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An Empirical Research on the Relationships between Big Data Analytics Capabilities, Value Proposition Innovation and Firm Performance for Chinese Financial Companies

（Thesis submitted for the degree of Executive Doctorate in Business Administration）

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ABSTRAIT

Confrontées à d'importants défis et à une concurrence de plus en plus intense, les sociétés financières chinoises font de plus en plus d'efforts pour innover dans leurs modèles d'affaires afin d'identifier et d'exploiter de nouvelles opportunités de croissance. Dans ce contexte, beaucoup d'entre elles voient dans l'analyse des données massives (Big Data Analytics) un moyen d'innover dans leur proposition de valeur (Value Proposition Innovation), de rester en phase avec les changements technologiques, de s'adapter aux changements de comportement des clients, de rivaliser avec les nouveaux entrants et, en fin de compte, d'améliorer leur performance. Cependant, la littérature académique rapporte peu de cas de réussite dans ce domaine. Cette étude empirique conceptualise et teste un modèle visant à permettre aux sociétés financières, chinoises notamment, de mieux comprendre comment exploiter l'analyse des données massives en vue de l'innovation dans leur proposition de valeur et l'amélioration de leur performance d'affaires.

S'appuyant sur la théorie des ressources (Ressource-based theory), les capacités d'analyse des données massives (BDAC – Big Data Analytics Capability) sont considérées comme une capacité organisationnelle clé. Ainsi, cette étude développe un instrument de recherche où la capacité d'analyse des données massive est établie en tant que variable indépendante ; la performance de l'entreprise (FPER – Firm Performance) est la variable dépendante et l'innovation dans la proposition de valeur (VPI – Value Proposition Innovation) est une variable médiatrice. L'étude adopte un design de recherche mixte et procède en deux étapes pour adapter et tester l'instrument de recherche. Dans la première étape (recherche qualitative), 20 entretiens approfondis avec des experts du secteur ont été menés pour adapter un instrument de recherche au contexte des entreprises financières chinoises en vue de la réalisation enquête. La deuxième étape (recherche quantitative) a consisté à mener à bien une enquête auprès de 150 répondants qui appartiennent à des sociétés financières chinoises cotées.

Les analyses ont ensuite été réalisées au moyen du logiciel SmartPLS. Les résultats confirment que les capacités d'analyse des données massives ont une influence positive directe sur la performance de l'entreprise dans le secteur bancaire mais pas dans les secteurs non bancaires, comme celui des valeurs mobilières ou des assurances. Il est également confirmé que les BDAC ont une influence positive directe sur l'innovation dans la proposition de valeur. Quant aux effets médiateurs, la VPI médiatise partiellement l'influence des BDAC

sur la FPER dans le secteur bancaire, tout en médiatisant totalement l'influence des BDAC sur la FPER dans les secteurs non bancaires. Il apparait ainsi que la VPI est un médiateur fort.

Les résultats montrent que les sociétés financières chinoises gagneront à construire et à renforcer leurs BDAC pour être en capacité de conduire avec profit l'analyse des données massives (BDA – Big Data Analytics). Ces résultats permettront aux sociétés financières chinoises de mieux comprendre comment exploiter avec succès les analyses de données massives pour innover dans leurs propositions de valeur, et comment la VPI dans le domaine de la BDA contribue finalement à l'amélioration du FPER. Il apparait que la raison principale pour laquelle peu de sociétés financières chinoises ont à ce jour réussi à tirer parti de l'analyse des données massives pour améliorer leur VPI et leur performance tient sans doute le fait que leurs capacités d'analyse des données massives ne sont pas encore suffisantes.

Cette étude empirique est significative tant du point de vue de la recherche que du point de vue de managérial. L'étude apporte trois contributions principales à la recherche : 1) elle développe un nouvel instrument que d'autres chercheurs pourront exploiter pour tester un type spécifique de relation entre capacités et performances (i.e., leg lien entre BDAC-FPER) dans d'autres industries ou pays ; 2) il comble trois lacunes actuelles de la recherche en Management et systèmes d'information, identifiées en amont de l'étude ; et 3) il approfondit et teste une théorie académique dans le contexte des industries financières chinoises. L'étude contribue également au management. En effet, elle met en exergue un modèle permettant aux sociétés financières chinoises de mieux comprendre comment exploiter avec succès le BDA pour stimuler l'amélioration de l'innovation dans la proposition de valeur et la performance d'affaires. Elle offre également des directions pour mieux comprendre l'importance de BDA et des BDAC pour la performance d'affaires et élaborer des stratégies d'investissement en cohérence avec ces aspects.

