Nordic Journal of Media Management

Issue 1(3), 2020, DOI: 10.5278/njmm.2597-0445.6108

Research article

Platform Entrepreneurship: An Interpretative Structural Modeling

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Abstract:

Purpose: Popularity of social media and their power to connect media enterprises to wide range of audiences have made platforms as a popular business models for media entrepreneurs' activities. Due to increasing number of entrepreneurial activities in platforms, this study aims to identify the critical factors of platform entrepreneurship.

Methodology: This study followed a qualitative approach and used ISM methodology for comparing the variables that are extracted from the literature and confirmed by the experts. A questionnaire developed and distributed to a limited sample of experts in platform business and social networks to compare nine identified factors.

Findings/Contribution: The findings showed that eight factors of opportunity, influencers, UX/UI, Strategic partners, resource control, platform governance, technical features and target audiences are the strategic factors in development of media entrepreneurship. Regulatory environment recognized as dependent variable that determine the success of media entrepreneurship in platforms.

Implications: This study provides a foundation for future research in the subject of media entrepreneurship on social media as well as media platform businesses. Policy makers can use the results of this study to understand the determining role of regulatory environment in promotion of media entrepreneurship. Entrepreneurs and owners of platform can use this research to use the identified factors in design and development of their media platform businesses.

Keywords: Media Entrepreneurship; Platform Business; Media Startups; Regulatory Environment; Platform Governance; Affordances.

To Cite This Article: Ebrahimi, P; Kot; S., Fekete-Farkas, M. (2020). Platform Entrepreneurship: An Interpretive structural modeling. *Nordic Journal of Media Management*, 1(3), 385-400. DOI : 10.5278/njmm.2597-0445.6108

1. Introduction

In the recent years we have observed a dramatic increase in academic attention to the media entrepreneurship research (Hang, 2017; Achtenhagen, 2017; Khajeheian 2019). Influenced by emergence of digital technologies (Ebrahimi, Shirsavar, Forootani, Roohbakhsh & Ebrahimi, 2018; Salavatian, Hesampour & Soltani, 2020; Bouzari, Gholampour & Ebrahimi, 2020) and then increasing penetration of mobile phones (Hossain, 2019), entrepreneurs found platforms as a new ground for grow (Parker, Van Alstyne & Choudary, 2016). Platforms facilitated media entrepreneurship and many people are involved in entrepreneurial activities even without being aware that what they are doing is a kind of media entrepreneurship. Khajeheian (2017) showed that platforms are critically important in study of media entrepreneurship because they present for value producers, such as journalists, creatives, talents, artists, and other creators of media content a ground to easily access the prospect readers, customers and consumers.

Platforms are defined by Evans and Schmalensee (2005) as catalysts between two or more groups of customers who cannot connect to each other and perform mutual interactions and rely on the platform to facilitate value creating interactions between them. Hagiu and Wright's (2015: 5) definition of platforms is narrower: platforms enable direct interactions between two or more distinct sides where each side affiliated with the platform. Platforms are also in different forms. Reillier and Reillier identified three types of platforms including market makers, audience builders, demand coordinators (2017: 24). In another classification, Heish and Wu (2019) identified four types of innovation, transaction, integration and investment platforms. While all of such platform types can be used by media entrepreneurs in different levels, in this study we focus on social media platforms that facilitate exchange of content between users. This selection is made based on Khajeheian (2017) that suggested content and platforms as two separated, although inter-related, elements of media entrepreneurship and then discussed that platforms as distribution channel of content are in special place in study of media entrepreneurship (Khajeheian, 2020). Following above, this study aims to identify the critical factors that impact on platform entrepreneurship.

2. The Research Model

The research model of this study nine dimensions for platform entrepreneurship, including: 1.Opportunity, 2.Influencers 3.UX/UI design, 4.Strategic partners, 5.Resource Control, 6.Regulatory environment, 7.Platform governance, 8.Technical features (affordances), 9.Target audiences.

