

Working Paper Series

The Structure and Evolution of
'Young Consumers and Marketing' Literature:
An Author Citation/ Co-citation Analysis

by

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Abstract:

Purpose: This article investigates the intellectual structure of the 'young consumers and marketing' field through citation and co-citation analysis.

Design/ methodology/ approach: Using appropriate keywords, relevant articles published in leading marketing journals during the period 1991-2010 were identified. Then, a ranking of all the authors of each article was prepared for their weighted citation counts. As a next step, co-citation frequencies were collected for authors with 70 or more weighted citation count for period 1991-2010 and two time-periods of ten years each: 1991-2000 and 2001-2010. Co-citation matrices were used as inputs for bibliometric analysis (specifically, factor analysis, multi-dimensional scaling and Pathfinder analysis).

Findings: Factor analysis delineated subfields and their evolution, multidimensional scaling graphically represented spatial distances between intellectual themes in two-dimensional space, and Pathfinder analysis identified boundary spanning and brokerage authors in the research field.

Research limitations/ implications: An 'aerial' view presented by the study intends to help future researchers to be introduced to the research field, to locate their research proposals within the field, and to source and compile their reading list for their research proposals.

Originality/ value: It applies bibliometric methods to conduct literature review on the research field and takes stock of evolutionary trajectory of the research field over two decades.

Keywords: Young consumers; Marketing; Bibliometrics; Author co-citation analysis; Pathfinder analysis; Multi-dimensional scaling

Article classification: Literature review

The structure and evolution of 'Young Consumers and Marketing' literature: An author citation/ co-citation analysis

Introduction

Literature reviews in a research field reflect maturity of the field, emerging themes and sub-themes, and the contributing authors in the research field. To the best of our knowledge, two literature reviews (Lundby, 2011; John, 1999) are published in 'young consumers and marketing' research field. John reviewed the literature on young consumers' socialisation and summarized socialisation research themes. Lundby presented a review of literature published on Scandinavian young consumers' interpersonal relationships and societal transformation process. These literature reviews are pertaining to specific themes and contexts, and cannot be extended to represent overall development of 'young consumers and marketing' research field. Insights from such literature reviews tend to reflect authors' impressions of the research field and their intuitive beliefs and thus, suffer from authors' biasness (Ramos-Rodriguez and Ruiz-Navarro, 2004). Thus, there is a scope of exploring the structure and evolution of 'young consumers and marketing' research field in a comprehensive manner by applying scientific approach such as bibliometric methods. Bibliometric methods use quantitative techniques to analyse citation counts of research articles/ authors and co-citation matrices to trace the knowledge flow in a research field (Marion and McCain, 2001; White, 1990). These methods are known for their non-biasness and greater objectivity in results (Bayer *et al.*, 1990). This study, therefore, uses author citation/ co-citation analysis to present the structure and evolution of 'young consumers and marketing' literature published in elite, aspiring and consumer-focused marketing journals over a period 1991-2010.

The paper is divided into four main sections. The first is a review of literature; second contains a description of the methodology employed; third presents the results and discussions; and, fourth section presents summary of the study.

Bibliometric methods and marketing

Use of bibliometric methods in marketing is reasonably popular though the studies are different for their objectives, unit of analysis and selection of bibliometric method. A set of marketing studies (e.g. Tellis *et al.*, 1999; Cote *et al.*, 1991; Jobber and Simpson, 1985; Goldmann, 1979; White and White, 1977; Hamelmann and Mazze, 1973) have used bibliometric methods (such as citation analysis) to investigate citation patterns among leading marketing and business journals, their rankings, influence and coverage. Another set of marketing studies have used advanced bibliometric methods (such as co-citation analysis and network analysis) to explore structure and evolution of research fields. Hoffman and Holbrook (1993) used citations analysis to identify 42 most frequently published authors in consumer research, and developed a "citation-similarity space" to show pattern of symmetric citation among the researchers and to measure research typicality. Chan *et al.* (2012) used threshold citation analysis to identify influential articles, journals, institutions, and researchers in marketing research between 2000 and 2009. This threshold citation analysis was based on the citation count of an article cited in elite and aspiring marketing journals. Pasadeos *et al.* (1998) used citation and co-citation analysis to identify the most-cited writers, most-cited published works, and co-citation networks for 1982-1985 and 1992-1995 in advertising literature. In business-to-business marketing literature, Backhaus *et al.* (2011) used citation analysis, co-citation analysis and network analysis to explore the structure and evolution of the literature. Similarly, Acedo and Casillas (2005) used author co-citation analysis to determine paradigms in the international

