



Identifying Ambidexterity Components of University Entrepreneurship, Case Study: University of Tehran

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ABSTRACT

Ambidexterity in universities means examining existing skills and acquiring new job opportunities simultaneously. Goal of this project is to identify ambidexterity components affecting university entrepreneurship in Tehran University. Research method used for this project is qualitative and the statistic population consists of experts and specialists of the university in the field of Entrepreneurship. Results gaining from interviews showed that five dimensions of ambidexterity include 9 components and 27 indexes. Findings of interviews also showed that ambidexterity components which are effective on university entrepreneurship in case study of Tehran University are in good conditions to improve and develop. In the end we presented suggestions for policy makers, university administrators and whom conducting further researches about this subject in the future.

Keywords: Ambidexterity, university entrepreneurship, Technical Faculty of Tehran University.

1. INTRODUCTION

Day to day increasingly challenge in world economics competition made countries to examine their approaches concerning economic development. Nowadays establishing and developing knowledge – based and innovative business enterprises formed main foundation for competitiveness advantage and economically development of regions. One of key mechanisms for knowledge transfer is to establish university based companies. These companies are creating job opportunities for skillful graduates making effect upon economic development of regions (Shane, 2004). Therefore, universities become the most important part of national innovation system requiring governmental institutions and private industries to cooperate in a threefold spiral (Yusof & Jain, 2007). Adding entrepreneurship program to educational responsibilities of universities highlights the role of them in economic and social development of societies. Hence subjects concerning university entrepreneurship and commercializing

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knowledge has recently come into consideration of many researchers and policy makers around different countries of the world. In Iran, considering that university entrepreneurship was a young category, it is in early stages to institutionalize (Etzkowitz, 2003).

In order to adjust with worldwide procedures, acquire international qualitative standards, increase equality of opportunities across the country, develop the ability to use new technologies and also to improve political, economic and cultural circumstances, keep national elite talent close to home and maintain university human and social resources and also to have active planning and correct viewpoints and improve existing guidelines, it is important to apply university entrepreneurship (the same source mentioned above). It is worthy to consider that commercialization of knowledge help to maintain university human and social assets which is leading to improve adjustment with international qualitative standards. Therefore in order to adjust with worldwide procedures and being converged with other universities of the world, it is necessary that universities of Iran come into this arena and provide pertaining infrastructures to accomplish such purpose.

Taking a glance at programs and missions of prominent universities of the world reveals the change in their missions from the category of education and researches to entrepreneur university while by reviewing strategic plan and 5 – year plan of Tehran University we can barely see such move toward entrepreneur university that from 8 mission lines of Tehran University only line 6 regards to this issue, in which it is said “development of technology incubator centers to produce wealth” which only considered incubator centers; this is while incubator centers are just one of knowledge transfer or researches commercialization mechanisms used to create value or produce wealth. Therefore, it is obvious that university entrepreneurship isn’t mentioned in mission lines of Tehran University.

Emerging entrepreneur university is described as a response to increase importance of knowledge in national and local innovative systems and university would be identified as a cost – effective investment which also performs technology and knowledge transfer. In spite of economic and industrial systems in different stages of development, governments all over the world focus on university potential as a source to elevate innovative environments and creating knowledge – based economic development regime (Etzkowitz, 2013).

Therefore, we are about to facilitate university entrepreneurship by identifying ambidexterity components of university entrepreneurship in this case study. In other words, we hope that after identifying ambidexterity components of university entrepreneurship, we would be able to provide requirements for Tehran University to ensure securely performing knowledge commence.

2. LITERATURE REVIEW

2.1 Ambidexterity

One of the basic ideas in organizational science is that the organization (learning organization) should be able to utilize its existing abilities and at the same time acquire new fundamental abilities along with performing its past duties precisely (March, 1991; Levinthal and March, 1993). In early researches discussed that relation between those two is unacceptable but in recent studies, it is mentioned that ambidextrous organizations can efficiently exploit their abilities and explore new opportunities at the same time. March (1991) believes that exploitation and exploration are two different learning activities and organizations divide its sources and consideration between these two; Ambidexterity in an organization is achieved by balancing exploration and exploitation. Exploitation includes things such as “refinement, efficiency, selection and execution” whereas exploration includes such things as “search, variation, experimentation and discovery” and therefore exploration and exploitation of organizational structures require different strategies and organizational textures. Companies that only focus on exploitation may accept status quo performance and products, fail to reach optimal level of success and may be troubled with reducibility – without – demand problem that is because the organization couldn’t being adaptive sufficiently to changes in the environment and reciprocally considering exploration may help the organization to improve its knowledge basis but on the other hand companies that focus excessively on exploration may embroil the organization into endless loop of researches and affectless changes (March, 1991).

