UNC-CHARLOTTE ICORPS PROJECT REPORT

2020 ENTERPRISE PERFORMANCE MANAGEMENT (EPM) INDUSTRY LEADER INTERVIEWS

A Project Report of 2020 UNC-Charlotte Ventureprise
NSF I-CORPS Site Customer Discovery Program on EPM

JULY 2020

GoPeaks
A SHARED BRAIN FOR PEOPLE AND SOCIETY

EPM Objectives

Enterprise performance management (EPM) creates value within the organization across different stakeholders to optimize resource allocation, increase profits and other wellbeing, and align managers with the executive's strategy. A key tenet of EPM is planning, budgeting, forecasting, strategic modeling, management accounting, and prediction of future activities. A narrowly defined EPM market is expected to reach $16 billion revenue by 2026. A broadly defined market, including the full potential of converting ERP and enterprise analytics into EPM, may reach as high as $78 billion revenue by 2026.

We started all the interviews with an understanding of how their organizations or clients define enterprise performance and problems to be solved by EPM solutions. While the traditional focus has always been on financial planning and analysis (FP&A), industry leaders are trying to expand the scope of EPM to a more holistic view for managing an organization and its ecosystem concerning operations, people, and social and environmental impacts (see figure 1). Furthermore, they are looking to explore the causal drivers of different performance outcomes using data-driven technology. According to industry leaders, the knowledge silo inside an organization and human nature's resistance to change remain a prevalent challenge to expand EPM scope. Managers across departments often do not share information and data remain fragmented. The process of integrating different systems and translating data into practice is still a challenge in its current state.

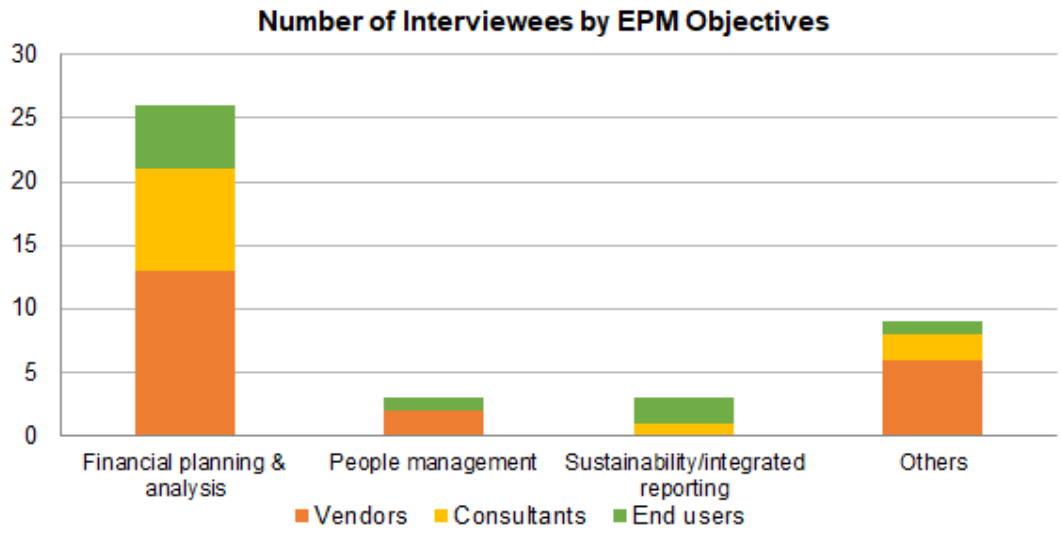

Figure 1. Focus of EPM objectives

EPM and Advanced Analytics

Industry leaders all emphasize the building of a single-point digital platform that is ready for advanced analytics of EPM data. Suggested capabilities of advanced analytics include the use of artificial intelligence and machine learning (AI/ML) to run predictive analytics and prescriptive analytics (see Figure 2). Most of the organizations are now moving towards predictive analytics of the rising stock of historical data such as forecasting. Predictive analytics involving AI recognizes historical patterns, correlations, and segmentation to identify or forecast particular trends and events.

TWO KEY ELEMENTS OF PRESCRIPTIVE ANALYTICS -- 1) HYPOTHESIS TESTING OF PATTERNS NOT IN HISTORICAL DATA, AND 2) CAUSATION -- ARE CURRENTLY MISSING IN THE PRACTICE OF EPM ANALYTICS.

Yet, a shared concern is that few EPM solutions have sufficiently developed the capability of prescriptive analytics. The current technology utilizes predictive analytics for ad-hoc or scenario analysis by forecasting future outcomes based on correlations trained in historical data. However, two key elements in prescriptive analytics – 1) hypothesis testing of unprecedented patterns that are not in historical data and 2) causation– are currently missing in the practice of EPM analytics. These missing parts reduce the reliability of data insights that may inform managerial interventions.