management field. Leone *et al.* (2012) synthesised pricing literature using citation counts, citation per year, and weighted and unweighted citation analyses to rank journals, authors, institutions and research articles published in SSCI-indexed marketing journals. Galvagno (2011) applied factor analysis, cluster analysis and multi-dimensional scaling on co-citation matrix of most-cited authors to understand intellectual structure of the anti-consumption and consumer resistance field. Kumar (2016) used weighted citation count to rank authors and research articles in green marketing. In sustainability-marketing literature, Chabowski *et al.* (2011) used social network theory and performed an extensive co-citation analysis using multidimensional scaling. Samiee and Chabowski (2011) investigated knowledge structure in international marketing by applying factor analysis, hierarchical cluster analysis and metric multidimensional scaling on co-citation matrix of most-cited research articles. Sinkovics (2016) identified 17 clusters representing themes in international marketing. These studies have contributed in providing an objective and aerial view of research fields. Thus, it indicates acceptance of bibliometric methods in marketing domain and their suitability in tracing the development of research fields.

Research methodology

To delineate intellectual structure and evolution of 'young consumers and marketing' literature, the study chooses author citation analysis and author co-citation analysis. This section explains each of these methods and rationale for their use in the study.

Citation analysis:

Garfield (1972) proposed use of citation analysis as a tool for journal, article and author evaluation for their research impact. It has been found as one of the most important aspects of bibliometry to provide rationale for ranking authors and journals (Mabry and Sharplin, 1985). It is believed for its scientific approach, reliability and effectiveness, and is known for being free from biases associated with perception studies (Jobber and Simpson, 1988). Though this method is biased towards articles published over a longer period as their authors have a greater opportunity to be cited, and thus more possibility of ranked higher (Holsapple *et al.*, 1994), this fits with the objective of the study to understand development of the research field based on most impactful authors in the research field.

Weighted citation analysis, one of the citation analysis methods, is recently adopted by many scholars in marketing (e.g. Kumar, 2016; Chan *et al.*, 2012; Leone *et al.*, 2012) to prepare rankings of authors based on weighted citation count. Weighted citation count means that if an article was co-authored by five authors, credit received by each author is 1/5th of the article citation count. If there is another relevant contribution of an author, the weighted citation count would simply be added to the total. Advantage of this method is that it offers equal credit of citation counts to all the authors of an article and thus, recognizes contribution of all the authors in a research field (Garfield, 1979).

Author co-citation analysis (ACA):

ACA uses authors as the unit of analysis and analyses co-citation frequencies between pairs of highly-cited authors to determine structure of a research field. The fundamental behind ACA is that authors in a research field often build upon earlier work of cited authors by working either on their limitations or on their proposed directions of future research (Culnan, 1986). The authors frequently co-cited can be visualised to create and disseminate knowledge towards a specific theme of research, and the relationships among these authors can be visualised as an

intricate web of relationships (Nerur *et al.*, 2008). For this, a matrix of co-citation frequencies between authors can be statistically analysed and processed to produce maps showing the relative distances between authors (McCain, 1990), to identify group of authors with conceptual similarities and to determine their ideational interactions (Acedo *et al.*, 2006). This makes ACA an appropriate methodology for the objectives of the current study. Adopted from McCain (1990), the steps of ACA are: (i) retrieval of co-citation counts for each pair of authors, (ii) compilation of matrix of raw co-citations and matrix of Pearson's correlations, (iii) performing exploratory factor analysis (to extract sub-fields, their protagonists and pervasiveness of their influence), multi-dimensional scaling (for graphical representation of author proximities) and pathfinder analysis (to highlight strong links and network of authors), and (iv) interpretation of results.

Factor analysis:

It uses raw co-citation matrix as input to produce sub-fields (factors) that represent intellectual themes defined by the work of highly loaded authors on the factors. Authors loaded on same factors are perceived to work on similar themes and are cited together by other researchers (McCain, 1990). And, the authors loaded highly on more than one factor have a persuasive influence on the field. Authors with loadings ± 0.4 or more are generally reported and those with loadings ± 0.7 or more are used for factor interpretation (McCain, 1990). The contribution of a factor in a research field is construed by the amount of variance explained by the factor. Inter-factor relationships are examined by oblique factor rotation method.