2.1 Opportunity

Identification of opportunity is the cornerstone of entrepreneurship as a general field (Corbett, 2005; Klein, 2008; Lundberg & Rehnfors, 2018; Emami, Welsh, Ramadani & Davari, 2020,). Accordingly, many scholars in the field of media entrepreneurship pointed out that Identification and exploitation of oportunities is the basis of media entrepreneurship (Hoag, 2008; Hang, 2020; Achtenhagen, 2008,2017,2020; Khajeheiean, 2013, 2017, 2019; Roshandel Arbatani, Kawamorita, Ghanbary & Ebrahimi, 2019). The main argument is that entrepreneurs can fill the gap that is created by a radical innovation or an inequiliburium in the market by delivering new value such as content, information, entertainment (Khajeheian, 2017). As such argument works in the field of social platforms and users seek for new content for their information or entertainment needs, therefore, we consider opportunity as the first variable of this model.

2.2 Influencers

In an analysis of busness models of U.S social media, Cha (2013) showed that one of the special advantages of Twitter is the presence and use of famous people from this platform to communicate with their fans. At the time of writing this article, Barack Obama (123.2m), Justin Bieber (112.6m),

Katy Perry (108.6m), Rihanna (98.6m), Christiano Ronaldo (88m), Taylor Swift (87.2) and Donal Trump (86.4m) followers are the top users of this social media. Twitter showed that having famous people as users is a critical factor for success of a platform (Cha, 2013: 71). For this reason, we consider influencers as one of the main variable for this model.

2.3 UX/U

User experience (UX) and User Interface (UI) are two words that are frequenly used in marketing of software industry and imply on the level of ease, pleasure and convenience of users from working with a software or application (Tsai, Chang, Chen & Chang, 2017; Rocha, Martins, Branco & Gonçalves, 2017). Many studies show that design of an application or software of a social platform has a particular effect on user acceptance and use (Hand & Kim, 2018; Kim & Kim, 2019; Aranyanak & Charoenporn, 2020). Many users decline to contiue use of a software because they feel confused about its functions. Due to this importance, UX/UI of a platform has been considered as a variable for this model.

2.4 Strategic Partners

As well as the benefitting from influencers and famous people, having strategic partners also promote and boost the platform (Parker et al, 2016; Reillier & Reillier, 2017). many users come to use a platform for updating and getting new information from a special person, company, foundation, etc. when such company or foundation perform the activities in a special platform, others will have to use the paltform to access the content and information. This is also a ligic that owners of some platforms invite or obligate their partners to publish their updates in the newly launched platform, to attract new users (Roshandel Arbatani, Asadi, Omidi, 2018) and increase the network power (Parker et al, 2016). For this reason, we consider strategic partners as a determining factor in success of platform entrepreneurship.

2.5 Resource Control

Network effect (Parker et al, 2016) is the power of platforms and the number of the users they have, means the resources that they are able to control. Choudary, Parker & Van Alstyne (2015) argues that there are three main changes in the platform economy: 1) from consumers to producers of value; 2) from processes to transactions; and 3) from resources to ecosystem. The latter implies on the ability of platforms to benefit from the resources that they do not own, but have access due to the network effect. AirBnB provides access to hundred tousnads of properties to stay, without having them, Uber provide the similar for riding, and so on. For this reason, we consider resource control as a factor in our model.

2.6 Regulatory Environment

Platform businesses are working in one or several countries, and as well as any business need to obey the rules and regulations that the country impose. In some countries, the regulations on platforms are strict, for example platforms are responsible for what their users post and share. In some other countries, platforms are immune from the consequences of user generated content. The latter situation, that can be seen in the United States as safe harbours (Gillespie, 2018), give platforms freedom to expand their activities with no concern of consequeces. Khajeheian and Tadayoni (2016) explicitly emphasized on the importance of free policy in promotion of media entrepreneurship and Labafi (2020) stress on the impact of digital policy on succes of social media businesses. following such important role of regulation, we put this into our model.

2.7 Platform Governance

Platform governance implies on the rules that a platform impose on the transactions and activities of its users. Gorwa (2019) argue that plaform governance study is understanding of "how platform practices, policies, and affordances (in effect, how platforms govern) interact with the external political forces trying to shape those practices and policies". As such policies, practices, limitations and freedoms are very critical in decision of users to stay or migrate from the platform, we consider this factor as one of the variables of the model.

2.8 Technical Features

Technical features or affordances (Bucher & Helmond, 2018) play an imortant role in user acceptance of a platform (Tsai et al, 2017). As Lai (2016) discuss, eas of use is a critical factor inuser acceptance of a platform. many studies show that technical feature of a platform can encourage or discourage users from continuing to use it. Karimi and Salavatian (2018) showed that how use of gamification elements in design of a platform can be encouraging for the organizational users to continue to use. Zikos et al (2019) emphasized on user acceptance of knowledge sharing platforms by use of gamification mechanism. Thus, technical features are considerd as a determining factors in success of platforms.

