

Full Length Research Paper

A proposed comprehensive model of ‘Value-Creation University’ and Transformational indicators of Higher Education in Iran

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Today, most high education experts consider value creation (a term different from entrepreneurship or entrepreneur) as a condition necessary for the survival and development of universities and higher education systems. In this era of advanced technologies and knowledge-based industries in global, regional, national and even local economies, universities can only cope with current widespread crises by strengthening their relationship with industries. The purpose of this study is to design a ‘Value-Creation university’ model with emphasis on indicators of higher education system. Mixed method (combination of exploratory plan and taxonomy development plan) was applied in this study terms of purpose and implementation. The statistical population consisted of two qualitative and quantitative groups. For the qualitative group, 15 individuals were selected from academic experts and professors in Golestan Province while for the quantitative group 140 individuals were selected from the staff of Ali Abad Katoul University. The selected sample volume based on Morgan's formula was 103. Sampling in the present study was judgmental or purposive at the first stage and simple at the second stage. The research tool used was a questionnaire. Data analysis was done manually in the qualitative part using Grounded method (open-axis-selective coding) while for the quantitative part structural equation method was used together with SPSS and Amos software. The results show that (1) interventionist conditions with focus on the indicators of higher education system, that is, structural component, have a positive effect on the central category, (2) central category has a positive effect on the encouragement, financial and pragmatic strategies, (3) strategies have positive impact on individual and social outcomes, (4) intra-organizational platforms have positive impact on central category and (5) the causal category, namely the indicators of the value creation in universities and the evolution of the higher education system, has a positive effect on the central category.

Key words: Value Creation, University, evolution indicators, higher education system, Ali Abad Katoul, Iran.

INTRODUCTION

In the third millennium, “value creation” can be described as one of the most important engines of growth and development. Promoting value creation is not only necessary for economic health, but is also a criterion for maintaining and developing new jobs (Allan, 2007).

The establishment of universities that create work and value helps to transform a country and its economy into an innovation-based economy, increasing its global competitiveness and improving its quality of life (Zosa, 2013). A university that creates value is an incubator that

strives to simultaneously carry out its missions (teaching, research and value-creation activities) and creates enough space for the academic community to identify creative ideas and visions in order to turn into new investments (John and Michael, 2002; Kirby et al., 2011).

The first university-derived organizations originated from the famous universities of MIT and Stanford. During the last 20 years, the number of universities involved in the training of undergraduate students has increased eightfold; it got to 200 universities, and the volume of copyrights has quadrupled (Talebi et al., 2008).

Today, different societies are seeking to improve solutions of value-creation revolution and a community of value-creation (Martínez-Argüelles et al., 2010; Clark et al., 1984). These communities have planned a special place for the value-creation concept and process, transforming of ideas to wealth (value) chains and providing comprehensive support for value creators and owners of new ideas (Kuratko, 2005; Muscio, 2010). According to recent studies in this field, collaboration between the three sectors of industry, academia and government is needed to promote national and local value-creation system (Philpott et al., 2011). Of these three factors, universities have a more prominent role than the other three sectors because of their mission to provide latest knowledge and techniques. Accordingly, the mission of universities has evolved during the time of global developments in order to meet the expedient needs of societies, and is moving towards participating in the value creation paradigm (Etzkowitz and Leedsdorf, 2000). Universities can, based on the corresponding executive approaches and structures, be described with one of the following three characteristics: first generation (education-based), second generation (research-oriented), and third or advanced generation (Value-Creation University, Value-Creation and Innovator). The systematic transformation of the academic institution from first generation to higher generation has been a spiraling process and the research and production of knowledge is now a key pillar for the realization of the third generation or Value-Creation University (Habibi Rezaei and Siah Mansouri, 2012).