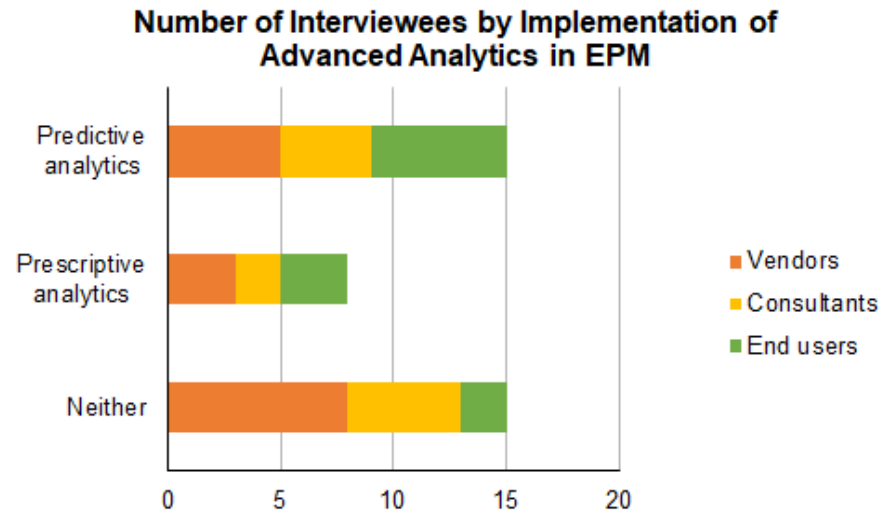

Figure 2. Implementation of advanced analytics

WHERE WE'RE AT **TODAY**

Competing Features and Gaps

We interviewed industry leaders on their thoughts about the competing features of existing EPM solutions. They suggest the most valuable features in existing EPM solutions include compatibility with other commonly used tools (e.g., Excel), high frequency of data reporting, usability through visualization and dashboards, flexibility of a cloud platform for multiple programs, and data integration from multiple legacy systems. Although EPM solutions, combined with advanced analytics, are bringing up insights for the future and setting a proper course of action, very few organizations have adapted these capabilities at the heart of their organizational process of performance management. The lack of adoption is due to several notable gaps in the current EPM solutions, including the quality of data integration from multiple systems, the silo of expertise residing in different departments and locations of an organization, the under-development of nonfinancial data standards, as well as the insufficient degree of usability for self-reliance without any technical support.

TO FILL THE GAPS, EPM SOLUTIONS SHOULD ALLOW A SINGLE-POINT INTERFACE THAT INTEGRATES THREE DOMAINS OF EXPERTISE:

1) business analysts and data scientists to do data discovery, predictive and prescriptive modeling, and interactive visualizations on the analytical results

2) people in business operations to do reporting and strategic planning

3) people in executive management to identify key metrics and causes-and-effects relationships from a visual dashboard

DESIRED NEW CAPABILITIES IN FUTURE EPM

We finally asked industry leaders to suggest the most desirable new capabilities that they aspire to have in the future EPM solutions. Their answers can be summarized into the following three types of capabilites (see Figure 3 for details):

Integration of different management decisions

Industry leaders recognize that EPM systems must integrate isolated performance management problems into a single decision point for top executives. They recommend that a system should digitalize and map the entire decision process across the enterprise, report more frequent data, continue to combine data from different systems, as well as develop coherent reporting standards for financial and nonfinancial data across the organization.

Integration of fragmented expertise to improve prescriptive capability

Industry leaders suggest that prescribing "best EPM practices" remains an unsolved challenge. The value for future EPM is to integrate information for better decisions. As a decision-making tool, future EPM should be able to test novel, hypothetical scenarios that never occurred in history, as well as prescribe potential managerial interventions based on causations not correlations. This would require EPM to serve as a digital place to bring fragmented metadata and expertise together. Missing causal links across fragments should be constantly mapped out and tested.

Usability

User interface features are improving, but have not reached a sufficient degree that is ready for executive managers to interact for decisions without technical support. Many interviewees agreed that "the usability currently is not for mere mortals yet", which sets up a significant barrier for fast adoption of EPM solutions. Rooms for improving human user accessibility include: 1) automation of data processing and analytics; 2) visualization for interactions based on "clicks, drags, and drops"; 3) engagement of NLP techniques to translate and link vocabularies across systems and disciplines; 4) self-maintenance of EPM system such as self-learning, self-correction, and self-improvement.