2.9 Target Audiences

Selection of target audience/customers is a basic principle in marketing (Kotler & Armstrong, 2017; Janavi et al., 2020) and as well in social network marketing (Luo et al, 2019). Wehile dominnate corporate social media usually cover a general market, like what Facebook, Twitter,Instagram and other corporate social media do; Alternative Social Media focus on the small portions of audiences that their needs are not met with the dominant platforms and seeking for alternative ones to access what they want (Gehl, 2018). Clement, Jiaming & Li (2020) argues target customers can be individual consumers or businesses. Josephson, Lee, Mariados & Johnson (2019) considers government as another type of customers and Achtenhagen (2020) stressed on public interest as a target. Within any of these types there are almost infinte forms of audiences that can be addressed. Accordingly we consider target audience as another variable of our model.

4. Methodology

This study uses Interpretive Structural Modelling (ISM) due to its power to analyze the inter-relationship among a large number of directly and indirectly related factors in complex and multifaceted phenomena, such as media entrepreneurship (Warfield, 1974; Chang Hu & Hong, 2013; Majumdar & Sinha, 2019; Dhir & Dhir, 2020). This method is able to identify unclear and poorly articulated models and to visualize and define the structures (Yang and Lin, 2020), and helps to recognize the order and direction among consisting elements of a complex system (Sage, 1977). Singh and Kant (2008) explain why this method is so-called. this method is 'Interpretative' because the relationship among the variables is suggest based on the judgement of respondents; is 'Structural' because it suggest an overall structure from the recognized relationship among the variables; and is 'Modeling technique' because visualize the identified relationship and structure.

To conduct ISM method, eight steps must be done (Singh & Kant, 2008; Pfohl, Gallus & Thomas, 2011; Gan, Chang, Zuo, Wen & Zillante, 2018; Xiao, 2018; Azvedo, Sequeira, Santos & Mendes, 2019; Agrawal, 2020; Dhir & Dhir, 2020; Yang & Lin; 2020):

1) The consisting elements in the problem must be identified by survey;

2) A contextual relationship among the elements must be drawn showing which pairs of elements should be examined;

3) A structural self-interaction matrix (SSIM) must be developed to show pair-wise relationship between the identified elements;

4) A reachability matrix must be developed from the SSIM and the matrix must be checked for transitivity. (transitivity of the contextual relation is a basic assumption in ISM. It states that if element A is related to B and B is related to C, then A is related to C);

5) Reachability matrix should be partitioned into different levels;

6) A directed graph (dgraph) should be drawn based on the relationships in reachability matrix, and the transitive links must be removed;

7) The digraph should be converted into an ISM-based model by replacing elements nodes with the statements;

8) The model must be checked for any possible conceptual inconsistency and to do necessary modifications.

AS said, ISM is interpretative because it is based on the judgement of respondents. This characteristic made ISM method suitable for the situation that there are a small number of experts. The sample for this research selected by a purposeful judgmental sampling, includes 10 entrepreneurs with experience of launching a platform for exchange of content or managed a startup or an enterprise on a platform. they were asked to respond to the questionnaire that is extracted from the literature (see Appendix1).

The validity of the questionnaire is tested by content validity and 3 experts confirmed the accuracy of the questions in the final modified version reliability of the measuring instrument determined by the ICC coefficient value.

4. Results

4.1. Identification of consisting elements

Based on step 1, with a literature review on media entrepreneurship and co-creation platforms, nine variables extracted as the determining factors on media entrepreneurship. Table 1 illustrated the list of the nine extracted constructs.

Table 1. Identified factors based on experts' idea and literature review

Number	Factors	Key References
F1	Opportunity	Hoag (2008); Khajeheian (2013, 2017); Çiçek (2018); Tajeddin, Emami and Rastgar (2018); Roshandel Arbatani et al (2019); Horst and Murschetz (2019); Ebrahimi et al (2020); Salamzadeh and Roshandel Arbatani (2020)
F2	Influencers	Cha (2013); Casal, Flavián and Ibáñez-Sánchez (2018); Hughes, Swaminathan & Brooks (2019)
F3	User experience/User interface design	Tsai et al (2017); Rocha et al (2017); Han and Kim (2018); Kim and Kim (2019); Aranyanak and Charoenporn (2020)
F4	Strategic partners	Parker et al (2016); Reillier and Reillier (2017)
F5	Resource control	Crespo Crespo, Pinto-Martinho, Foà, Paisana and Pais (2020); Khajeheian (2013; 2017) Roshandel Arbatani et al (2019)