2.2 Ambidexterity Role in University Entrepreneurship Performance

University entrepreneurship interest at national policies scope of the country and also among organizational authorities contributing to conduct research and innovation, is clearly obvious (Goldfarb & Henrekson, 2003). Consequently governmental and organizational budgets dedicate funds to research and developmental projects of public and private sections are increasing and many universities are now building their structures focusing on university entrepreneurship (Phan & Siegel, 2006). Entrepreneur University is also turned into ambidextrous organizations which not only are parallel, efficient and beneficial but also become adaptable and exploration in their third mission to build new entrepreneurial companies and economic development (Etzkowitz, 2003). Ambidexterity clearly defines the role of beneficiaries involved in commercialization of researches. Hence, naturally it requires university researchers to become more specialized. Ambidexterity build top to down policy – institutionalized structure, commercial infrastructure and organizational guideline to support commercialization. Ambidexterity builds down to top policy

– based and flexible context which encourages university researchers to divide their time and roles between research and commercializing research. University researchers can flexibly involve in commercializing researches as researchers, inventors, franchisors or entrepreneurs. Therefore, contextual ambidexterity required more general knowledge and skills (Chang et al., 2009). In addition, managing top to down and down to top policies plays an important role to success. Hence, it seems essential to identify ambidexterity components which can simultaneously expand exploration or exploitation activities inside universities contributing to elevate university entrepreneurship performance.

As we know to begin an exploration case study, we need to define comprehensive and suitable theoretical framework. In order to refine results of report, organizing interviews, gathering and managing data we considered theoretical framework in all stages (not to apply partiality in research plan). Tushman and O'Reilly (1996) were first researchers who introduced organizational ambidexterity theory based on research conducted by Duncan in 1976. They believed there is hope that ambidextrous organizations show better performance and describe organizational structures which help to improve ambidexterity. In recent years, among researches conducted regarding organizations we can see that the concept of organizational ambidexterity is considered more. Gibson and Birkinshaw (2004) define organizational ambidexterity as an organizational ability in being parallel and being efficient in response to market demands and at the same time being adaptive with environment changes. Entrepreneur universities have turned into ambidextrous organizations which not only become parallel, efficient and beneficial but also become adaptable and explorational in their third mission to build new entrepreneurial companies (Etzkowitz, 2003). Foundation of the above mentioned framework which is based on researches conducted by Raish et al (2009) is presented in the following. Goal of this research is to find out the appropriate response for following question: what are the ambidexterity components of university entrepreneurship?

3. RESEARCH METHOD

This study is an applied research and related information gathering is conducted by interviewing the university experts. Statistic population of this research are consisted of university administrators, experienced professors in the field of university entrepreneurship and commercializing university studies in Tehran University faculty of engineering. We select our population from experienced professors who have at least 3 commercialization experiences and as for scholars and experts we considered who wrote scientific articles related to commercializing university studies and university entrepreneurship. For sampling we used judgmental (or targeted) method which is a non – probability sampling

technique. Considering the method of qualitative study which is focus group method and research model and statistic population including administrators and professors who are expert in the field of university entrepreneurship, sampling for this research conducted by at least 8 experts. In this study, we are going to identify university entrepreneurship ambidexterity factors in Tehran University. Therefore, we distinguished semi – structured interview as the best tool for this purpose. This tool enables us to exchange opinions and thoughts to fulfill goals of the project. This tool also enable the manner and feelings observation which help us to better understand notions and feelings of the interviewee regarding subject of this project. We used the method of “content validity” to determine validity of the measurement tool. As for calculating reliability, the method of intersubjective agreement between two valuator by the help of a PhD student in the field of management who has a good command of content validity method (as a participant in the project) were used. Accompanied with mentioned participant record 3 interviews, intersubjective agreement used to calculate reliability index using the following formula which results 0.91. Considering that the amount of reliability is more than 60 percent as a result reliability of evaluation is validated. For analyzing data we used content analysis and theme analysis. For content analysis we took following steps: data preparation, acquaintance, coding and creation of concepts and meanings.