A university that creates value is a university in which scientific inventions can produce the force needed for economic growth and competition in global markets (Mitchell and Chesteen, 1995; Kuratko, 2005). It is necessary to create innovative activities by establishing universities that create value. If such universities do not exist, the results of scientific research would be useless; they would just be stored in academic repositories and libraries, which rarely become innovative activities, products and services (Behzadi et al., 2014). Scholars such as Clark (1998) and Ropke (1998) focused on the

value-creation characteristics of the university (Mitchell and Chesteen, 1995; Kuratko, 2005). Ropke (1998) considers the factors that influence the value-creation characteristics of universities that create value: having value-creation management practices, value-creation members, and value-creation exchanges in the environment. Etzkowitz (2001, 2000) considers the close relationships between industry, government and university as key elements and factors that influence universities that create value; they have linking structures, knowledge and modernization (Yadollahi Farsi et al., 2012). Collaboration between academia and industry is becoming an important issue because it can lead to mutual benefits for all partners involved and the entire community (Muscio, 2010). Interaction can take various forms, both direct and indirect mechanisms (Gender and Wagner, 2008), which in most recent time is called "academic interaction" (Parkman et al., 2018).

Today, if universities all over the globe do not become agents of innovation just like the universities that create value, they will disrupt national and regional development as well as international competition. Over the past ten years, universities have been struggling with a variety of issues, such as globalization and internationalization of higher education, student population growth, financial constraints, and recently financial and economic crises (Samadi et al., 2016). Indeed, value-creation is a process that requires planning in the education and research system and it expands its programs from the family and school to universities and organizations. Additionally it empowers individuals with the expertise and power of creativity, opportunities and abilities. Therefore, in this study, a model for designing universities that create value was formed based on the indicators of higher education system development in Iran. The indicators of higher education system are based on comparative studies of 8 countries selected such as educational and research system indicators, international interaction, members of faculty, administrative and educational force, economic and financial force, graduates and other indicators. Furthermore, the indicators of the higher education system, according to the Cultural Revolution Council, are in the area of macro and micro evaluation including general, educational, research, student and cultural sections and credentials and facilities in quantitative and qualitative terms.

Masoumzadeh and Ansari (2009) have shown in their research that some of the requirements for transforming a traditional university to the one that creates value are (1) overview of organizational structure (financing supply structure - administrative structure - supportive departments), (2) value-creation culture, (3) laws and policies and (4) local economy development. Clark et al.,

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(1998), after a longitudinal study of some European universities in the mid-1990s (this study is considered a turning point in the literature of universities that create value), identified 5 factors as indicators of universities that create value: (1) strong command center, (2) extensive development, (3) diverse funding, (4) academic dynamic, and (5) a value-creation culture. Various studies and researches have confirmed that universities are required to make the necessary changes in their structural, managerial and cultural dimensions universities and in the infrastructures required for them to transit to universities that create value. They themselves provide the basis for more recent works within the Entrepreneurship University framework. For example, Fischerr et al. (2019) showed that developing countries have a particular dynamic for academic entrepreneurship. To promote academic entrepreneurship, universities are still going through specific strategies to become entrepreneurs. Therefore, research activity is not higher levels of academic entrepreneurship.

Academic entrepreneurship is also shaped by the exogenous elements of the University. Dalmarco et al. (2018) also indicated that inventors are cited as important dimensions of entrepreneurship promotion, but the quality of entrepreneurship education, in addition to its close relevance to applied research, encourages academicians to pursue their career plans to startups. In addition, the results of the research by Sidrat and Fricka (2018) showed that to become an entrepreneur university, internal transformations must take place. In this sense, the role of the manager and the type of university has a positive impact on the development of entrepreneur university. Franco and Hass (2015) also showed in their study that collaboration of university and industry is promoted by (1) motivation of researchers (including financial resources, acquiring up-to-date knowledge and technology, practical application of research results, access to job opportunities) and (2) interactive channels (workshops, seminars and conferences, local authorities and specialized associations as mediator, teaching and research, contractual and collaborative research projects, professional and academic workplace).

Jameson and Edonell (2015), Graham (2014), Walshok and Shapiro (2014) and Ketikidis (2012) identified the components of an entrepreneur university and provided a model for it. The results of the study by Shabanpour and Badri (2019) showed that in academic value-creation results the university benefits from the industry and the industry also benefits from the university scientific services, ultimately leading to the creation of employment and economic growth in a country. The results of Mortezaei et al. (2018) showed that in the creation of knowledge-based economy, there are four components in the organizational structure dimension. The results also showed that of all the components giving comprehensive attention to innovation in the university had the highest rate of importance; the informal decision-making

component had the least rate of importance. The other components were in the next ranks, respectively.

