research, the residents of Tehran had given the rate 4.21 (on 1-5 scale) for the spread of lying in the city, and 2.76 among their own relatives. The rates stood respectively at 4.11 and 2.76 for hypocrisy. And for the entire country, the rates were 3.56 and 2.52 for lying and 3.43 and 2.46 for hypocrisy.

Lying in Iran has historical roots, mainly emanating from long historical dictatorship and widespread insecurity. But according to the first narratives of Iranian society, it is concluded that this issue has been widespread. A famous prayer attributed to King Darius – “O Lord! Spare Persia Drought, Lie and Enemy Corps!” – shows lying was as harmful as drought and enemy troops at that time. Xenophon’s narrative of post-Cyrus time also bears proof to this issue. Dictatorial governments throughout Persian history have plundered people in a way or other. In addition to common ways of looting through war, pillage of sedentary people by tribes, levying up to 25% taxes and charging taxes for following years (which forced people to flee) and assigning people’s fate into the hands of rulers (by selling provincial governments and customs), there have been other ways of overcharging people particularly during the Qajar era. Some of them were the king’s presence at the residence of famous figures to receive rewards, the king’s presence in the bazaar and partnership with a tradesman in order to sell items to courtiers and merchants at much higher prices, seizure of decedent’s assets and confiscation of dissidents’ assets.

Such policies made people to lose their trust in the government and always bear in mind Molavi’s poem that “Never speak about these three thing: Your destination, your gold (wealth) and your religion.” Therefore, it would not be reasonable to expect people to enter their true economic data to deny themselves an economic profit, particularly when there is no control tool to verify data. If during registration for subsidy receipt, citizens were assured that their data would be verified they would not give wrong response to the question about their wealth status.

Meantime, based on Iranian dictatorship theory, “since all rights in Iran belong to government, so do all responsibilities” and citizens do not feel accountable about social issues. Furthermore, experience has shown that except for critical political cases, the government has always granted social and economic subsidies to people and never has anybody been punished for tax evasion or any other economic offense. Therefore, nobody is afraid of lying about his wealth status.

And of course another issue is that those who receive subsidy are not be considered as wealthy and in people’s mind, not being recognized as wealthy mean capital security.

Mistrust of government, coupled with avarice and lack of fear for government verification as well as interests of pretending to be poor, are micro-level reasons which caused so many Iranians to register for subsidy receipt.

And the conditions under which an ordinary actor had to choose to register or not stipulated a situation in which registration resulted in definite profit with low likelihood of loss while non-registration had likely low profit with definite loss. In other words, in such conditions, any ordinary person chose to register. Furthermore,

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the experienced lived from no firm action against lies at such a level tempted people to register and lie. Therefore, the government placed the people in a situation of "temptation for registration" and "temptation for lying in registration". When the conditions are conducive to avarice and lying, registration on such levels and lying on such scale are not unlikely.

The fallout of such a situation was the institutionalization of lies in the society with impunity for liars and the foregoers' feeling of loss in addition to economic losses on the government due to paying subsidy to affluent groups. That caused people to no longer cooperate with the government. Meantime, non-fulfillment of pledges made by the government for punishing liars would further prove the inefficiency of the government for people.

Another worrying issue was people's negligence of fatwas by religious leaders who had declared religiously forbidden any receipt of subsidy by affluent households. That would undermine the impact of edicts of supreme authority on religious matters, which should be studied independently.

Punishment of the Honest

But there is also a flipside of the coin; a significant number of people who forwent subsidy receipt. Under conditions where honesty is labelled as sucker, a segment of people preferred to tell the truth just for the sake of moral value of honesty. They numbered 2.5 million. Their motivations may be studied so that causes of their withdrawal would be known. The issue of equity is not new regarding analysis of cooperative behavior in the global literature of social sciences. In his article "But Taxpayers Do Cooperate!", Elffers (2000) concludes that equity (not on a large scale) is spreading at the global level, citing ultimatum and dictator games-based evidence.

Equity may be gauged in the ultimatum and dictator games. In the ultimatum game, there are two players; Player One (proposer) disposes of sum furnished by the examiner and is authorized to determine the share of Player Two (responder). The proposals are as follows: all the money for Player One, the bulk, a small segment or nothing of the money for Player One. The responder may accept the first proposal and the sum will be divided between them. He may not accept and neither of parties will gain any money. The dictator game is similar to the ultimatum game with the difference that Player Two has no right and time to accept Player One's proposal and the money will be imperatively divided based on Player One's desire. That is why Player One is called dictator. The dictator can give as much money he wants to Player Two; nothing more, nothing less.

For Jolls, Sunstein and Thaler (1998), in the ultimatum game in the real word, if the proposer suggests less than 20% of the total sum to the responder, the proposal will be rejected. The likelihood for the acceptance of proposal is between 20% and 30%. The predictable behavior of proposers is such that a significant segment of the total money will be divided, i.e. 40%-50%. This issue partly depends on the proposer's equity and partly depends on his fear for reprisal in the ultimatum game. Most

dictators in the dictator game give a minimum portion to Player Two. In other words, most dictators show a minimum level of equity although the money received from them by Player Two may not be as much as proposed in the ultimatum game.