4. FINDINGS

As it is explained in conceptual model of the research, first dimension of this study relates to organizational learning components affecting university entrepreneurship ambidexterity. Extracting joint concepts of components described by selected professors and experts (you can see a sample of interview in Table 1) and totalizing and assigning one level to set of joint concepts (axial coding) based on codes assigned to each concept we reach to 9 main components based on professors and experts opinions which are explained in Table 2.

Concepts discussed in answers of professors and experts to the questions of interview regarding the subject of university entrepreneurship ambidexterity components of Tehran University are based on open coding and we consider a title for each category of joint concepts answered.

We totalize discussed concepts in verbal propositions of interviewees in Table 1 which also shows frequency of each. We also present code of interviewees who point to these concepts in second column of this table.

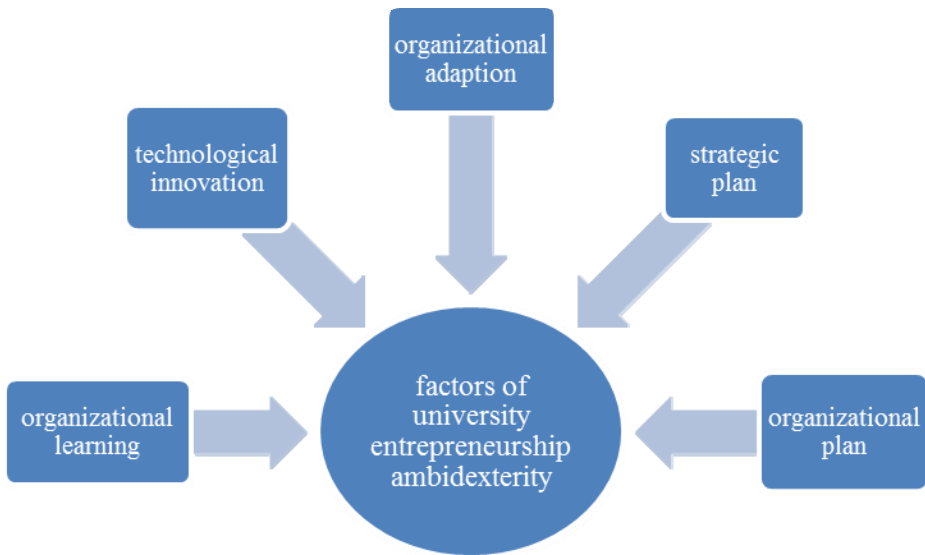


Figure 1: Theoretical Framework of Research (Raishe & Birkinshaw, 2008)

Table 1: Extracted Components and Indexes of Focus Group Interview Session with Professors and Experts of University Entrepreneurship

Frequency	Code of interviewee point to this concept	Extracted index from content of interview with professors and experts in university entrepreneurship	Components	Dimensions
5	I ₁ , I ₂ , I ₆ , I ₇ , I ₈	Organizational learning development	Learning environment	Organizational learning
5	I ₄ , I ₅ , I ₆ , I ₈ , I ₃ ,	Identifying learning development process		
6	I ₂ , I ₃ , I ₄ , I ₆ , I ₈ , I ₅	Applying and developing learning process		
7	I ₁ , I ₂ , I ₄ , I ₅ , I ₆ , I ₇ , I ₈ ,	Creative and innovative persons	Innovation orientation	
4	I ₁ , I ₂ , I ₃ , I ₅	Normative support of managers for innovation		
5	I ₁ , I ₃ , I ₄ , I ₅ , I ₇	Sufficient knowledge and skills of team members in commercialization activities		
5	I ₁ , I ₂ , I ₄ , I ₅ , I ₆	Innovation intensity	Innovation form	Technological innovation
5	I ₂ , I ₃ , I ₅ , I ₆ , I ₇ , I ₈	Communication with field of activity		