Khosravi and Roshani (2017) claimed that the role of universities has changed based on their new responsibilities against the changing society such as national economy, social development, reduction of public finances and the education market. Obviously, universities and higher education system are more in harmony with the indigenous, regional and international economic development process. These universities have shifted their traditional role to knowledge production in the form of entrepreneurial universities and transformed them into action. Universities that have technological innovation and transform these technologies into business, creating employment for graduates and society via these technologies are named third-generation universities. Third-generation universities are entrepreneurs, value-creation, and wealth-creating universities (Habibi Rezaei and Siah Mansouri, 2012). Mansoori et al. (2018) showed that Iranian western universities are not good entrepreneurs in terms of applying software programs and hardware tools. Moreover, it was found that the move to entrepreneurial university requires fundamental changes in software and hard dimensions. The changes of course content, the use of entrepreneurship professors, and communication with industry are among the suggestions that lead to the transformation of any university into an entrepreneurial one. Abedi et al. (2017), in a data analysis, showed that organizational relationships, teaching-learning, curriculum planning, and differences between one Agricultural Value-Creation University, one Natural Resources Value-Creation University and Value-Creation University in the other fields' processes and activities are some of the components that make up a Value-Creation University in the fields of agriculture and natural resources. There was a significant relationship between the two components of strategy and process. From the viewpoint of Pouratashi and Pizhizkar (2017), value-creation competencies can be studied based on the constituents of value-creation competences, predictors of value-creation competences, and outcomes of value-creation competences.

Based on the results, the graduates' value-creation competencies are grouped into six groups: individual and cognitive competence, communication competence, leadership and teamwork competence, business establishment and management competence, economic and marketing competence, and research competence. The university mission was considered as a predictor of value creation in three categories: education, research, and support. Afterwards, value creation intentions emerged as the outcome of value competencies. Samadi et al. (2016), using the fuzzy inference test for research hypotheses, investigated the dimensions and indicators of the universities that create value including vision and mission, university governance and administration, organizational structure and design, multidisciplinary,

power of influence, management of stakeholder, graduates, knowledge transfer, growth and financing center, internationalization, value creation training. They found that none of the indicators were in good situation and all assumptions were poor to accept the hypothesis. Today, the universities that create value link economic development as a new academic practice to education and research.

According to the study of indices done in a university that creates value and the research done in and outside of Iran, the researcher aims to measure the indices and characteristics of universities that create value (Third Generation Universities). These indices studied in this research are educational system, research, international interaction, faculty, administrative, educational and economic-financial force, and graduates as indicators of the country's higher education system for value-creation universities across the country. Therefore, this study seeks to answer the question: what model can be designed and explained for the universities that create value, with emphasis on the evolving indicators of the higher education system?

International higher education challenges

Universities, certainly as one of the most complex institutions, have grown and developed, from the golden decade of the 1960s in many countries around the world (both in Europe and in North America in particular) and have become elements with community credibility, both publicly and privately. Although the number of students has increased tenfold today compared to a century ago, the credibility of universities is declining. In a seminar held in Switzerland in 1998, six basic challenges of universities were considered (Jamshidi Koohsari, 2009) which were: (1) changing environment, (2) missions, (3) student education, (4) higher education funding and (5) department of university affairs.

The administration of higher education institutions, especially research-based universities, is probably the most important and complex issue in higher education policy. The current trend of participatory governance, rooted in North American and Western European universities, works well in a steady state or at a time of increasing resources, but has obvious shortcomings in times of pressure or limitation and rapid change.

History of value creation in Iranian universities

Our country, in the last few years, attended to the issue of value creation, and prior to that, except for a few special cases, there has been almost no history of activity in this regard. Unfortunately, many officials, people, and even the educated and university professors have misunderstood and misinterpreted value creation. The term, which is a seductive translation of the word

entrepreneurship, means job creation or employment, while value-creation has a broader and more valuable meaning than the aforementioned interpretation. This misconception of value creation, as well as the inflation of unemployed manpower in society (especially among University graduates), has led to much focus on many of the policies adopted, programs developed, directives and speeches of officials in this regard, which most of them having economical aspects. Even in Iran universities, which ought to be at the forefront of developing value creation in the true sense of the word and which ought to have proper orientation of views and perceptions in this issue, unfortunately has this unpleasant problem.

