



# SCHOOL OF BUSINESS

KWAME NKRUMAH UNIVERSITY OF SCIENCE  
AND TECHNOLOGY, KUMASI, GHANA



## **The effect of data driven culture on customer development and firm performance: the role of supply chain information sharing and supply chain information quality**

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## Introduction

- Becoming data-driven has become a top priority in many organizations (Storm and Borgman, 2020).
- Data driven culture is the belief that having, understanding and using data and information plays a critical role in the success of an organization (Kiron et al., 2013).
- An enterprise-wide data driven culture is important for organizations to fully exploit the potential of advanced analytics (Anderson, 2015).
- The ability of firms to attract and retain customers is customer development. This is vital to the survival of firms (Blank et al., 2013; Amedofu et al., 2019).



## Motivation

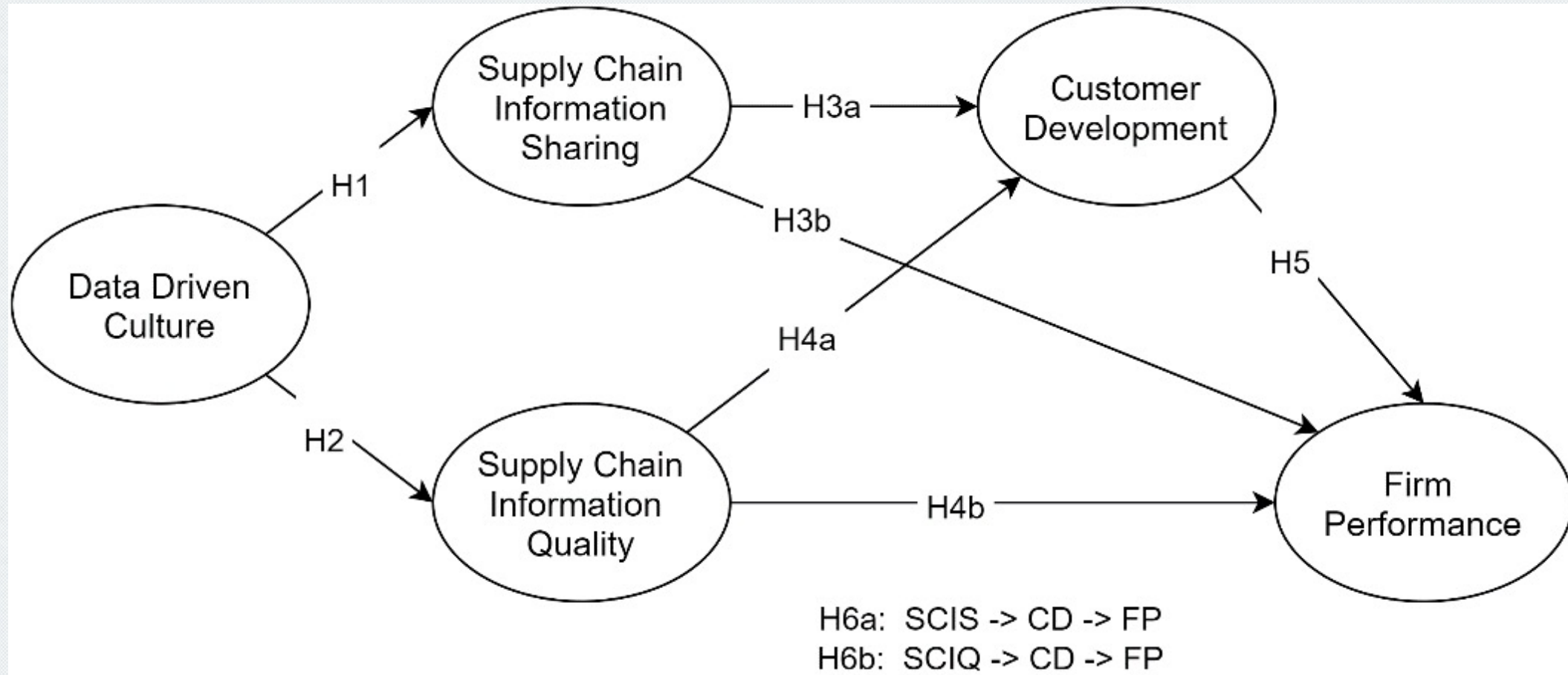
- Firms become data driven with the goal of gaining new insights to enhance their customer development capabilities and their overall bottom line (Hallikainen et al., 2020).
- However, how data driven culture enhances the bottom line of firms has scarcely been explored and is little understood (Agyei-Owusu et al., 2021).
- This study examines the mechanisms through which data driven culture enhances customer development and firm performance by shedding light on the important roles of supply chain information sharing and supply chain information quality.