Multi-dimensional scaling (MDS):

It uses author co-citation matrix to generate visual displays (maps) to illustrate underlying structure within a set of authors, their ideational similarities and conceptual distance between various intellectual strands of research (McCain, 1990). Co-cited authors appear close to each other on the visual maps, those with many links to other authors appear in the central position and those with weak ties with others appear at periphery (McCain, 1990). The output of MDS is evaluated for "stress" statistics and goodness-of-fit.

Pathfinder analysis:

It uses author co-citation matrix as input to generate network structure of authors (generally called a PFNet) that highlights prominent relationships among authors and indicates 'boundary-spanning' authors (White, 2003). The network is represented in forms of nodes and lines where nodes represent authors and the lines represent links between authors. In the network structure, the link between two nodes is shortest path between two authors and the direct linkage between two authors explains proximity between them (Nerur *et al.*, 2008). An interpretation of the network structure offers insights on influential authors, research communities and dominant perspectives in the research field. This reveals how citers jointly perceive (or, do not perceive) the relationships among highly-cited authors in the field (White, 1990).

Findings and discussion

This section presents results of each stage of our analysis.

Data

Journal articles for time period 1991-2010 were searched using terms (keywords) such as "children", "kids", "adolescents", "teens", "preschoolers", "youngsters", "school pupils", "girls", "boys", "tweens", "minors", and "millennial". The journal articles having titles,

abstracts or keywords containing any of these terms were selected for the study. A database was prepared to record names of journal articles, names of all the authors for each journal articles, year of publication and citation count as per December 2015. For ensuring reliability of the data collected, all the data was recorded twice and the entire data set was double-checked (Pasadeos and Renfro, 1989).

Selection of authors

All the authors in the database were ranked for their weighted citation count and 58 authors (Table 1), having 70 or more number of weighted citation count (based on Screen plot between authors and weighted number of citations, were selected for further analysis.

Table 1

An alphabetical list of authors with more than 70 citations

BAKER J	COSENZA RM	GRAM M	MAILER G	PIACENTINI M	TAYLOR SL
BEATTY SE	CROSS G	GROSSBART S	MANGLEBURG TF	PRESTON C	THOMPSON CJ
BELCH MA	DALAKAS V	HAYTKO DL	MARQUIS M	RATNESHWAR S	VASSALLO R
BOUSH DM	DONEY PM	HIRSCHMAN EC	MARTIN CA	RITSON M	WALSH A
BRISTOL T	DOTSON MJ	HYATT EM	MCNEAL JU	ROSE GM	WILKES RE
BUSH AJ	ELLIOTT R	JI MF	MIZERSKI R	SHIM S	WOOD L
CARLSON L	FLURRY LA	JOHN DR	MOORE ES	SHOHAM A	YEH CH
CARUANA A	FRIESTAD M	LACHANCE MJ	PALAN KM	SMITH KH	YOUN S
CHAN K	GEHRT KC	LUTZ RJ	PECHMANN C	STUTTS MA	
CHAPLIN LN	GOLDBERG ME	MACKLIN MC	PERACCHIO LA	TALPADE S	

Retrieval of co-citation data

Total period of interest (1991-2010) was split into two time periods of ten years each: 1991-2000 and 2001-2010. For each time period as well as total time period, a frequency of co-citations was obtained for each pair of authors from online bibliographic databases and co-citation matrices were prepared. For the diagonal values in matrices, though many approaches are proposed by several authors, McCain (1990) found neither of the approaches significantly affects the results. Highest off-diagonal co-citation count for each author was used for diagonal values in the study (White and Griffith, 1981).

Factor analysis

Exploratory factor analysis was applied to co-citation matrices for both the time periods using Principal Component Analysis and Oblique rotation in SPSS package version 20.0. Factors with a minimum eigenvalue of 1 were extracted. For each factor, authors with factor loadings greater than or equal to ± 0.4 were reported in the factors and authors with factor loadings greater than or equal to ± 0.7 were used for interpretation of the factors. Eight factors were extracted for each time period but two factors for the time period 1991-2001 and one factor for the time period 2001-2010 were not interpretable. Hence, a six-factor solution for the time period 1991-2001 (Table 2) and a seven-factor solution for the time period 2001-2010 (Table 3) were accepted. Tables 2 and 3 report factor structures, variances, significant factor correlations and persuasive authors for each time period. Authors loaded on more than one factor have influence spread over many areas in the research field and are recognised as bridge authors.