5	I ₁ , I ₃ , I ₄ , I ₅ , I ₆	Link with other related sections		
5	I ₁ , I ₂ , I ₄ , I ₅ , I ₆ , I ₈	Type of innovation		
5	I ₂ , I ₃ , I ₅ , I ₆ , I ₈	Physical structures of research and development	Infrastructures	Organizational adaption
8	I ₁ , I ₂ , I ₃ , I ₄ , I ₅ , I ₆ , I ₇ , I ₈	Resources infrastructures, science and information infrastructures of research and development		
6	I ₃ , I ₄ , I ₅ , I ₆ , I ₇ , I ₈	Intellectual property laws		
6	I ₁ , I ₂ , I ₃ , I ₄ , I ₅ , I ₆	Networking with risk – taking investors	Contextual activities	
6	I ₂ , I ₃ , I ₅ , I ₆ , I ₇ , I ₈	University budget for applied researches		
7	I ₁ , I ₂ , I ₄ , I ₅ , I ₆ , I ₇ , I ₈	Internal integration in processes related to commercializing researches	Integration	Strategic management
6	I ₃ , I ₄ , I ₅ , I ₆ , I ₇ , I ₈	External integration in organizational entrepreneurship processes		
5	I ₂ , I ₃ , I ₅ , I ₆ , I ₈	External and internal environment integration		
6	I ₁ , I ₂ , I ₃ , I ₄ , I ₅ , I ₈	Scientific cooperation	Organizational communications	
5	I ₂ , I ₃ , I ₅ , I ₆ , I ₇	Interdisciplinary teams		
5	I ₂ , I ₃ , I ₄ , I ₅ , I ₆	Investment partnership		
6	I ₁ , I ₂ , I ₃ , I ₅ , I ₆ , I ₇	Science and technology parks of research centers	Local separation	Organizational plan
5	I ₁ , I ₃ , I ₄ , I ₅ , I ₆	Incubators		
5	I ₂ , I ₃ , I ₄ , I ₆ , I ₈	Research institutes and companies		
6	I ₁ , I ₂ , I ₃ , I ₅ , I ₆ , I ₇	International conferences and seminars	Knowledge promotion	
5	I ₂ , I ₃ , I ₅ , I ₆ , I ₈	Research opportunities		
6	I ₁ , I ₃ , I ₄ , I ₅ , I ₇ , I ₈	private research laboratories		

5. DISCUSSION AND CONCLUSION

In this research, we gather indexes and components of ambidexterity in university entrepreneurship by examining ambidextrous and university entrepreneurship articles. Next the research framework extracted by conducting case study and interviews. In sessions of research focus group of which statistic population consists of professors and university entrepreneurship experts, factors are discussed and gained data analyzed and divided into 5 dimensions based on theoretical framework. In organizational learning dimension, we extracted 2 components (including learning environment and innovation orientation) with 6 indexes (1- organizational learning development, 2- identifying learning development process, 3- applying and developing learning process, 4- creative and innovative persons, 5- normative support of managers for innovation and 6- Sufficient knowledge and skills of team members in commercialization activities), in technological innovation dimension, we extract 1 component as innovation form and 4 indexes (including 1- innovation intensity, 2- communication with the field of activity, 3- link with other related sections, 4- type of innovation), in dimension of organizational adaption we extract 2 components (including infrastructures and contextual activities) accompanying with 5 indexes (including 1- physical structures of research and development, 2- resources infrastructures, science and information infrastructures of research and development, 3- intellectual property laws, 4- networking with risk – taking investors, 5- university budget for applied projects), in strategic management dimension we extract 2 components (including integration and organizational communications) accompanying with 6 indexes (including 1- internal integration in processes relating to commercializing researches, 2- external integration in organizational entrepreneurship processes, 3- internal and external environment integration, 4- scientific cooperation, 5- interdisciplinary teams, 6- investment partnership) and in the end, as for organizational plan we extracted 2 components (including local separation and knowledge promotion) accompanying with 6 indexes (including 1- science and technology parks of research centers, 2- incubators, 3- research institutes and companies, 4- international seminars and conferences, 5- research opportunities, 6- private research laboratories). All of these components are extracted from interviews and previous studies.

Considering discussed matters in previous sections and conducting qualitative project, the appropriate answer to the above question of the research is given and the effective components on university entrepreneurship has been extracted by using interview and multiple sources and figured in the form of three – surface model shown in figure 1, 1st surface of this figure defines dimensions, 2nd surface defines components and 3rd one defines indexes. It is also required to say that concepts of each mentioned dimensions would appear in the form of one coherent system; this means that single – dimension activity doesn't suffice for

ambidexterity but with multi – dimensional activities beside each other we can bring about mutually increasing effects.