METHODOLOGICAL APPROACH

Mixed method (combination of exploratory and taxonomy development plan) was used in this study in terms of purpose and implementation. The statistical population of the study consisted of two groups (qualitative and quantitative groups). In the qualitative part (the first stage), the first statistical sample was all academic experts including adjunct and full-time professors of Islamic Azad Universities in Golestan Province. Sampling was done from which Theoretical Saturation was obtained. At the second stage, the statistical sample was 140 employees in Ali Abad Katoul University; the number obtained by the Morgan's formula was 103. The sampling method was judgmental or purposive in the qualitative part and simple random in the quantitative part. In the qualitative method, data were analyzed by Grounded model (open-axis-selective coding) manually and in the quantitative part Smirnov-Kolmogorov test was used to assess the normality of the research data. The study hypothesis was tested using the SPSS and Amos software and structural equation method was used for modeling. Structural equation method and Amos software were used to analyze the data. For this purpose, the analytical model designed by Amos software was measured.

After conducting the qualitative studies, we proceeded to the quantitative analysis of the research model and the information obtained from the statistical sample of this study, which was University staff. 37.9% of the respondents were females and 62.1% were males. The mean age of most of the respondents (57.2%) was 30-40 years and 1% of the respondents is in the age group of over 50 years. Based on the level of education, majority of the respondents (68.9%) had a bachelor's degree and minority (1%) had a PhD degree. The most frequency in terms of work experience was 49.5% for individuals with 5 to 10 years of work experience and 1% for those over 20 years of work experience with the least frequency.

Methodological principles and processes

This study was conducted using qualitative and quantitative methods and the results were analyzed in two parts. In the qualitative part, interviews were first conducted with experts in the universities of Golestan Province. After data collection via interviews, data were coded and data analysis was performed in three stages (open-axis-selective coding).

Step one, namely, open coding is the first level of coding and involves several stages: extracting data from the interviews, coding, discovering categories. The analysis method of key points was used to extract data from interviews. In this method, instead of coding individual words, key points are identified and coded.

Category discovery

At this point, the concepts themselves are categorized based on the relevance to similar topics, referred to as categorization. The topics we assign to categories are more abstract than the concepts that make up the set of these categories. Categories have high conceptual power because they can aggregate concepts on their own axis.

Step two, namely, axial coding is the second level of coding. This stage involves specifying patterns in the data and the level of categorization and requires permanent comparison of the data. In this study, the coded data and the extracted concepts in the previous step were compared and included in a table in the form of clusters and categories fitting together. To this end, each of the first level codes and concepts were compared with the other first level codes to ensure that the categories were distinct. New data are simultaneously compared to all data to find correlation between them. In this step, we bring together new data and examine the relationship between categories. In this step, the data are oriented and classified according to the nature of the categories and the relationship between them.

Axial coding components are central category, causal conditions, dominant context, intervening conditions, strategies and consequences. The relation of the other categories to the central category is shaped by a paradigm pattern.

Methodology tools

The research tools in the qualitative and quantitative parts were semi-structured interview and questionnaire, respectively. The questionnaire consisted of 6 components (strategies, outcomes, contexts, axial, causal, and intervener) and 63 items in a five-point Likert scale. The scoring method was very high (5), high (4), medium (3), low (2) and very low (1). Content validity and face validity of the questionnaire were approved by the supervisor and advisor professors. The reliability of the questionnaire was above 0.70 in all cases, indicating that the questionnaire had an appropriate reliability.

FINDINGS

All categories are first classified in general and according to the fields studied and then in the form of 6 main columns including central categories, contexts, consequences, intervening conditions, causality and strategies. Since the number of categories is not only abundant but also sometimes similar and intermittent, re-coding operations of the final core category have been performed again, and a more limited and abstract number of categories have been extracted. Then, the category of the final core, that is, the most abstract conceptual level, has been selected again so that it can include all the aforementioned categories and also have an analytical feature. Finally, the final background model is drawn around the core category according to Figure 1. As shown in Figure 1, the concepts obtained from the previous step, in this step, by repeated review and study and the iterative process between concepts and categories, the relationship between concepts and categories in this study was expressed in a paradigmatic pattern in six categories.