Table 2. Factor extracted for the period 1991-2000
Author factor loadings at 0.40 or higher

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
	<i>BOUSH</i>	<i>HIRSCHMAN</i>	<i>SMITH</i> ₁	<i>BRISTOL</i>	<i>CARLSON</i> ₂	<i>SHIM</i> ₃
	<i>FRIESTAD</i>	<i>THOMPSON</i>	<i>STUTTS</i> ₁	<i>MANGLEBURG</i>	<i>GROSSBART</i> ₂	<i>GEHRT</i>
	<i>JOHN</i>	<i>ELLIOTT</i>	<i>RATNESHWAR</i> ₁	<i>PALAN</i> ₂	<i>WALSH</i>	<i>MACKLIN</i> ₂
	<i>ROSE</i> ₁	<i>RITSON</i>	<i>PECHMANN</i> ₂	<i>BEATTY</i> ₂	<i>MCNEAL</i> ₂	<i>BEATTY</i> ₄
	<i>PERACCHIO</i>	<i>WILKES</i>	<i>YEH</i> ₂	<i>SHIM</i> ₂	<i>MOORE</i> ₃	<i>JI</i> ₂
	<i>LUTZ</i> ₁	<i>PALAN</i> ₁	<i>MCNEAL</i> ₁	<i>TALPADE</i> ₁	<i>LUTZ</i> ₂	<i>TALPADE</i> ₃
	<i>PECHMANN</i> ₁	<i>YEH</i> ₁	<i>JI</i> ₁	<i>STUTTS</i> ₂	<i>ROSE</i> ₂	
	<i>MOORE</i> ₁	<i>MACKLIN</i> ₁			<i>YEH</i> ₃	
	<i>MIZERSKI</i>	<i>MOORE</i> ₂			<i>TALPADE</i> ₂	
	<i>CARLSON</i> ₁	<i>BEATTY</i> ₁			<i>SMITH</i> ₂	
	<i>GROSSBART</i> ₁	<i>SHIM</i> ₁			<i>BEATTY</i> ₃	
					<i>RATNESHWAR</i> ₂	
Per cent of variance explained	25.01	23.72	16.28	11.08	4.94	3.05

Total variance explained: 84.08%.

Authors with loading $\geq \pm 0.7$ are shown in italics.

Subscripts: 1 = First appearance; 2 = Second appearance; 3 = Third appearance; 4 = Fourth appearance

Significant factor correlations: factors 4 and 6: 0.31.

The results of factor analysis revealed underlying sub-fields in the research field. Five of the sub-fields have appeared across both the time periods. Authors in ‘Socialisation process studies’ sub-field in the time period 1991-2000 (factor 2) and 1991-2000 (factor 7) conceptualised psychological and social processes that shape young consumer’s consumption behaviour. Authors in ‘Young consumer’s exposure studies’ sub-field explored the roles of young consumer’s interactions with parents, family members (in the time period 1991-2000, factor 4) friends, internet and shopping malls (in the time period 1991-2000, factor 5) in shaping their consumption behaviour. Authors in ‘Young consumer as influencers’ sub-field in time period 1991-2000 (factor 6) examined the influence of young consumer in parents’ shopping decisions and determinants of their influence, and the authors in time period 2001-2010 (factor 1) focused upon assessment of their influence on parents’ shopping and consumption decisions. In the later time period, authors such as Shoham and Beatty addressed cross-cultural dimension in the sub-field, and Flurry adopted social power theory approach for conceptualisation.

