BUSINESS MODEL INNOVATION: SCALE DEVELOPMENT & VALIDATION

Rajesh Verma* and Makhmoor Bashir**

Abstract: The concept of business model innovation has received much attention from the academia and industry over the last decade. Widespread research has been done on the conceptualization of the term business model with almost all of the studies either conceptual or based on case studies. Researchers have stressed for more generalizable results involving empirical sophistication. This paper is an attempt to clarify the construct of business model innovation by developing a reliable and valid scale measuring business model innovation. Researchers in this study have used highly valid and reliable scale development procedures by Churchill (1979) and Hinkin (1995) to ensure reliability and validity. The findings revealed that business model innovation can be decomposed into eight factors viz.: Value Proposition, Channels, Costs, Human Capital, Value Network, Linkage with Partners, Assets & Capabilities and Revenue Sources.

Keywords: Business Model Innovation, Business Model components, Scale Development, Factor Analysis, Competitive advantage.

Jel Classification: M19, M10, M1, C1

1. INTRODUCTION

The concept of business model innovation has received considerable attention over the last decade (Schneider & Spieth, 2013; Spieth *et al.*, 2014; Zott *et al.*, 2011). The sudden success of companies like Uber, Xiaomi, and Airbnb has highlighted the importance of business model innovation in creating novel ways of value creation. According to a survey of over 700 CEO's worldwide by IBM (2006), firms which have grown higher operating margins than their competitors have spent more time and have given more emphasis on business model innovation than the underperforming firms. Researchers also believe that business model innovation can be a source of sustainable competitive advantage (Casadesus Masanell & Zhu, 2013; Bashir, Yousaf & Verma, 2016). Economist intelligence Unit (2012) conducted a global survey of 4000 managers worldwide and found that executives don't prefer products and services as a source of competitive advantage but novel business models.

^{*} Professor, School of Business, Lovely Professional University, Punjab

^{*} Research Scholar, Lovely Professional University, Punjab

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The previous available literature on Business Models has mainly focussed on the differentiation aspect of the subject from strategic management (Casadesus-Masanell & Ricart, 2010; DeSilva & Trkman, 2013). On the other hand the most recent literature on business models is either conceptual or in most case based on case studies with very little generalization (Aspara *et al.*, 2013; Schneider *et al.*, 2013; Sosna *et al.*, 2010). Researchers have given contradicting definitions suiting their studies with very little linkage among each other. This has created confusion among researchers in explaining the term business model and its components (Bashir & Verma, 2016).

Researchers suggest that one of the basic reasons for this confusion is the lack of empirical research. There are very few studies which have used a comprehensive measurement tool in explaining business model or business model innovations. Zott & Amit (2008) have differentiated between novelty based business models and efficiency based business model design by using a multi item scale. Researchers have also used a solitary indicator signifying a fraction of a company's innovation effort dedicated to business model innovation (Bock *et al.* 2012). There are other very rare cases when an empirical study has been conducted on business model innovation like Aziz & Mahmood (2008), Brettel, Strese & Flatten (2012), Zott & Amit (2007). This clearly demonstrates that one of the main reasons of the difference of opinion among scholars is due to the absence of a valid and reliable scale measuring the business model innovation.

This paper is an attempt to fill this gap by developing and testing a new scale to measure business model innovation. The study follows highly valid and reliable scale development procedures of Churchill (1979) and Hinkin (1995). The study has also defined the dimensions of the business model innovation theoretically by defining the domain and components of business model innovation. Data has been collected from top 42 multinational companies operating in India as per the revenue criterion is concerned. A total of 205 responses were collected.

2. LITERATURE REVIEW

Since the dot-com era there has been a huge surge in the academic and nonacademic literature on business models. Despite this huge surge the concept of business model has yet to achieve a common definition among academicians and managers. According to Al-Debei and Avison (2010) there are three main reasons behind the lack of clarity among researchers on the concept of business models. One of the very first reason is that the concept is still at a budding stage, very young and just making inroads into some top notch academic journals. Second reason being that the concept is being studied in new industries like Telecommunication and E-business. Lastly scholars use business models in different varieties of research like in strategy, technology management, Entrepreneurship and even in Information technology. According to Morris *et al.*, (2005) business model can be defined as company's unique value proposition, how it will outperform its rivals by using its sustainable competitive advantage and most importantly how the firm makes money at present and in near future. Researchers also define business model as the logic, data and other substantiation that supports a value proposition for the end consumer which has a feasible arrangement of revenues and costs for the delivery of that value (Teece, 2010). In similar lines Lecocq *et al.* (2010) defines business model as the participation of a company in value creation by arranging all of its transactions and activities within a larger network of organizations often called by researchers as value network and how the model is able to capture value to ensure its survival.