F6	Regulatory environment	Gillespie (2018); Khajeheian (2020); Xu and Hu (2019); Tokbaeva (2019); Girija (2020)
F7	Platform governance	Tiwana (2014); Martin, Upham and Klapper (2017); Gorwa (2019); Fenwick et al (2019); Janowski et al (2019)
F8	Technical features (Affordances)	Weller (2016); Bucher and Helmond (2018); Dal Zotto and Omidi (2020)
F9	Target audiences	Achtenhagen (2008); Emami and Dimov (2017); Khajeheian and Ebrahimi (2020); Dal Zotto and Omidi (2020).

4.2. Building adjacency matrix or Structural self-interaction matrix (SSIM)

According to step 2 and 3 of conducting ISM, the contextual relationship that established among the identified nine factors, constructed in an Adjacency Matrix based on the feedback we received from the respondents. It is presented in Table 2. Most direct-effect relationships were found between F6 (Regulatory environment) and other factors. The least direct-effect relationships were between F5 (Resource control) and then F8 (Technical features) and other factors.

Table 2. Structural self-interaction matrix (SSIM)

	F9	F8	F7	F6	F5	F4	F3	F2	F1
F1	V	A	A	V	X	V	O	A	
F2	A	O	V	V	X	V	V		
F3	X	X	V	V	O	O			
F4	V	O	A	V	X				
F5	A	A	A	V					
F6	A	A	A						
F7	A	A							
F8	A								
F9									

4.3. Initial reachability matrix

According to step 4, the produced SSIM converted into the initial reachability matrix that is presented in Table 3. This binary matrix is generated by replacing V, A, X, and O by 1 and 0, depending on the position. This conversion follows a set of rules (Faisal, 2010; Chang et al, 2013; Azvedo, et al, 2019):

- If the (i, j) entry in the SSIM is V then the (i, j) entry in the initial reachability matrix becomes 1 and the (j, i) entry becomes 0.
- If the (i, j) entry in the SSIM is A, then the (i, j) entry in the initial reachability matrix becomes 0 and the (j, i) entry becomes 1.
- If the (i, j) entry in the SSIM is X then the (i, j) entry in the initial reachability matrix becomes 1 and the (j, i) entry becomes 1.
- If the (i, j) entry in the SSIM is O, then the (i, j) entry in the initial reachability matrix becomes 0 and the (j, i) entry also becomes 0.

Table 3. Initial reachability matrix

	1	2	3	4	5	6	7	8	9
F1	1	0	0	1	1	1	0	0	0
F2	0	0	1	1	1	1	1	0	1
F3	1	1	1	1	0	0	0	0	0
F4	1	0	0	1	1	0	0	0	0
F5	0	0	0	1	0	1	0	1	1
F6	0	0	0	0	0	0	0	0	0
F7	0	0	0	1	1	1	0	0	1
F8	0	0	1	1	1	0	1	0	1
F9	0	1	1	1	1	0	1	1	0

4.4. Developing reachability matrix to final reachability matrix

The transitivity rules checked by use of power iteration analysis of MATLAB. As several cells of the initial matrix were filled by inferences, the final reachability matrix is based on the entroes from the pairwise comparisons and some inferred entries. The concept of transitivity is used to make this inferences and fill the gaps. Any entry 1*represent the incorporating the transitivity.

The transitivity principle is based on the following: if a variable 'I' is related to 'j' and 'j' is related to 'k', then transitivity implies that variable 'I' is necessarily related to 'k'(Warfield, 1974; Gan et al., 2018; Azvedo et al, 2019). As Table 4 displays, after the application of the transitivity principle, the final Reachability matrix was obtained.

The final reachability matrix makes identifies the reachability and antecedent sets for each variable. The driving power for each variable corresponds to the total number of variables (including itself) which it may affect. Dependence of a variable is the total number of variables (including itself) which may be affecting it. These driving powers and dependencies are used below in the MICMAC analysis or cross impact analysis (Azvedo et al, 2019).