Step three as selective coding step is the third step in the analysis of the contextual theory. The selective term is used at this stage because the analyst clearly chooses a central aspect of the data as the core category and focuses on it. Therefore, in selective coding, the same techniques used in axial and open ones will be used (but at a higher level of abstraction). Selective coding is not just a simple description of the data but also analytically centralizes to the data.

Table 1 shows the values Goodness Fit Index (GFI), Normed Fit Index (NFI), Relative Fit Index (RFI), Incremental Fit Index (IFI) and Comparative Fit Index (CFI) for the suggested model in Figure 2. In Figure 2, the research-designed analytical model is evaluated by Amos software and while presenting the model output of this software, we express the optimal criteria of this model based on the obtained data. In Table 1, the confirmatory factor analysis of the questionnaire constructs has a good fit and the questionnaire constructs appropriately represent the relevant variables and relationship between proposed model variables (Table 2).

DISCUSSION

In response to the main question “does the conceptual research model fit well?”, the research results showed that the model designed in this study has a good fit and the questionnaire constructs can well explain and show the relevant variables, namely, GFI, NFI, RFI, IFI and CFI. Regression coefficients also showed that the conditions of intervener, that is, structural component, had a positive impact on the central category, namely the ‘value-creation university’, based on the indicators of higher education system. Central category had a positive impact on the encouragement, financial and operative strategies and as such the strategies positively influenced the individual and social outcomes. Intra-organizational contexts had a positive impact on the central category and the causal category, namely value-creation University indicators and the evolution of higher education system positively influences the central category.

In general, given the flexibility in allocating resources to different parts of the university, it is hoped that a university will be able to make the right financial decisions and measures in different situations and put them on its agenda. Partial branching and sometimes incorrect branching lead to classical management and non-use of lower-level ideas and suggestions. Therefore, what becomes important in this case is the existence of a presidency that has a participatory perspective and can accept suggestions, as stated at the end of the paper.

The results obtained in this research are in line with the results of Fischer et al. (2019), Dalmarco et al. (2018), Franco and Hass (2015), Jameson and Edonel (2015), Graham (2014), Walshok and Shapiro, 2014; Ketikidis,