Osterwalder & Pigneur (2010) worked on business model ontology and explained business model as a conceptual tool that contains a set of elements and their relationships which explains the business logic of a firm. It is basically a description of company's offering, its architecture and its network of partners. In similar lines Westerlund (2009) defines business model as the way a company creates value by stipulating its relationships with other actors in the value network and the firm's position in value creating network.

There is a unanimous opinion that if any of the components or elements in an existing business model is changed it can be referred to as business model innovation (Abdelkafi, Makhotin, & Posselt, 2013; Demil & Lecocq, 2010; Lindgardt, Reeves, Stalk, & Deimler, 2009). Business model innovation can be defined as the discovery of different mode of value proposition, value capture and value creation in businesses (Teece, 2010). Therefore business model innovation can be best described as the process of discovering a novel way of doing business which will result in reconfiguration of value capturing and value creating mechanisms (Björkdahl & Holmén, 2013; Massa & Tucci, 2014).

3. THEORETICAL FRAMEWORK

Literature review on business models revealed that researchers have given a wide variety of components explaining business models in their studies with very little linkage among each other. The components given by researchers in many studies are overlapping with very little or almost no empirical support which questions their validity(Bashir & Verma, 2016). Therefore capturing the context of business model innovation while framing a questionnaire is a very challenging job for any researcher. The study has used Westerlund (2009) framework for explaining business model innovation. The first reason for using this framework is that it has been developed after reviewing all of the literature on business models and only those components were picked on which all of the scholars agree and are on the same ground. Second apart from minor changes this model is also in line with Zott *et al.* 2011; Osterwalder & Pigneur, 2010. Westerlund (2009) has divided

business model into four broad components viz.: Value proposition, Assets & Capabilities, Economic Logic or revenue logic and the Actors in Business Network.

4. SCALE DEVELOPMENT

In order to ensure high reliability and validity, researchers have followed highly reliable and valid scale development procedures of Churchill (1979) which is also in line Anderson & Gerbing (1982), Bentler & Bonnet (1980), Bagozzi *et al.* (1991), Nunnally & Bernstein (1994), Hinkin (1995). Figure 1 gives a holistic view of the scale development process used in this study.

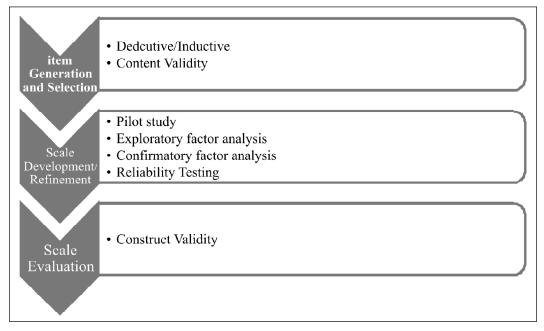


Figure 1: Scale Development Process

4.1.1. Item Generation & Selection

In order to generate the items for this study deductive scale development method was used. To get the understanding of the concept to be examined a deep and thorough literature review was conducted to develop the definition of the construct. Then researchers used this definition as a guide for generating the items (schwab, 1980). After going through the literature the authors initially started with around 20 items measuring value proposition, 25 items measuring assets & capabilities, 24 items measuring Economic logic and 21 items measuring actors in business networks. In totality there were around 90 items measuring business model innovation. Researchers used a five point Likert Scale with 5 as 'strongly disagree' to 1 as 'strongly agree'.

4.1.2. Content Validity

Content validity was used to check the internal consistency of the statements. The experts rated the items on one of the three categories 'Retained', 'Modified' and 'Deleted'. The experts constituted a mix of people from industry and academics representing some top notch multinationals like Airtel, HCL, Deollite, J & K Bank, Aon Hewitt and universities like National University of Singapore, Indian Institute of Technology Delhi, Aligarh Muslim University, Priest University. Evaluating the collective feedback of the 11 experts around 10 items were deleted due to possibility of misinterpretation and lack of transparency. The scale was again revised and send back to the experts. After reviewing the feedback of the experts' 6 more items were deleted as experts were of the opinion that some are repetitive and others double barrelled in nature. The final scale was reduced to 74 items which was again send to the experts for their feedback. This time experts suggested using simpler and more familiar words but no item was deleted.

4.2. Scale Development /Refinement

According to Churchill (1979) and Henkin (1995) the purification stage includes pilot testing of the instrument, testing the construct by exploratory factor analysis and confirmatory factor analysis.