Table 4. Final reachability matrix

	1	2	3	4	5	6	7	8	9	Driving power
F1	1	1*	1*	1	1	1	1*	1*	1*	9
F2	1*	1*	1	1	1	1	1	1*	1	9
F3	1	1	1	1	1*	1*	1*	1*	1*	9
F4	1	1*	1*	1	1	1*	1*	1*	1*	9
F5	1*	1*	1*	1	1*	1	1*	1	1	9
F6	0	0	0	0	0	1*	0	0	0	1
F7	1*	1*	1*	1	1	1	1*	1*	1	9
F8	1*	1*	1	1	1	1*	1	1*	1	9
F9	1*	1	1	1	1	1*	1	1	1*	9
Dependence power	8	8	8	8	8	9	8	8	8	

Note: During the checking of transitivity* indicates the values which are changed from ''0'' to ''1'' and shown with 1*.

4.5. Level partitions

The reachability set is constructed from the element itself and the other elements that may achieved by its help. The antecedent set, on the other hand, is constructed from the element itself and the other elements that by their help it may achieved. The intersection of these sets consists of all the factors. The factors that are same in both sets place on the top level of the ISM hierarchy. An element in top level of the hierarchy does not help to achieve any other element above its own level (Singh and Kant, 2008; Dalvi-Esfahani, Ramayah & Nilashi, 2017; Digalwar et al., 2020). When the top-level element is identified, as Table 5 displays, it separated out from the other elements.

Table 5. Level partitioning factors (first iteration)

Factors	Reachability set	Antecedent set	Intersection set	Level
F1	1,2,3,4,5,6,7,8,9	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	
F2	1,2,3,4,5,6,7,8,9	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	
F3	1,2,3,4,5,6,7,8,9	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	
F4	1,2,3,4,5,6,7,8,9	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	
F5	1,2,3,4,5,6,7,8,9	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	
F6	6	1,2,3,4,5,6,7,8,9	6	1
F7	1,2,3,4,5,6,7,8,9	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	
F8	1,2,3,4,5,6,7,8,9	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	
F9	1,2,3,4,5,6,7,8,9	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	

The similar process done for the elements that are placed in the next level. This process continued until all elements placed in the proper level. Table 5 and Table 6 presents two levels for ISM model. It is worth to notice that F6 is top-level element in ISM model of this research.

Table 6. Level partitioning factors (second iteration)

Factors	Reachability set	Antecedent set	Intersection set	Level
F1	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	2
F2	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	2
F3	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	2
F4	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	2
F5	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	2
F7	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	2
F8	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	2
F9	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	1,2,3,4,5,7,8,9	2

4.6. ISM model and MICMAC analysis

Figure 1 identified the research variables and the relationship among them and the hierarchical level of each variable. Through level partitioning factors, the diagram of the final ISM model is built. Based on the results from Table 5 and 6, the Regulatory Environment is positioned at level-level of ISM model. As it is depicted in Figure 1, all variables except from regulatory environment, are positioned at the base of our model, which means that they are the main drivers to achieve the other variables.