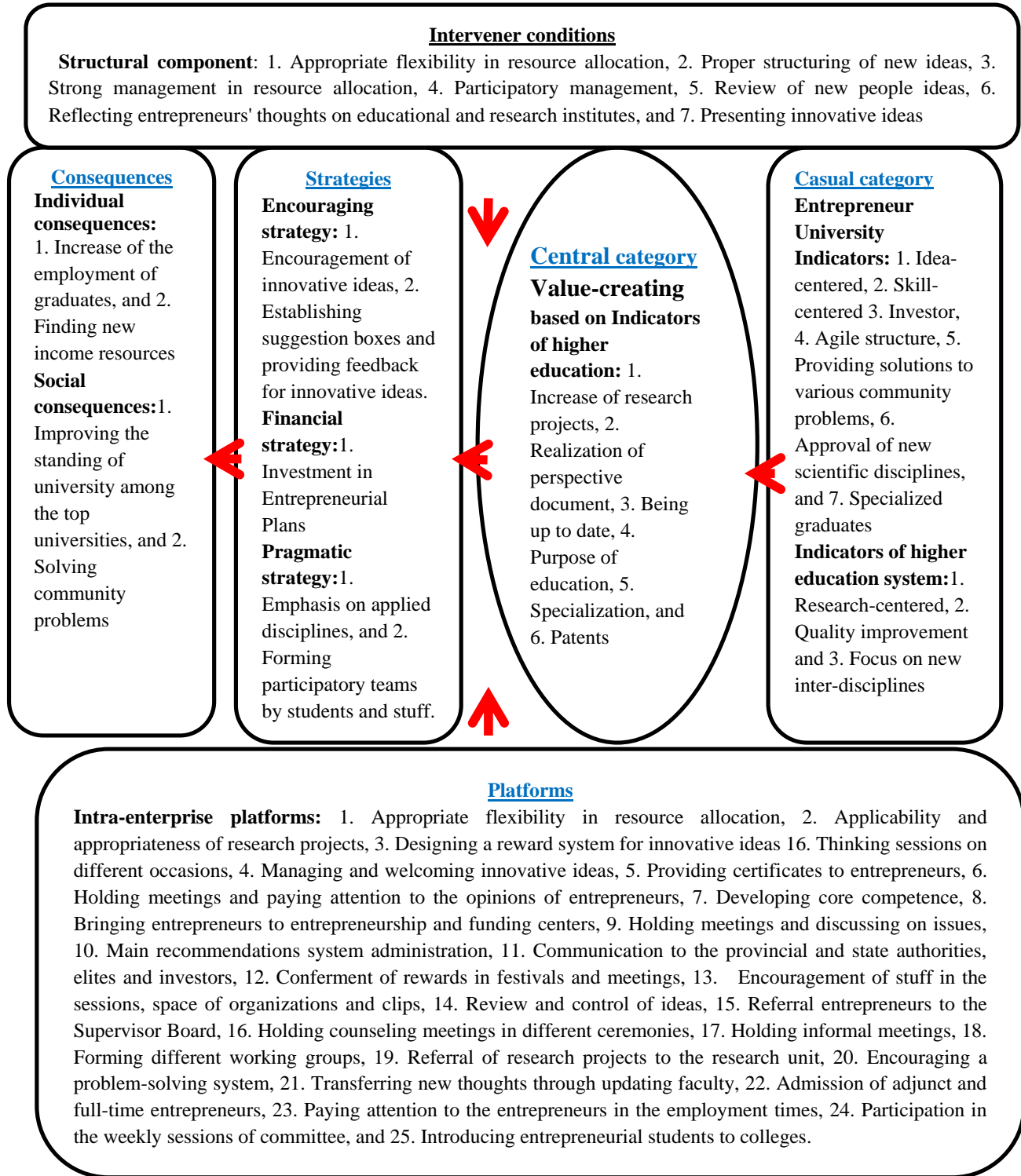


Figure 1. Entrepreneur University model design based on higher education system.

(2012), Shabanpour and Badri (2019), Mortezaei al. (2018), Khosravi Pour and Roshani (2017), Sa'adi et al. (2017), Abedi et al. (2017), Pouratashi and Parhizkar (2017) and Samadi et al. (2016).

SUGGESTIONS

According to the results obtained from the qualitative and quantitative parts of this study, it is suggested that special

Table 1. Fitting indicators of the measurement model.

Result	Value	Effect type	Tolerance range	Title of index
Model Verification	0.92	Positive	GFI>0.90	GFI
Model Verification	0.93	Positive	NFI>0.90	NFI
Model Verification	0.92	Positive	RFI>0.90	RFI
Model Verification	0.91	Positive	IFI>0.90	IFI
Model Verification	0.91	Positive	CFI>0.9	CFI