4.2.1. Pilot Study

In order to conduct pilot study the questionnaire was electronically send to over 120 middle level executive representing some top notch companies. A total of 55 responses were received among with 5 were discarded due to incomplete information. The Cronbach's alpha was calculated using IBM, SPSS software. The Cronbach's alpha was found out to be .938 (Table 1). According to Nunnally (1994) the minimum acceptable threshold limit for Cronbach's alpha is 0.7. Therefore the measure suggests that the consistency between statements is adequate and we can proceed with the final data collection.

Table 1 Reliability Statistics

Cronbach's Alpha	N of Items
.941	74

4.2.2. Exploratory Factor Analysis

The next step in the refinement stage is to conduct the exploratory factor analysis. The questionnaire measuring business model innovation was again send electronically and via a hard copy to over 300 respondents usually top to middle level executives representing some top notch companies across seven industries like Information technology, Banking, Insurance, Telecommunication, Publishing, Media & Entertainment and academia. A total of 205 usable responses were collected. According to Cattell (1978) and Arrindell & Van Der Ende, 1985) the minimum subject to variable ratio of 3:1 is adequate for conducting factor analysis. Therefore we can proceed with the factor analysis.

Several iterative cycles of factor analysis were conducted on the data set. The total variance explained and numbers of factors extracted were examined after each iteration. Factors with low communalities and which didn't correlate were deleted with the aim of improving the factor structure so that to get a matrix with much clear loadings. The researchers have used principal component matrix in this study and for rotation researchers have used Varimax method as inter factor correlations were found out to be insignificant.

The minimum Kaiser-Meyer-Olkin (KMO) for a good factor structure should be 0.60 (Tabachnick and Fidell, 1996). The KMO measure for this study was found to be .893 (Table 2). A negligible significance level was shown by Bartlett's test of sphericity. Therefore both these measures suggest that sample is adequate for performing factor analysis.

	KMO and Bartlett's Test	
Kaiser-Meyer-Olkin Measure o	of Sampling Adequacy.	.871
Bartlett's Test of Sphericity	Approx. Chi-Square	2187.088
	df	253
	Sig.	.000

Table 2

Factor Structure: To classify the items rotated components matric was used. The factors below 0.4 were suppressed to get a much clear matrix. The minimum cut off norm for deletion was the factor loading (>0.50) (Karatepe et al., 2005). A total of 9 factors were extracted explaining a cumulative a variance of 76.597 (Table 3).

4.2.3. Confirmatory Factor Analysis

According to Joreskog & Sorbom, (2004) Confirmatory factor analysis is a distinct case of Structural Equation Modelling which is also known as linear structural relationship model. The confirmatory factor analysis was applied using SPSS Amos 19.0 to the nine factors extracted in factor analysis. The indices of the model were (Chi-square = 422.560, CMIN/DF=2.178, RMR=.020, CFI=.890, RMSEA=.076). The inspection of the results revealed that some indices are below the threshold level. After the inspection of the squared multiple correlations, variances and modification indices two statements were deleted. The process was again repeated but this time no item was deleted. The final indices of the model were (Chi-

Table 3 Rotated Component Matrix									
Variable				(Componen	t			
	1	2	3	4	5	6	7	8	9
1	.743								
2	.722								
3	.754								
4	.755								
5	.734								
6		.782							
7		.519	.563						
8		.801							
9		.798							
10			.836						
11			.601						
12				.809					
13				.731					
14					.711				
15					.818				
16						.849			
17						.686			
18							.618		
19							.914		
20								.855	
21								.547	
22									.755
23									.590

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square=356.147, CMIN/DF=2.212, RMR=.017, CFI=9.00, RMSEA=.077). Figure 2 provides a holistic view of the Confirmatory Factor analysis model.

4.3. Scale Evaluation

The final step I the whole scale development process is to check the reliability and construct validity of the final scale.

4.3.1. Reliability Analysis

The final reduced set of items was again check for internal consistency using SPSS. The Cronbach's alpha for the final set of items was found out to be .895 (Table 4). This illustrates a high degree of internal consistency among the items.