In Iranian society, there have been religious recommendations for sacrifice and forsaking personal interests for divine satisfaction, and bravery. Although many people have not been faithful to such causes they have always liked to be labelled such and that is why the bulk of people have always responded positively to requests of sacrifice and bravery. Examples have already been experienced in the years leading to the Islamic Revolution and during the Iraq-Iran War. But there is also another example in contemporary history, which was Prime Minister Mohammad Mossadeq's appeal to people for loan at a time foreign governments, along with Britain, had imposed oil embargo on Iran. Iranians rushed to Mossadeq's help by buying bonds and these were some people who set records; Haj Mohammad Jafar Kazerouni bought bonds for IRR 10 million in Isfahan or Hassan Shamshiri, owner of Shamshiri kebab, purchased bonds for IRR 5 million.

Equity at such seemingly insignificant level is a big asset which must be used. At a time almost everyone is assured that others are lying and all economic calculations recommend that everyone register, this figure is significant and hopeful.

During the Iraq-Iran War, the families who sent their own children voluntarily to the frontline were not more numerous.

Iran's president heaped praise on sacrifices during registration in a televised interview, saying: "I also offer my gratitude to those who did not register or were not in need. Even though they were in need to some extent but they declined for the sake of more significant and national objectives. In coming months, it is possible for others to decline for the sake of more significant goals."

In our view, in addition to the 2.5 million, those who registered but honestly declared their income (no data is available on their number) are appreciable although subsidy payment to them must be cut.

CONCLUSION

As it was mentioned, at the level of individual actors, under conditions where no effort is made for rewarding equity, lying is not punished, the government has no intention of reviewing people's bank accounts and people hold the government responsible for everything, defining behavior as a "prisoner's dilemma" in which the dominant strategy i.e. defection is not unexpected and it has been observed people have practically chosen this option. However, the game structure might have changed into chicken game or tit-for-tat, whose dominant strategy is cooperation. Some of approaches that could change the output's structure and change the dominant strategy are as follows:

- Instead of asking people whether or not they are "in need", they should be asked to show sacrifice and give their share of subsidy to the needier groups despite their own needs.

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- Global experiences about change in behavior and development of stable behavior (Mackenzie Moore, 2012) indicate the significance of commitment in behavioral changes. Therefore, widespread announcements by state managers failed to convince people to change mind and decline subsidy receipt. Such announcements are made only within the framework of state organs' fulfillment of obligations and have no role in persuading people. There were sporadic cases of declining subsidy receipt. Announcements in which names have been singled out are very effective. Therefore, it is suggested that captivating notices be designed for declining subsidy receipt. Such signs would persuade people to decline subsidy because a person should not see conflict in his own behavior and belief. When he voluntarily bears a sign of decline he will transform it into action.
- Had the government cut the subsidy of affluent applicants who had honestly declared their wealth it would not have been labelled as sucker because of paying money to affluent groups amid economic woes. The next stage would be gradual identification of affluent people who registered but did not honestly declare their wealth. Failure to cut subsidy payment to this group equals spread of lying and will make those who honestly declared their wealth or bravely declined hopeless. Furthermore, the government should fulfill its pledge of forcing liars to restitute subsidy sums and pay fines equaling three times the subsidy value. Elimination can be gradual and the public opinion in the society will definitely not oppose cutting subsidy payment to affluent groups and there is nothing for the government to worry about.
- The government regularly reiterates that it does not investigate people's banking accounts. That is while modern governments have been established based on the rationale that the entire society would be fully submissive to the government. Everyone is equally powerless before the government and the government controls the body and the spirit of people. A new theory developed by John Luck stripped the government of control over people's assets; however, the government remains the sole legitimate authority in the society. Based on such logic, the government is required to do its utmost for safeguarding security. It has to control windfalls and hold their proprietors accountable in order to maintain economic health in the society. The opponents of the theory of government's supervision over people's assets will make maximum gain from economic anarchy. Therefore, the process of verifying people's declarations must be implemented in order to bring economic and psychological security back to the society.

This is while supervising people's accounts is common across the globe. Even US state officers regularly and unexpectedly refer to the residence of applicants of food stamp, enter in and control their belongings to see whether or not they deserve such government aid.

Therefore, the current situation in Iran shows defection is dominant. The situation cannot change by recommending equity and making publicity campaign. The only solution to improving the situation is to change the structure in favor of cooperation.

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Lista de **palabras clave** (como máximo cinco) en español e inglés que faciliten la clasificación temática del artículo.

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- Descriptores del *Journal of Economic Literature* (JEL): <https://www.aeaweb.org/econlit/jelCodes.php>

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