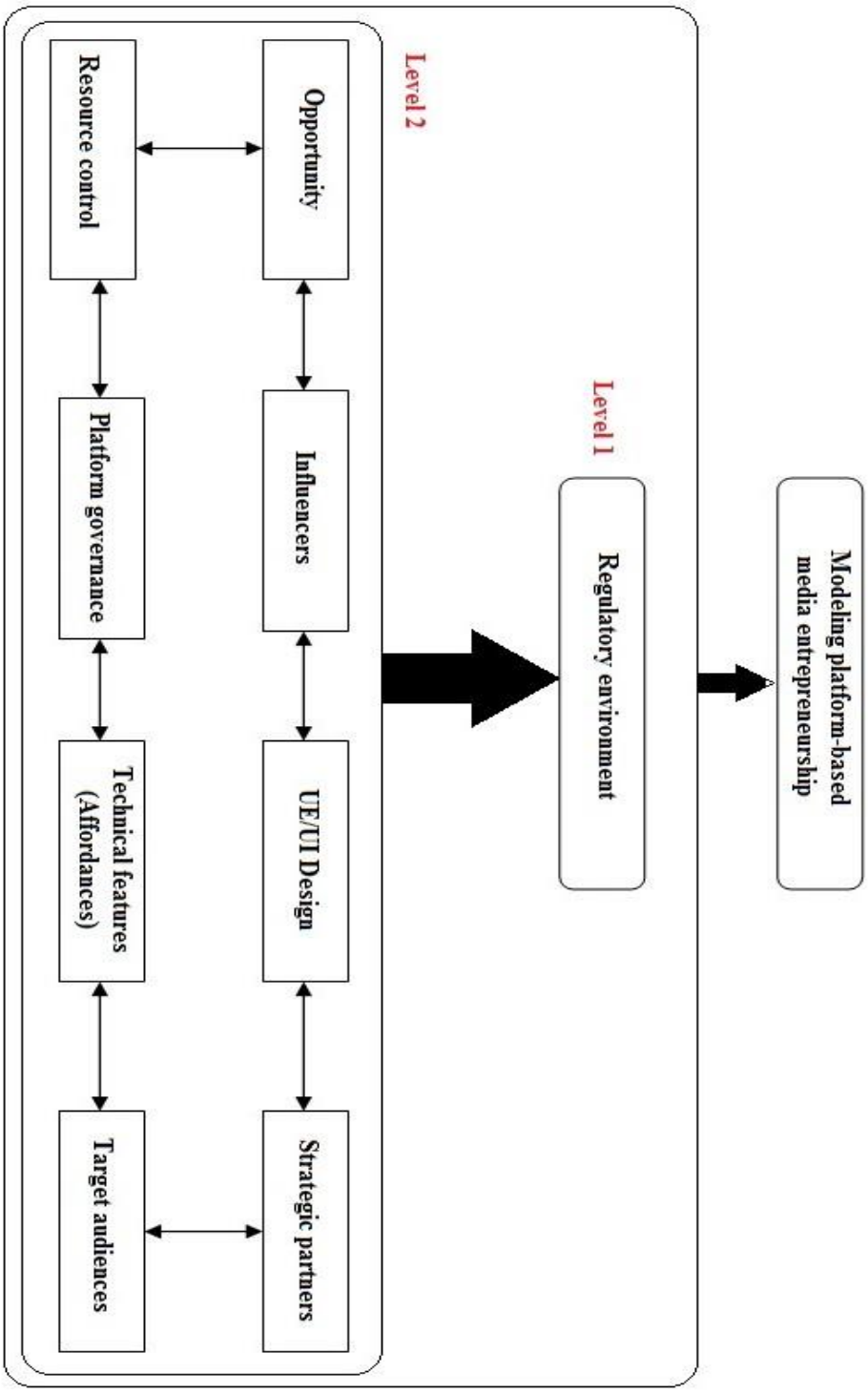

Fig 1. ISM model

As several researchers expressed (e.g. Warfield, 1974; Gan et al., 2018; Dhir and Dhir, 2020), the purpose of MICMAC analysis is to examine the dependence power and driving power of the factors, thus, all factors of this study classified their driving power and dependence power, that is presented in Table 4. This classification includes four categories of autonomous factors, dependent factors, linkage factors and independent factors. Figure 2 reveals that factors 1,2,3,4,5,7,8,9 are in the strategic quadrant, showing that they are strategic factors to achieve the research goal, which is platform entrepreneurship.