Table 3. Factor extracted for the period 2001-2010
Author factor loadings at 0.40 or higher

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
	<i>DALAKAS</i>	<i>JOHN</i>	<i>THOMPSON</i>	<i>JI</i>	<i>BAKER</i> ₂	<i>MAILER</i>	<i>DOTSON</i>
	<i>GRAM</i>	<i>GOLDBERG</i>	<i>HAYTKO</i>	<i>MCNEAL</i> ₄	<i>DONEY</i>	<i>PIACENTINI</i>	<i>HYATT</i>
	<i>VASSALLO</i>	<i>LACHANCE</i> ₁	<i>ELLIOTT</i>	<i>YEH</i>	<i>YOUN</i> ₂	<i>SMITH</i> ₁	<i>STUTTS</i> ₃
	<i>CARUANA</i> ₁	<i>BOUSH</i>	<i>WOOD</i> ₂	<i>CHAN</i> ₂	<i>BEATTY</i> ₂	<i>STUTTS</i> ₂	<i>SMITH</i> ₂
	<i>FLURRY</i>	<i>MANGLEBURG</i>	<i>LACHANCE</i> ₂	<i>CROSS</i> ₁	<i>PRESTON</i> ₂		
	<i>SHOHAM</i>	<i>CHAPLIN</i>	<i>PECHMANN</i> ₂	<i>STUTTS</i> ₁	<i>CARUANA</i> ₂		
	<i>MARQUIS</i> ₁	<i>PECHMANN</i> ₁	<i>BAKER</i> ₁		<i>CROSS</i> ₂		
	<i>BELCH</i> ₁	<i>BRISTOL</i>			<i>BELCH</i> ₂		
	<i>BEATTY</i> ₁	<i>CARLSON</i> ₂			<i>MARQUIS</i> ₂		

	<i>CARLSON</i> ₁	<i>ROSE</i> ₂					
	<i>ROSE</i> ₁	<i>CHAN</i> ₁					
	<i>WOOD</i> ₁	<i>MCNEAL</i> ₂					
	<i>MCNEAL</i> ₁						
	<i>YOUN</i> ₁						
	<i>PRESTON</i> ₁						
Per cent of variance explained	28.15	19.62	13.71	8.05	7.73	5.99	5.54

Total variance explained: 88.80%.

Authors with loading $\geq \pm 0.7$ are shown in italics.

Subscripts: 1 = First appearance; 2 = Second appearance; 3 = Third appearance

No significant factor correlations observed.

For 'Young consumer's response studies' sub-field, the authors in the time period 1991-2000 (factor 3) explored how factors such as belief, peer influence and advertising that develop young consumer's responses towards products, and the authors in the time period 2001-2010 (factor 4) explored types of young consumer's responses and processes of developing responses. Authors in 'Young consumer's learning process' sub-field in the time period 1991-2000 (factor 1) explored the processes of acquiring learning from advertisements, information and product experience. Authors in the time period 2001-2010 (factor 2) underpinned the learning processes in social power theory (Mangleburg) and protection motivation theory (Pechmann).

Authors in 'Cross-cultural studies' sub-field in the time period 1991-2000 (factor 6) focused upon understanding differences in young consumer's shopping approaches across cultures. For the time period 2001-2010, cross-cultural aspects were mainly captured in 'Young consumer as influencer' sub-field (factor 1) to understand how young consumer's influence on parents' purchase decisions vary across cultures. In the time period 2001-2010, two more sub-fields were extracted: young consumer's experience studies (factor 3) and symbolic consumption (factor 6). Authors in 'Young consumer's experience studies' sub-field explored young consumer's experience acquisition in changing media environment, changing shopping environment and changing consumption environment. Authors in 'Symbolic consumption' sub-field explored how symbolism dimensions such as self-concept, self-expression and personality reflection shape young consumer's behaviour (such as judgment of people and situations).

For the two time periods 1991-2000 and 2001-2010, a summary of factor analysis is presented in Table 4. This shows the development of the research field over the two time periods. The factors in two time periods were not mutually exclusive as some authors are found involved with more than one factor and this reflects upon expertise of these authors in more than one sub-field.

Table 4: Summary of factor analysis

Time periods	Factors							
	Socialisation process studies	Young consumer's exposure studies	Young consumer as influencers	Young consumer's response studies	Young consumer's learning process	Cross-cultural studies	Young consumer's experience studies	Symbolic consumption
1991-2000	✓	✓	✓	✓	✓	✓		
2001-2010	✓	✓	✓	✓	✓		✓	✓

Multi-dimensional scaling

Using SYSTAT software, multi-dimensional scaling was applied to matrices for the two time periods of ten years each: 1991-2000 and 2002-2010. Authors with loadings greater than or equal to ± 0.7 are shown for easier interpretation and to reduce the clutter. Figures 1-2 show spatial solutions displaying authors in two-dimensional space using the Kruskal loss function available in SYSTAT for each time period. The stress values for each time period was observed below 0.2, showing an acceptable fit for co-citation data (McCain, 1990). A two-dimensional solution was preferred over three- or more-dimensional solutions for its easier interpretation and reasonably good approximation.