## Theoretical Background

- The study is grounded on the absorptive capacity theory and the dynamic capability theory.
- The absorptive capacity theory explains a firm's ability to recognize the value of new information, assimilate it and incorporate them into organizational processes (Cohen and Levinthal, 1990).
- Dynamic capabilities refer to the ability of an organization to build and reconfigure the internal and external resources and competences required to sense and seize opportunities in rapidly changing environment (Teece et al., 1997).

## Research model and hypotheses





## Methodology: Measurement items

- The measurement instruments used to measure the constructs were initially sourced from existing studies (Asamoah et al., 2018; Li et al., 2005; Li et al., 2006; Amedofu et al., 2019; Blank et al., 2013).
- Items were refined by incorporating feedback from three top information systems scholars.
- The context and applicability of the constructs and the items were assessed by five industry leaders.



## Methodology: Data collection

- A survey of manufacturing and service firms operating in Ghana was conducted.
- A list of 5,000 firms operating in Ghana was obtained from the Registrar General's Department, out of which a sample of 500 firms were randomly selected for this study.
- The firms were contacted and permission was sought for data collection.
- In all, 58 firms declined to participate in the study.
- For the remaining firms, questionnaires were sent by email, courier or in-person, depending on which option the firms preferred.





## Methodology: Data collection ...cont'd

- Target respondents from firms were members of upper management.
- Follow up calls after 1 week and 2 weeks.
- 123 usable responses were successfully retrieved (24.6% response rate).
- Power analysis revealed that the data was sufficient to attain statistical power.
- Lack of non-response bias was established by comparing early respondents to late respondents.
- Harman's one-factor test confirmed common method bias was not a problem.



## Summary of demographic results

- Majority (57.8%) of the responding firms were microenterprise businesses (less than 19 employees).
- Majority (54.5%) had been in operation for 5 years or less.
- In terms of estimated annual revenues, 30.9% of responding firms had revenue levels of less than \$10,000.



## Measurement model results

- The model was assessed using partial least squares structural equation modeling.
- Convergent validity was established by assessing the item loadings, composite reliability and the average variance extracted (AVE).
- Two measurement items with loadings below 0.708 were dropped
- Three items with high cross loadings were dropped.
- Composite reliability of constructs exceeded 0.7 (Hair et al., 2019).
- AVE of constructs exceeded 0.5 (Hair et al., 2019).

## Measurement model results ...cont'd

- Discriminant validity: Fornell-Larcker criterion (Hair et al., 2019).

	I	II	III	IV	V
Data Driven Culture (I)	<b>0.841</b>				
Supply Chain Information Quality (II)	0.528	<b>0.908</b>			
Supply Chain Information Sharing (III)	0.668	0.685	<b>0.816</b>		
Customer Development (IV)	0.563	0.622	0.586	<b>0.826</b>	
Firm Performance (V)	0.441	0.488	0.507	0.552	<b>0.845</b>