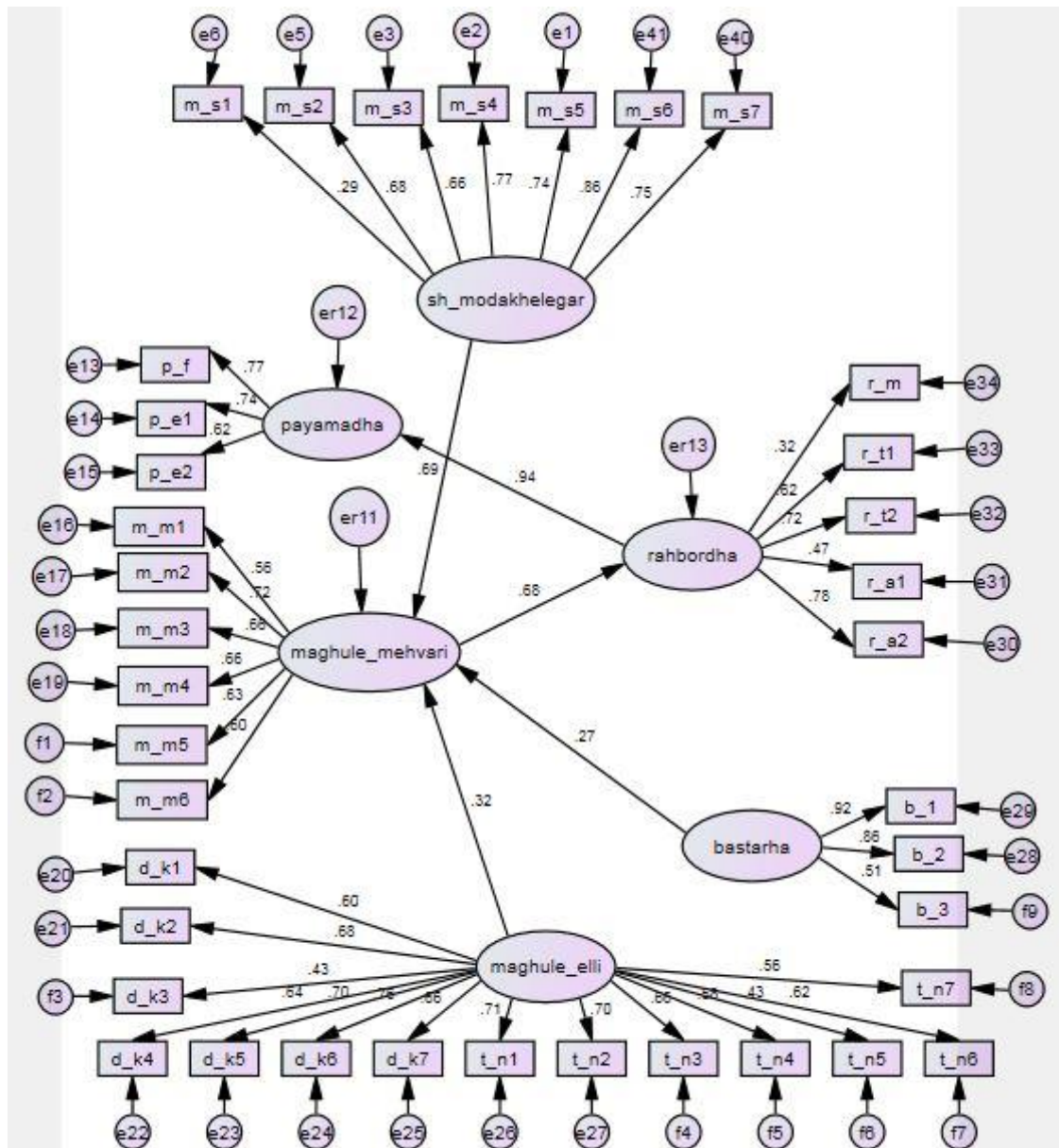


Figure 2. Standard coefficients of research variables in the measurement model.

attention should be paid to the following issues in the policies of universities:

- (1) Making profit in the university by involving in science and sharing the profit.

Table 2. Relationship between proposed model variables.

Effect type	Regression coefficient	Relationship between variables
Positive	0.69	Intervener conditions that influence central category
Positive	0.94	Strategies influencing outcomes
Positive	0.68	Central category influencing strategies
Positive	0.27	Contexts influencing central category
Positive	0.32	Casual category influencing central category

(2) Approving student projects and plans that address community problems.

(3) Enhancement of applied and profitable research projects.

(4) Special attention to the realization of the university outlook document.

(5) Developing the employment of academic graduates.

(6) Stepping on the path to specialization of these graduates.

(7) Considering academic patents.

(8) Focus on research, productive, applied and skillful aspects in the courses offered in the university.

(9) Allocation of sufficient fund to the academic plans and investment in the knowledge-based activities of universities.

(10) In order to create opportunities for university development, it is recommended that the chairperson of university maintain and strengthen its relationship with the provincial and state managers, elites and investors and invite national authorities to the university.

(11) Establishing training workshops and scientific and practical courses in university to enhance and transform the higher education system.

(12) Paying attention to new ideas in order to create appropriate conditions for university growth and development.

(13) Giving of material rewards to competent individuals (staff, elites, entrepreneurs, etc.) and appreciating and encouraging them during special events and festivals.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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