Figure 1: Multi-dimensional scaling for time period 1991-2000

Stress of final configuration: 0.104

Proportion of Variance (RSQ): 0.927

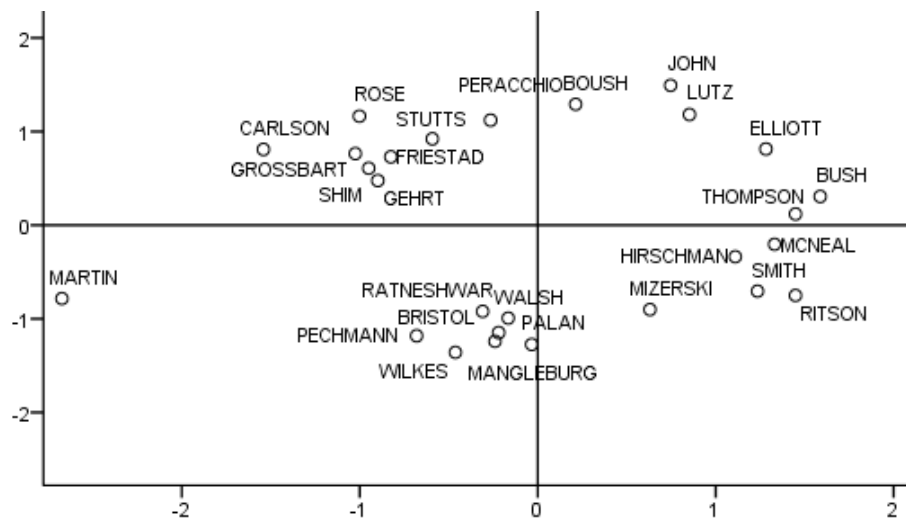
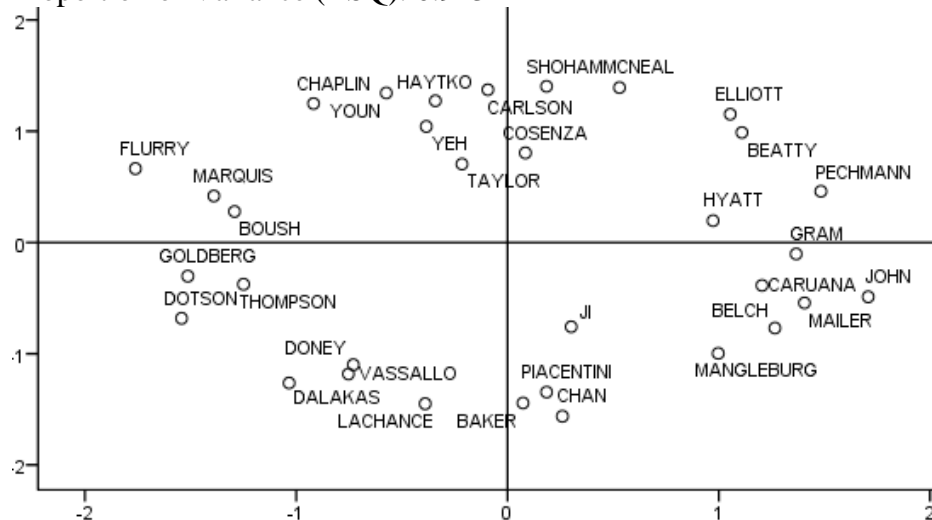


Figure 2: Multi-dimensional scaling for time period 2001-2010

Stress of final configuration: 0.129

Proportion of Variance (RSQ): 0.923



The MDS maps are interpreted for conceptual similarities, dissimilarities among the authors based on distances between authors. Shorter the distance between two authors, more is conceptual similarities between them and higher is the prospect of being cited together. For example, the MDS map (figures 1) for time period 1991-2000 indicate that authors such as Carlson, Rose and Shim are conceptually similar with each other as they are placed in same quadrant and close to each other while dissimilar from authors (e.g. McNeal, Ritson and Smith) placed in opposite quadrant. And, the MDS map (figures 2) for the time period 2001-2010 indicate that authors such as Elliott, Beatty and Pechmann are conceptually similar with each other as they are placed in same quadrant and close to each other while dissimilar from authors (e.g. Doston, Thompson and Goldberg) placed in opposite quadrant.

