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Big-Data Labs: Merchandising Informatics by Using Hyperlinks and Network Analysis Visualization Approaches

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Merchandising Informatics

Despite attempts being made to provide references to curricula and instructive guidelines, many merchandising programs struggle with the proper direction and design of courses in response to industry demands and consumer changes. Merchandising informatics, a novel research-related pedagogy, views data analytics from an information management perspective on merchandising practices. A real-world case of merchandising informatics can be seen at @WalmartLabs. They are developing the latest open sources and big data innovations, such as building technology solutions that have real world impact. They are bringing together visionary engineers, smart data scientists, ingenious product managers, merchandising gurus, creative marketers, supply chain innovators, finance experts, and internet professionals around the world (<https://www.walmartlabs.com/>). More willingly competent merchandising graduates are able to provide analytical support to cross functional projects (e.g., email targeting, consumer recommendations, product loyalty forecasts) and assist in building large data sets from multiple sources in order to predict future data characteristics. A visionary data inventor with a passion for learning new technologies and translating data into business solutions is critical for growth and success in the merchandising industry.

Merchandising informatics aims to transform teaching and learning at graduate courses and around the globe by implementing big-data labs. Applying hyperlinks and Network Analysis Visualization (NAV) approaches to big data construal helps graduates grasp temporarily big data concepts more quickly and fully, connect theory and application more adeptly, and engage in learning more readily, while also improving instructional techniques, and facilitating the widespread sharing of knowledge. Indeed, the information management perspective and practical experiences within merchandising informatics equip graduates with unique and career-oriented capabilities.

Bid-Data Lab1: Big data Implementation in Hyperlinks Analysis

Hyperlinks are the structural elements of the Web. They are designed and modified by the owners and administrators of the websites and reflect their communicative agenda. Hyperlinks thereby are a type of representational communication because no information flow is involved. Hyperlinks have been described as vehicles for the expression of collective identity, public affiliation, credibility, visibility, reputation, authority, and endorsement (Mincer & Niewiadomska-Szynkiewicz, 2012). Furthermore, the resulting link structures play an important role for the visibility of websites in search engines (Bollweg, et al., 2018).

'CMHT 6500 Big data Implementation in Social Network Analysis' was developed for Interdisciplinary Information Science (IIS) PhD Program in 2015 with the College of Information. By collecting and analyzing big data from a large cloud of favorites, comments, tags, likes, ratings, and links in social media, students are able to generate research insights

which are applicable across various business sectors.

Specific students' learning outcomes are to: (1) understand theoretical and methodological concept of Social Network Analysis; (2) collect, analyze, visualize and interpret big data of a large cloud of favorites, comments, tags, likes, ratings, and links by using NodeXL and Netdrew programs; and (3) develop a case study by integrating topics, theory and research findings.

Bid-Data Lab2: Network Analysis and Visualization (NAV) for Digital Retailing

Network analysis focuses on relationships among social entities, including communication among members of a group, economic transactions between corporations, and trade or treaties among nations (Carrington, et al., 2005). The network perspective provides new means of identifying social structures and relations by giving precise definitions to aspects of the social structural environment (Wasserman & Faust, 2009) including social support, diffusion and adoption of innovation, belief systems, and consensus and social influence. Network analysis concerns itself with the formulation and solution of problems that have a network structure; such structure is usually captured in a graph. Graph theory provides a set of abstract concepts and methods for the analysis of graphs (Barnes, 1969). These, in combination with other analytical tools and with methods developed specifically for the visualization and analysis of social networks, form the basis of what we call Social Network Analysis (SNA). The methods of information visualization have also become valuable in helping students to discover patterns, trends, clusters, and outliers, even in complex social networks.

'*CMHT 6600 Network Analysis and Visualization for Digital Retailing*' was created for the emphasis of data visualization skillsets based on the foundation from CMHT 6500. Network Analysis and Visualization (NAV) articulates the analysis, interpretation and visualization of big data collected from online networks in social media. As a result, the learning outcomes able students to: (1) synthesize network analysis and graph theory in the broader fields of digital retailing theories; (2) advance methods for collecting, analyzing, visualizing and interpreting big data by using additional programs of Gephi and R-Studio; (3) discover network patterns and consumer trends in social media based on the cluster and semantic analysis; and (4) develop social media strategies for digital retailing.

Students need to develop these critical analytical and decision skills for the 21st century job market. Today's problems are increasingly complex and involve vast amounts of data. They require computers and modeling to solve them. Merchandising informatics emphasizes the multi-disciplinary study of the design, uses, and consequences of Information Communication Technologies (ICT) that consider their interaction with institutional and cultural contexts (Kling, Rosenbaum, & Sawyer, 2005, p. 6). The right mix of merchandising knowledge and big data analytic expertise proposes to develop core competencies for predicting future data characteristics and new trends in the industry and utilizing up-to-date technology and analytical skills. The paper concludes that merchandising informatics is not just a new term, but instead offers a data management stream on information systems. As such, merchandizing informatics can complement the traditional product and consumer-oriented study.

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