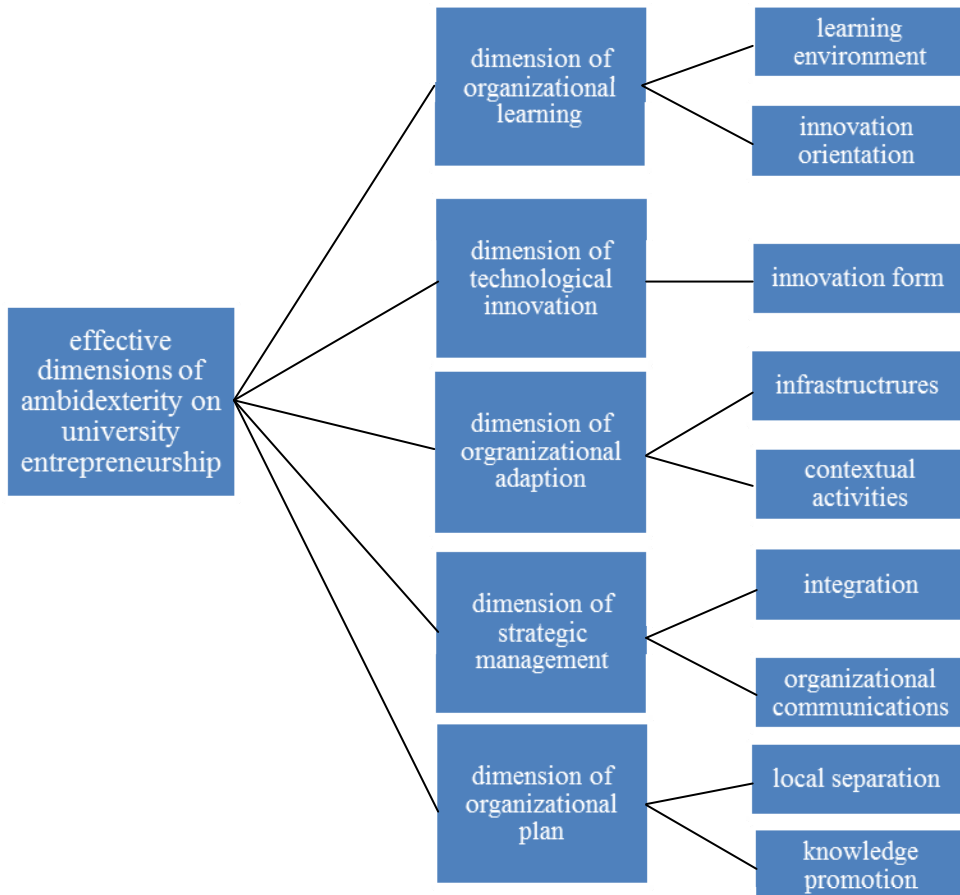


Figure 2: Model of Effective Ambidextrous Components on University Entrepreneurship

Following the interviews we reach to guidelines to improve ambidexterity and consequently to develop university entrepreneurship as explained below:

1. Pursuing policies and making supportive laws for entrepreneurship especially for university entrepreneurs.
2. Increasing university research budget and building risk – taking investment funds to be used for university entrepreneurship.
3. Considering organizational infrastructures which strengthen ambidexterity in university.

4. Making strategic programs which guarantee to achieve long term goals regarding university entrepreneurship.
5. Improving beyond organization communications and integrating internal and external processes.
6. Attracting other organizations or private sectors support.
7. Making clear laws regarding intellectual property and also making rules for guaranty and legal prosecution of intellectual property.
8. Establishing entrepreneurial courses for members of boards in order to promote their abilities in entrepreneurship context.
9. Defining mutual goals of university and industry to develop our country.
10. Establishing sessions and meetings in order to exchange opinions and identifying mutual issues.
11. Introducing university capabilities to industry in order to attract university forces.

6. COMPARING THE RESEARCH FINDINGS WITH HISTORY OF THE SUBJECT

Commercializing university studies has been considered as bipartite process; that is because on one hand universities are following their past missions, which are educational and research activities and they believe to survive existence of university by emphasizing on these missions and on the other hand, commercial demand and emerging new entrepreneurial companies and completion between universities push them toward commercialization and amid keeping balance between contradictive demands would turn into one of main complexities in universities mission, they are coping with. in this section we try to compare findings of this study with previous studies conducted by other researchers (which are explained in previous sections of this article), which shows that theoretical framework of this research is based on Raishe & Birkinshaw's study (2008); model of our research includes 5 dimension: organizational learning, technological innovation, organizational adaption, strategic management and organizational plan while in most existing studies regarding ambidexterity, models are explained in 3 dimensions: structural dimension (Duncan, 1976, Gibson & Birkinshaw, 2004, Gilbert, 2005), contextual dimension (Gibson & Birkinshaw, 2004; Chang et al, 2009, Bartlettand Ghoshal, 1989, Gupta et al, 2006, O'Shea et al., 2005) and management dimension (Tushman & O'Reilly,