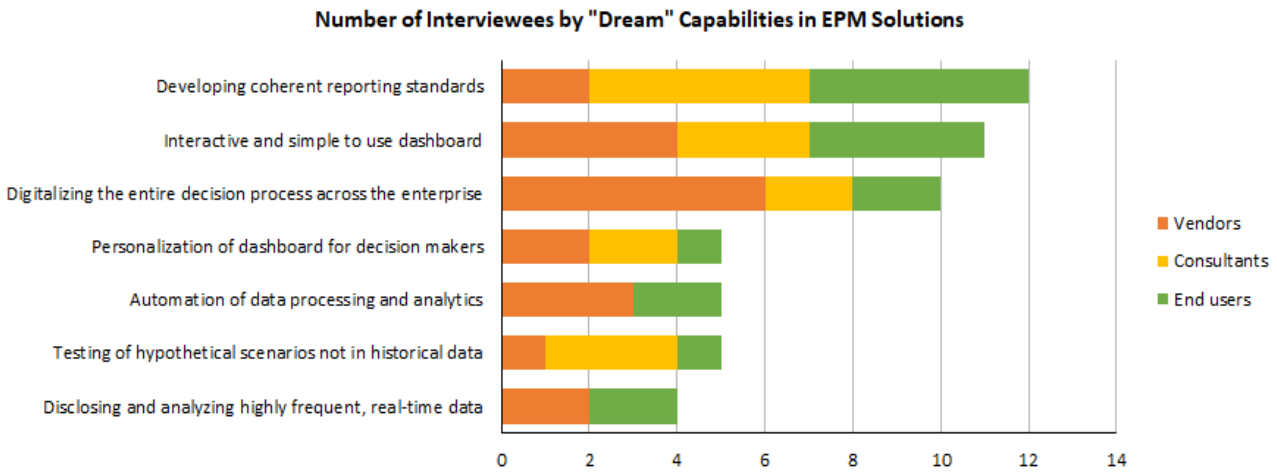

Figure 3. Most mentioned "dream" capabilities in future EPM solutions

STEPPING FORWARD

One-minute survey for desired new EPM capabilities

Please select the top three new capabilities you would like to see in EPM solutions in the next 3-5 years.

[ ] Developing coherent reporting standards
[ ] Strategy management with a holistic set of key performance indicators (KPIs)
[ ] Planning for both financial and nonfinancial objectives
[ ] Ensuring data reflect causal relationships about performance drivers
[ ] Interactive and simple to use dashboard
[ ] Digitalizing the entire decision process across the enterprise
[ ] Testing of hypothetical scenarios not in historical data
[ ] Automation of data processing and analytics
[ ] Personalization of dashboard for decision makers
[ ] Disclosing and analyzing highly frequent, real-time data
[ ] Others, please specify:

Please submit your survey at https://www.gopeaks.org/epm-survey-2020 (Password: UNCC-ICORPS2020)

MEET THE TEAM

Dr. Victor Zitian Chen, Principal Investigator
Associate Professor of International Management
Belk College of Business
University of North Carolina at Charlotte
Founder of GoPeaks Initiative
Email: zchen23@uncc.edu
LinkedIn: linkedin.com/in/victorzitianchen

Ramya Prakash
Masters in Data Science and Business Analytics
University of North Carolina at Charlotte
Email: ramyaprakash21@gmail.com
LinkedIn: linkedin.com/in/ramya-prakash-30872319

Wendy Chengyi Long
PhD Student in Organizational Science
University of North Carolina at Charlotte
Email: wlong13@uncc.edu
LinkedIn: linkedin.com/in/wendychengyilong

Nasheen Nur
PhD Candidate in Software and Information System
College of Computing and Informatics
University of North Carolina at Charlotte
Email: nnur@uncc.edu
LinkedIn: linkedin.com/in/nasheen-nur-20a2b068/

Appendix. Interviewee background

We selected our interviewees from three pools of representatives –EPM vendors (Gartner EPM Quadrant), EPM consultants (big 4 accounting firms and specialists), and end users (Fortune 500 and large NGOs). We then used the keywords of "enterprise performance management", "performance management", "enterprise management", and "integrated management" in Linkedin to find C-level or senior managers related to EPM. We sent out approximately 100 invitations for interviews, and 30 interviews were conducted. Each interview took about 30-45 minutes.Our interviewees include 13 vendor representatives, 9 consultants, and 8 end users. Vendor representatives hold such titles as Chief Revenue Officer, Founder & CEO, President of Americas, VP of EPM, VP of Product Management or Strategy, Senior VP of Executive Accounts, and Regional Director. Consultants hold such titles as Chief Technical Officer, EPM Director, Founder & CEO, and Managing Director. End user representatives hold such titles as EPM Manager, Managing Director, Senior VP, and Head of Analytics.

Dr. Wenwen Dou
Assistant Professor of Computer Science
College of Computing and Informatics
University of North Carolina at Charlotte
Email: wdou1@uncc.edu
LinkedIn: linkedin.com/in/wenwen-dou-77635699

Gary Cokins, Industry Mentor
Founder & CEO
Analytics-Based Performance Management LLC
Email: gcokins@garycokins.com
LinkedIn: linkedin.com/in/garycokins

We are developing numerous prototypes of new EPM capabilities to integrate automation, visualization, and interactive data exploration, combined with a repository of causal knowledge graph for enterprise management. For more, see https://www.gopeaks.org/applications.