L'étude présente certaines limites qui pourront être dépassées à l'occasion d'approfondissements dans le cadre de recherches futures. Premièrement, la taille de l'échantillon de l'enquête réalisée (N=150) est relativement faible. L'étude utilise en effet un critère de sélection très strict en ne ciblant que les sociétés financières chinoises cotées. Ainsi, dans nos recherches futures, nous pourrons élargir le champ de recherche pour couvrir à la fois les sociétés financières cotées et non cotées. Deuxièmement, bien que la BDA par sa nature soit spécifique au contexte, en raison des variations entre les industries, la réplication du modèle conceptuel dans d'autres contextes pourrait permettre d'améliorer sa généralisabilité. Ainsi, nous envisageons d'élargir le champ de recherche des industries

financières aux industries intersectorielles dans nos futures recherches. Enfin, les recherches futures pourront cibler l'international pour couvrir également les sociétés financières et non financières, notamment américaines et européennes. Les résultats pourront être utiles pour mieux comprendre comment les entreprises internationales pourraient mieux tirer parti de la BDA pour améliorer leur performance.

Mots clés : innovation dans les modèles d'affaires, innovation dans la proposition de valeur, capacités d'analyse de données massives, performance de l'entreprise

ABSTRACT

Facing various challenges (e.g., increasingly fierce competitions), Chinese financial companies are making an increasing amount of effort to innovate their business models for tapping potential growth opportunities. More specifically, many of them leverage big data analytics (BDA) to innovate their value propositions (VPI), aiming to keep up with technology changes, accommodate changing customer behaviors, compete against new entrants, and ultimately enhance their firm performance (FPER). However, there is a paucity of success stories in this field. They urgently need to find a right pattern and build knowledge for success. This empirical study aims to identify a pattern or formula for Chinese financial companies to successfully leverage BDA on VPI and ultimately FPER enhancement.

Drawing on resource-based theory (RBT), big data analytics capabilities (BDAC) are considered as a key organizational capability of conducting BDA successfully. This study develops a research instrument where BDAC is the independent variable, FPER is the dependent variable, and VPI is the mediating variable. The study adopts the explorative mixed methods research design strategy and proceeds in two research stages to adapt and test the instrument. In the first stage (qualitative research), 20 in-depth interviews with industry experts were conducted to adapt the instrument (i.e., adapting the existing measurement models of BDAC and VPI to make them more context specific to Chinese Financial Industries). The second stage (quantitative research) completed 150 quantitative surveys with respondents from Chinese listed financial companies and then analyzed the survey results to test the instrument.

Through using SmartPLS, the analyses for quantitative research were conducted. The results confirm that BDAC do not have a direct positive influence on FPER in the non-Banking Sectors (i.e., Securities + Insurance Sectors). It is also confirmed that BDAC have a direct positive influence on VPI in Chinese Financial Industry. As for the mediating effects of VPI, VPI partially mediates BDAC' influence on FPER in the Banking Sector, while fully mediating BDAC' influence on FPER in the non-Banking Sectors. In fact, VPI is a strong mediator. Therefore, Chinese financial companies can build and strengthen their BDAC to set up the foundation for conducting BDA. Such foundation enables Chinese financial companies to successfully leverage BDA to innovate their value propositions (i.e., BDA-driven VPI), and BDA-driven VPI ultimately contributes to FPER enhancement. So, the pattern or formula (for

successfully leveraging BDA to drive VPI and FPER enhancement) is “BDAC -> BDA -> VPI -> FPER enhancement”. This also explains why few Chinese financial companies have made a success in leveraging BDA to drive VPI and FPER improvement – their BDAC were not ready!

This empirical study is meaningful from both academic and management perspectives. It has made three research contributions: 1) it develops a new instrument that other researchers can leverage to test a specific type of capabilities-performance (i.e., BDAC-FPER) for other industries or countries; 2) it fills in three current research gaps; and 3) it creates one academic theory for Chinese financial industries. Meanwhile, it has attained three managerial contributions: 1) it identifies the pattern or formula for Chinese financial companies to successfully leverage BDA to drive VPI and FPER enhancement.; 2) it sets the direction for them to solve the managerial challenge - “they fully understand the importance of BDA but struggle to leverage BDA successfully; and 3) it enables them to make suitable BDAC investment strategy.

The study does see some research limitations, which should be addressed in future research. First, the sample size of quantitative research is relatively small, since the study uses a very tight screening criterion (i.e., targeting only on Chinese listed financial companies). Thus, I would expand the research scope to cover both listed and non-listed Chinese financial companies in my future research. Second, although BDA by its nature is context specific due to the variations across industries, replications of the conceptual model in other settings would enhance its generalizability. So, I will expand the research scope from financial industries only to cross-industries in my future examinations. Finally, I can also make a global study to cover US and European financial companies, comparing the relationships between BDA, VPI and FPER across these three regions within my further research. The findings would be meaningful in discovering how global companies should leverage BDA to improve their FPER.

Key Words: Business Model Innovation, Value Proposition Innovation, Big Data Analytics Capabilities, Firm Performance

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