The comparison of the MDS maps for the two time periods (figures 1 and 2) reveal interesting observations. MDS maps of the two time periods (figures 1 and 2) show that the some of the authors such as Pechmann, Thomson, Boush, John, McNeal, Carlson, Elliott and Mangleburg have appeared in maps of both the time periods and can be interpreted for their conceptual similarities and dissimilarities over the time periods. Thompson and McNeal are placed close to each other in the time period 1991-2000 while opposite to each other in the time period 2001-2010. The explanation lies in their conceptual similarities and dissimilarities across time periods. In the time period 1991-2000, both the authors focused upon behavioural development of young consumer as consumers while in the time period 2001-2010, Thompson conceptualised experience acquisition process of young consumer while McNeal explored young consumer's perception formation. Similarly, McNeal and Carlson are placed opposite to each other in the time period 1991-2000 while close to each other in the time period 2001-2010. Thus, these observations show the change in conceptual similarities or dissimilarities over the time periods.

Another interpretation lies in no change in conceptual similarities or dissimilarities over the time periods. The maps (figures 1 and 2) show that Pechmann and Carlson are placed opposite

to each other in both the time periods as Pechmann conceptualised advertising effects on young consumer and Carlson focused upon socialisation phenomenon in both the time periods. Similarly, Boush and Mangleburg are also placed opposite to each other in both the time periods. The positioning of authors in the map is useful for researchers working on a particular topic to understand list of authors they should/ should not refer for their topics.

Pathfinder analysis

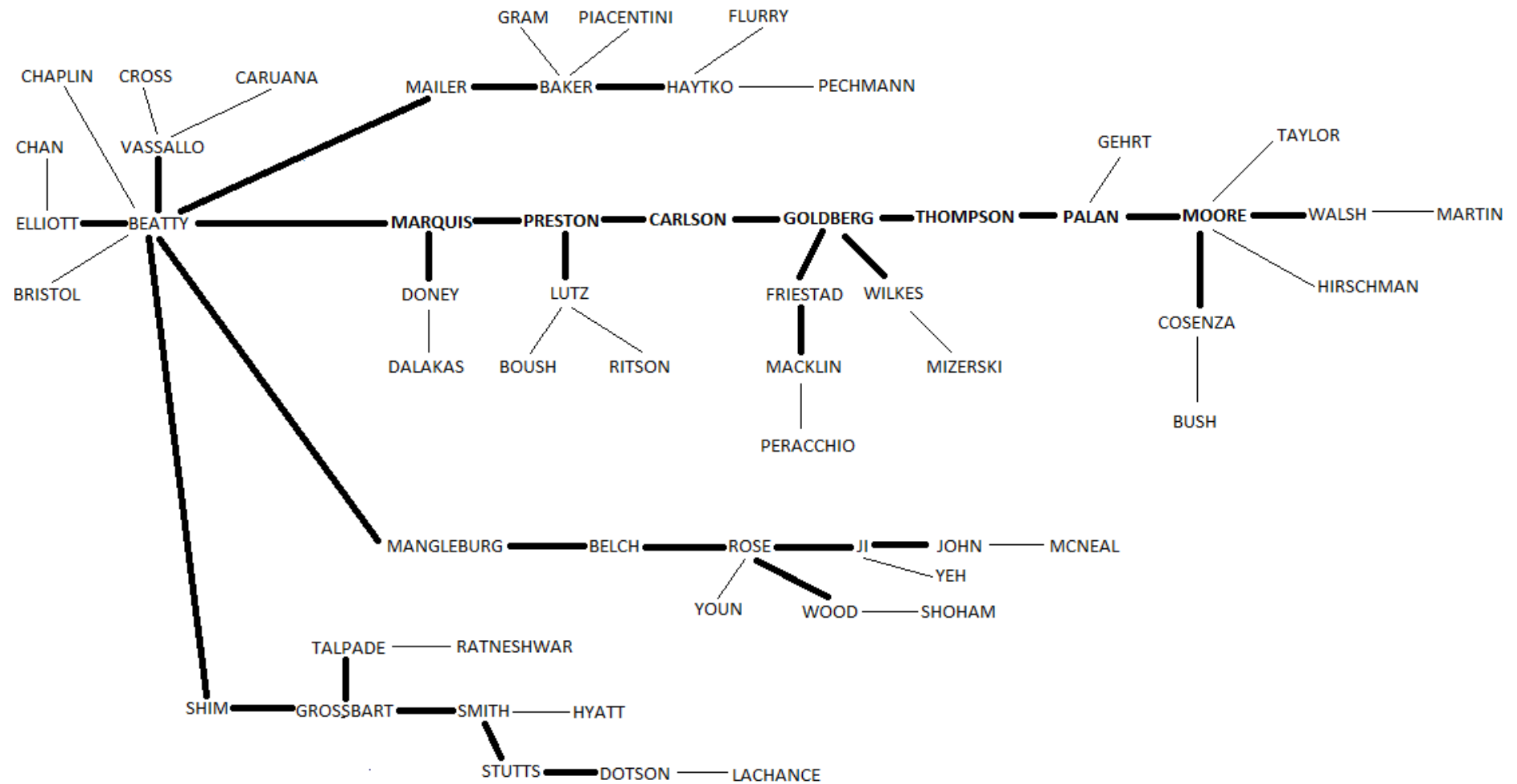
Pathfinder analysis used author co-citation matrix for the time period 1991-2010 to produce an undirected graph. Using PCKNOT tool, it generated a network structure for 58 authors (Figure 3) with coherence index of 0.171 (≥ 0.15). The network structure shows that Beatty, Goldberg and Grossbart act as central nodes to connect distinct clusters and are thus, critical to the stability of this network of authors. These authors have influence on the research field and are also known as 'boundary-spanning' authors. The results suggest that young consumer's role as influencers (Beatty), young consumer's socialisation (Grossbart) and young consumer's learning (Goldberg) are three dominant perspectives that delineate the research field. The network structure also reveals distinct research communities (denoted by distinct groups of authors closely connected to each other in the network) in the research field that are held together by common conceptual origins and share similar research questions. Thickness of the lines in figure 3 has interpretations where large thickness means that the authors are connected to other authors while those with less thickness means that they are not central authors.