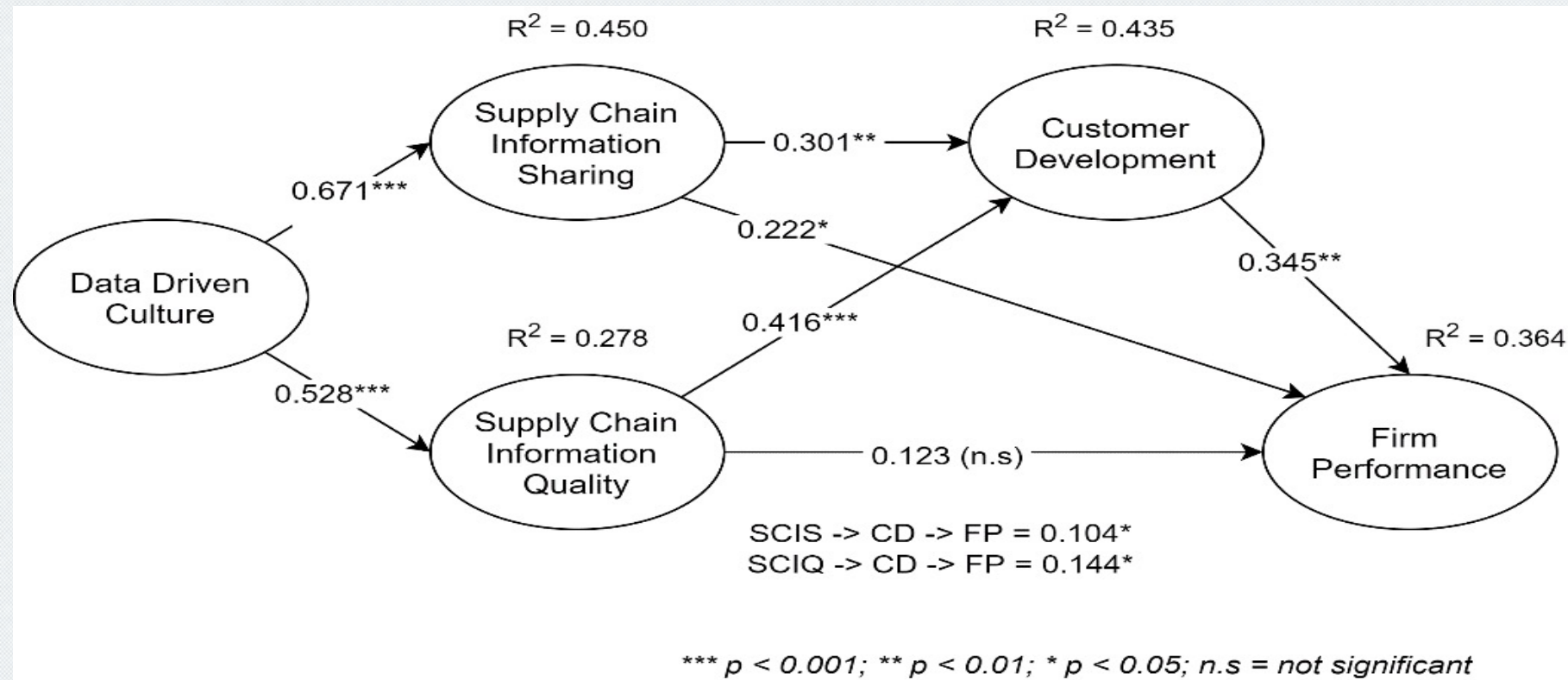
- HTMT test (Hair et al., 2019).

	I	II	III	IV	V
Data Driven Culture (I)					
Supply Chain Information Quality (II)	0.583				
Supply Chain Information Sharing (III)	0.758	0.738			
Customer Development (IV)	0.631	0.662	0.634		
Firm Performance (V)	0.487	0.519	0.555	0.579	



## Structural model results

- $R^2 = 0.278$  to  $0.450$  [moderate levels of determination] (Hair et al., 2019).
- $Q^2 = 0.223$  to  $0.286$  [predictive relevance confirmed] (Hair et al., 2019).





## Discussions

- The initial manifestation of outcomes of a sound data driven culture is an increase in the volume and quality of important supply chain information that is shared with key partners (Yu et al., 2019).
- Supply chain information sharing then directly enhances customer development and firm performance.
- The effect of supply chain information sharing on firm performance is mediated through customer development (complimentary partial mediation – Nitzl et al., 2016).



## Discussions ...cont'd

- Supply chain information quality directly enhances customer development but not firm performance.
- There is a positive and significant indirect effect of supply chain information quality on firm performance through customer development (full mediation – [Nitzl et al., 2016](#)).



## Implications of the study

- The findings of the study shed much insights into how data driven culture enhances the performance of firms.
- Supply chain information sharing and supply chain information quality are key in realizing the benefits of “data drivenness”.
- Customer development is important in understanding how supply chain information management enhances firm performance.
- For practice, the study provides an important guide for managers and owners of firms who want to achieve positive outcomes from developing data driven firms.





## Conclusion

- The study was conducted to examine how data driven culture enhances performance outcomes of firms.
- Data culture initially creates supply chain information sharing and supply chain information quality capabilities for firms, which are then leveraged to achieve higher firm performance.
- Customer development plays important mediation roles in understanding how supply chain information management enhances firm performance.



## Limitations and future research

- A limitation of the study is that data was obtained only from Ghana.
- Further research is needed to explore the effect of data culture on firm performance in developed countries and other regions (Asamoah et al., 2016; Shou et al., 2017; He et al., 2017).
- Future research can also explore the complementarity of supply chain information sharing and supply chain information quality in understanding the outcomes of data driven culture.



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*Thank You*