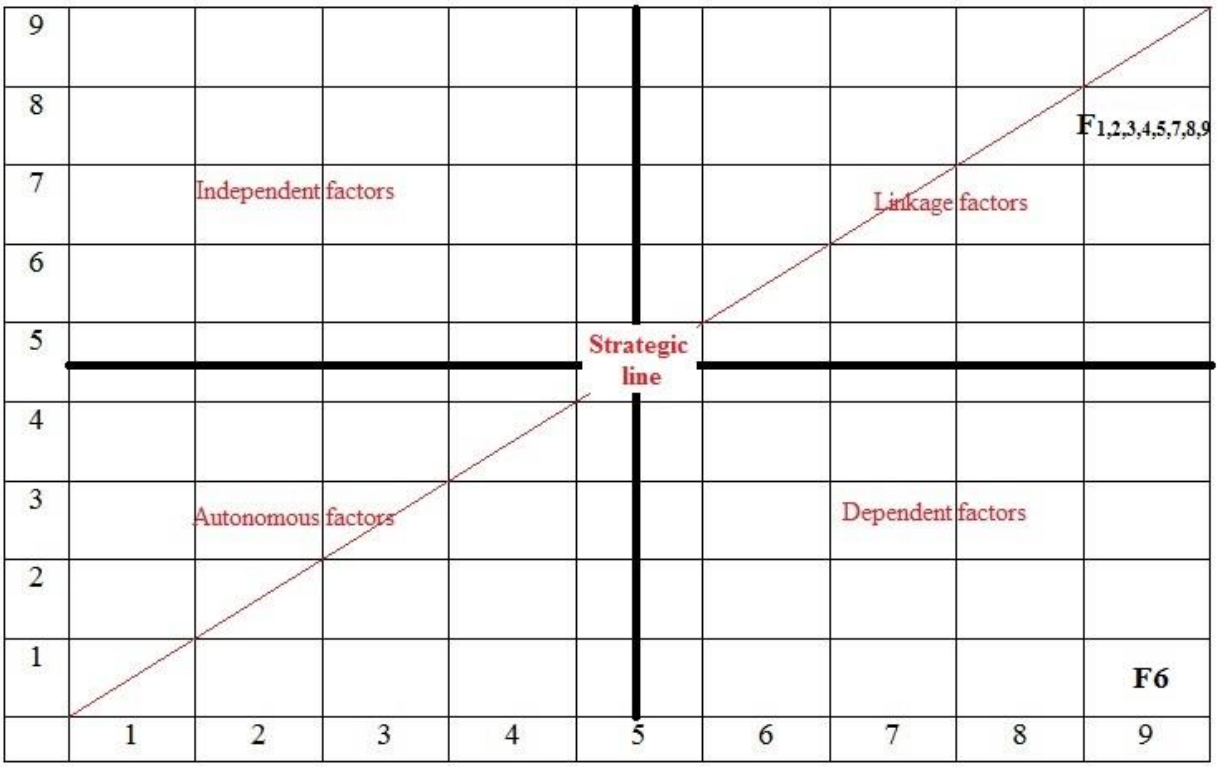

Fig 2. MICMAC analysis

5. Discussion

The results of this research emphasize on the importance of regulatory environment for success of platform entrepreneurship. this finding is supported in the real world by success of U.S based platforms in the world, which benefit from Article 230 and safe harbor for platform businesses in the United States. On the other hand, we see the policies in other countries that support platforms in lower level (Conditional and Strict liabilities, based on Gillespie, 2018) failed to lead the platforms to the same level of success. The cautiousness of governments to platforms is understandable. Platform businesses do not publish the content of themselves, but they allow various types of users to share what themselves want, and in several occasions such content might cross over different redlines or facilitate crimes or fraud. On the other hand, platforms provide the ability to effective use of resources that are not owned by business, or provide opportunity for employment of people as freelancers or related temporary or full time jobs. Considering such benefits, setting proper policies that facilitate platform entrepreneurship will prospect the nations and grow economies.

The findings also show that all other identified variables are strategic variables. Strategic, in terms of MicMac analysis, means that such variables are significant and are worth of investment in the future. These results support the selection of the variables, that are deliberately confirmed by experts of the field. The recognized strategic variables, called linkage factors, have equal driving power and dependence power to explain the media entrepreneurship model. Level Partitioning showed that linkage variables impact significantly on dependent factor, which is regulatory environment, and consequently on media entrepreneurship in platforms. In fact, the variable of regulatory environment as showed above, has a highest dependence power and lowest driving power and therefore, significantly influence by other variables of the model. It can be said that, this variable is goal variable and determine the success of platform entrepreneurship.

In generalization of the findings of this research, some limitations must be carefully mentioned. One research limitation is that We didn't extract any of our model's variables from interview with experts. For this reason, the model is a confirmatory model, not exploratory one. Also the method of ISM has some limitations for example, do not calculate the weight of variables.

We also suggest the following for the future researches who would like to continue this research. When one of the strategic variable removed from the model, results return one of two other remaining variables as autonomous variable. This implies on interrelationship of such factors in promotion of media entrepreneurship. Due to such result and considering the above mentioned research limitations, we strongly suggest the future researchers to compare on each of variables separately. Also we suggest the future researchers to add new variables from extended literature or interview with experts or practitioners to show more layers of level partitioning model. Another suggestion is to use one of the multi-criteria decision making model (MCDM) such as AHP, ANP, DEMATLE or Fuzzy method to prioritizing the factors their weight in the model.

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Other Information:
Received: 23 July 2020, Revised: 19 August 2020, Accepted: 26 August 2020
Funding: This research received no external funding.
Conflicts of Interest: The author declares no conflict of interest.