1996, Raish & Birkinshaw, 2008, Lubatkin & Simsek, 2006, Floyd & Lane, 2000) and most of studies focused on one dimension of ambidextrous dimensions. This is a power point of this research comparing to previous studies which is a combination of five dimensions and indexes extracted from literatures and interviews. We use studies to complement and find components and indexes. In study conducted by Louket and Wright (2005) they believe that sufficient experience and skill earned in universities with non – commercial environment are the source of ability to earn money from risk – taking university companies. This subject is considered in this research and findings are adaptable. In dimension of organizational learning, one of indexes that are also explained by university experts is sufficient knowledge and skill of team members in commercialization activities. Franklin et al., (2001) explain that some of actions to commercialize university studies and university entrepreneurship are official while unofficial actions to transfer knowledge are also playing an important part and in order to exploit these actions superior management team who are functioning integrated are playing effective role in commercializing university studies. This subject considered as one of main principles in this study. In other words, learning environment associated by supports of superior management team can bring about ambidexterity in university entrepreneurship. In ambidexterity all two missions of universities are complementary and promoting universities performance in commercializing studies require two – way process which allow pursuing education as an exploitation activity and commercializing studies as an exploration activity, not simply an educational environment that is just related to commercializing studies. This finding is parallel with results of studies conducted by Chang, (2009) and Etzkowitz (2003). Findings and results of this research are closer in complementing findings of other studies and are more parallel with them.

In the end, universities provide preparations relating to management, organizational and contextual ambidexterity integration; this means that combination of down to top and top to down policies and choosing the best strategy to commercialize studies, are main roles of superior management in university. Also building flexible context and organization which can help university researchers in commercializing studies is of great importance. From this perspective we can say that findings of this research are adaptable with some other studies in which superior managers play important roles by building appropriate context to integrate activities and by making appropriate motivation and being parallel in carrying out activities.

7. SUGGESTIONS

Goal of this research is to identify university entrepreneurship ambidexterity components (Tehran University case study). Authorities and policy makers of university entrepreneurship discussed about barriers and opportunities of this subject in the form of developed systematic theoretical framework in order that authorities can take proper actions in policy making and performance management regarding university entrepreneurship.

Considering results of this research, it is also recommended that policy makers and administrators of university and research institute improve ambidexterity in individual and organizational scope, by growing the ability to do science and research activities and simultaneously (not doing one after another) commercialization. It is required that administrators participate in training courses enabling them to perform those activities simultaneously. It is also required to establish courses to individually train and manage researchers in order that researcher is enabled to manage his / her time considering these two demands.

The other important subject is that managers should remember that these components are effective on ambidexterity performance inside and outside university environment and examining these factors or some of them without considering environment wouldn't come into meaningful results.

Components of organizational adaption including infrastructures and contextual activities are building appropriate context for researchers and scientific board members; these components also strengthen organizational abilities of university. Networking and providing required resources can help us to promote ambidexterity skills of researchers.

Policy makers and managers should take encouraging and motivation policies and other normative supports; in case those policy makers do not change these policies, researchers would have no motivation to reveal their research results.

We also recommend that policy makers and managers of university take strategic approach to the subject and make long term programs for further achievements in university entrepreneurship. They should manage to amend and modify structure and processes related to ambidexterity and as for beyond the organization communications they should make coherent and continuous endeavors. They should also clearly define the budget dedicated to studies and form a process to apply budget without limitation of studies type; it is to mention that we can only fulfill this by determining goals and this matter requires further description and explanation.

Considering results of this study, we present some recommendation for who attempt to study on this subject in the future:

We recommend researchers to consider framework test by using quantitative methods and factor analysis tools. We also recommend them to compare results of quantitative examinations in different populations since each factor of different case studies produces different results. In the end, they can step to design a model to accelerate university entrepreneurship ambidextrous activities focusing on all previous studies conducted regarding this subject.

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