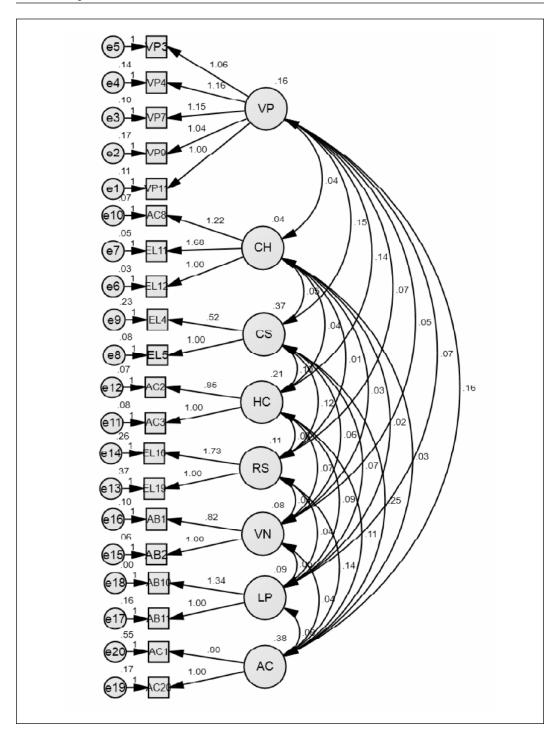


Figure 2: Confirmatory Factor Analysis Model

Table 4 Reliability St	
Cronbach's Alpha	N of Items
.895	20

4.3.2. Construct Validity

The composite reliability of all the factors ranges from .626 to .821 which is satisfactory as per the researchers (Hair *et al.*, (1998). Further the average variance extracted for the eight factors ranges from .465 to .696 which is also well above the threshold level. Therefore these measures reflect the content validity of the scale. On the other hand the factorial loading, reliability measures also provide strong evidence for the construct validity of the scale.

5. CONCLUSION

The study has theorised a broad literature review of the existing state of business models and business model innovation. A rigorous methodological procedure was carried out to develop a validated measurement scale for business model innovation based on qualitative pre-test, an initial assessment based on a sample of 50 respondents and then the final refinement process based on a subsequent sample of 205 respondents. This study has developed a reliable and valid measurement scale for business model innovation. A total of 33 items were retained which reveal that business model innovation can be decomposed or conceptualised into 8 factors consisting of Value Proposition, Channels, Costs, Human Capital, Value Network, Linkage with Partners, Assets & Capabilities and Revenue Sources.

The scale exhibits high degree of internal consistency and has remained consistent across different samples. The scale has passed all of the reliability measures like convergent validity and construct validity. This study will give academicians much needed tools for the empirical research on the concept of business model innovation which will ultimately help in bringing a fresh empirical perspective to the concept of business model innovation.

5.1. Limitations

Researchers in this study have used highly valid and reliable scale development procedures by Churchill (1979) and Henkin (1995) but still it suffers from some limitations. The first limitation is that both the techniques of the scale refinement like the exploratory factor analysis and the confirmatory factor analysis are quite sample size specific. Researchers in this study have a rationale and proper literature support for applying these techniques but in order to adequate much better results a bigger sample size is advisable. The study measures 8 sub constructs of business

model innovation as general activities. The scale cannot be used to capture some unique business model changes.

5.2. Scope for Future Research

The scale measuring business model innovation will go a long way in enriching the research on business model innovation. This scale is only adequate in measuring business model innovations and cannot answer why some business models perform better than the others. Therefore a further qualitative study can be conducted based on this scale to uncover the reasons behind this. Second a further research can be conducted to determine the relationship of business model innovation with firm performance.

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Factor	Items	Factor Name
1.	We continuously seek to differentiate our products with	Value Proposition
2.	respect to our competitors. We have created more USP's for product/ services than	
	our competitors.	
3.	We have added more Features to the offerings than our competitors.	
4.	We continuously seek new ideas to make our products easy to use	
5.	We seek to bring new value added services than our competitors	
1.	Our channels are more responsive to customer requirements than our competitors.	Channels
2.	We have developed New low cost avenues for advertisement.	
3.	We have More options for revenue sharing	than our competitors
1.	We continuously develop new ways to make our processes more streamlined	Costs
2.	We actively seek opportunities to reduce Fixed costs	
3.	We continuously seek opportunities to reduce Variable costs	
1.	We seek to find new ways to improve the skill set of the employees	Human Capital
2.	We have developed new ways to improve the Efficiency of our people	
1.	We continuously seek to find new ways to improve the Relationship with suppliers.	Value Networks
2.	We continuously seek to find new ways to improve the Relationship with customers.	
1.	We have developed new ways of Coordination with partners	Linkage with Partners
2.	We have developed new ways of Communication with partners	
1.	We have relatively a lean workforce than our competitors	Assets & Capabilities
2.	We have developed new ways to reduce the capital	-
1.	requirements in our business than our competitors We have developed new ways to reduce the risk associated in	Revenue Sources
	business.	
1.	We continuously seek new ways to increase the margins in each revenue source.	

Appendix 1 Extracted Factors & Their Interpretation