Conclusion and Limitations

The objective of this study was to conduct a literature review of 'young consumer and marketing' research field using author citation/ co-citation analysis to understand the evolution and intellectual structure of the field over the time period 1991-2010. It, first, identified 58 highly-cited authors in the research field using weighted citation analysis and prepared co-citation matrices of the authors for the time periods 1991-2000 and 2001-2010. Second, it applied exploratory factor analysis on co-citation matrices for each time period, delineated research sub-fields, and explained their development, similarities and dissimilarities across the time periods. For sub-fields, the study validates and extends the research themes outlined by John (1999). Third, it applied multi-dimensional scaling to co-citation matrices of seminal authors for each time periods, and identified authors with conceptual similarities and dissimilarities across (and, within) the time periods. Fourth, it applied Pathfinder analysis on co-citation matrix of authors for the time period 1991-2010 to understand network structure in the research field and the network-based relationships among the 58 seminal authors.

This study has contribution for performing literature review with a quantitative approach to take stock of evolutionary trajectory of the research field over two decades. By performing the quantitative analysis of co-citation patterns among highly-cited authors, this study overcomes authors' subjectivity and biasness in performing literature reviews. We believe that 'aerial' view presented by the study will help future researchers to be introduced to the research field, to locate their research proposals within the field, and to source and compile their reading list for their research proposals. In our great expectations, this study may also serve as a reference to investigate changes in the research field over time for emergence of new areas, contributing authors and development in the field.

Figure 3: Network diagram for Pathfinder analysis



Inevitably, the study has mainly two methodological limitations. First, since weighted citation analysis is based on citation counts (rather than citation counts per year), it is quite possible that the study would have excluded significant authors who entered the field relatively recently and have not yet built up a substantial citation history. Future researchers may use weighted citation counts per year and compare the results. Second, co-citation data is perceived to be noisy (e.g. an author's name used in multiple disciplines of research and thus, producing misleading co-citation counts) but in aggregate it is robust to represent intellectual linkages perceived by citers (Galvagno, 2011). For future researchers, this study can be extended or replicated using advanced bibliometric methods such as threshold citation analysis, cross-citation analysis, co-word analysis and co-author analysis (e.g. Bu *et al.*, 2016; Reyes-Gonzalez *et al.*, 2016; Zupic and Cater, 2014).

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