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INDIVIDUAL, ORGANIZATIONAL, TECHNOLOGICAL AND INDUSTRY FACTORS EFFECTS ON INNOVATION CAPABILITY OF DAIRY SMES IN PAKISTAN: KNOWLEDGE SHARING AS MEDIATED

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DOCTOR OF PHILOSOPHY
UNIVERSITI OF UTARA MALAYSIA
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INDIVIDUAL, ORGANIZATIONAL, TECHNOLOGICAL AND INDUSTRY FACTORS EFFECTS ON INNOVATION CAPABILITY OF DAIRY SMES IN PAKISTAN: KNOWLEDGE SHARING AS MEDIATED

By

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ABSTRACT

Existing literature reveals a gap in the empirical knowledge on innovation capability in the dairy sector of Punjab, Pakistan. Innovation capability is a key player in the growth and success of a business. Therefore, the major objective of this study was to examine the mediating role of knowledge sharing on trust, motivation, training & development, supervisor support, ICT use, and industry cluster resources with innovation capability of the dairy sector. This research contributes to the growth of GDP through the dairy sector. The research framework in the study was based on the diffusion of innovation and the resource-based view theories. The data were collected from dairy farm owners and managers in the study locality, i.e. Punjab, Pakistan. The study instrument was 410 self-administered questionnaires which were distributed to the dairy farm managers/owners through the simple random sampling technique. 254 valid questionnaires were used for the analysis. The SPSS and SMART PLS 3.0 were used for the basic screening of the raw data and testing the hypothetical statements. The study found that motivation, training & development, supervisor support and industry cluster resources have positive significant impacts on knowledge sharing. Furthermore, motivation, training & development, ICT used and industry cluster resources also have positive impacts on innovation capability; and knowledge-sharing mediated the relationship between motivation, training & development, supervisor support and innovation capability. The results of the study provide important insights to outcome, policy-makers and researchers to further understand the effects of the innovation capability of dairy SMEs (small medium enterprises) in Pakistan. This study suggested that managers and owners of dairy farms must provide motivation, training & development and supervisor support to enhance the innovation capability of dairy workers.

Keywords: Innovation capability, knowledge sharing, dairy sector, Punjab Pakistan.
ABSTRAK


Kata kunci: keupayaan inovasi, perkongsian pengetahuan, sektor tenusu, Punjab Pakistan
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LIST OF ABBREVIATION

TR  Trust
MO  Motivation
TD  Training & Development
SS  Supervisor Support
TE  Technology Factor
IN  Industry Cluster Resources
KS  Knowledge Sharing
IC  Innovation Capability
ICT Information Communication Technology
GII  Global Innovation Index
UHT  Ultra High Temperature
PDDC  Pakistan Dairy Development Corporation
PDA  Punjab Dairy Association
SME  Small Medium Enterprise
SMEDA  Small Medium Enterprise Development Authority
FAO  Food Agriculture Organization
IT  Information Technology
KM  Knowledge Management
GDP  Gross Domestic Products
HRM  Human Resource Management
HR  Human Resource
RBV  Resource Based View
SEM  Structural Equation Modeling
SPSS  Statistical Packages for Social Sciences
PLS  Partial Least Square
CR  Composite Reliability
CA  Cronbach’s Alpha
VIF Variance inflation Factor
AVE Average Variance Extract
GOF Goodness of Fit
SD Standard Deviation
SE Standard Error
KMO Kaiser–Meyer–Olkin
TOL Tolerance
UL Upper Limit
LL Lower Limit
PES Pakistan Economic Survey
EPS Enterprise Survey
BCIP Business Climate in Pakistan
WB World Bank
CHAPTER ONE

INTRODUCTION

1.1 Background of the study

In the 21\textsuperscript{st} century, innovation capability is viewed as an important component to survive in the global business world (Yeşil, Koska, & Büyükbeşe, 2013; Corrocher & Solito, 2017; Strobel & Kratzer, 2017). Innovation capability is now taken place as the success of firms and growth for any country (Mawson & Brown, 2017; Woschke, Haase, & Kratzer, 2017; Zou, Guo, & Song, 2017). It is clearly stated that innovation capability provided more benefits to the firms such as eliminating the cost of the firms, product differentiation from competitors and produce a better quality of the existing products and uplifting the services (Eren, Kabadayi, & Sahin, 1999; Hult, Hurley, & Knight, 2004; Kilelu, Klerkx, & Leeuwis, 2013; Ngo & O'Cass, 2013; Dutta & Lanvin, 2016; Johnston & Marshall, 2016). In the study of Lin (2007) mentioned that if the firms do not practice their capability for the development then no firms can survive in the current competitive environment. It is argued that the innovation is a capability through which managers can find the solution of their business-related problem (Porter, 1990; Henard & Szymanski, 2001; Hult, Hurley, & Knight, 2004).

Therefore, innovation capability has become generally recognized as a major source to competitive success and for the economic growth (Sena, 2004; Francis & Bessant, 2005).
The contents of the thesis is for internal user only
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Appendix I

QUESTIONNAIRES

Dear Sir/Madam,

I am inviting you to participate in my research project entitled “Individual, organizational, technological and industry factors effects on innovation capability of Dairy SMEs in Pakistan: Knowledge Sharing as Mediated”. The present study will investigate the impact of Industry, Technological, organizational and individual factors which are shaped by the surrounding environment in the SMEs dairy sector of Pakistan. I hope you will be able to assist me by completing the enclosed questionnaires. All information provided will be treated as private and confidential. It will be used for academic purposes. As is normally in academic research, I shall not disclose the names of individuals who provided me with particular information. All data will be analyzed in a collective manner and will be not attributed to name individuals.

The survey should take approximately 15 minutes to answer. I shall be grateful if you could complete the enclosed questionnaires.

Thank you in advance for your time and cooperation.

Yours sincerely,

Muhammad Imdad Ullah
P.hD Scholar (Management)
University of Utara,
Malaysia
Part I

1. Demographic Profile of Dairy SMEs

Please tick (✓) the appropriate box to answer the question.

1.1 Dairy Farm Type

1.2 Dairy Farm Status

<table>
<thead>
<tr>
<th>Public</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1.3 Size of Dairy Farm

<table>
<thead>
<tr>
<th>Employee&lt;=15</th>
<th>Employee 16 to 25</th>
<th>Employee&gt;=26</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1.5 Age of dairy farm

<table>
<thead>
<tr>
<th>Less Than and equal to 05 years</th>
<th>6-10 years</th>
<th>11-14 years</th>
<th>More than 15 years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1.6 Location of dairy Farms

<table>
<thead>
<tr>
<th>Lahore Division</th>
<th>Multan Division</th>
<th>DG Khan Division</th>
<th>Faisal Abad Division</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Part II

2. Innovation Capability

The following questions ask you about the extent of your judgment on the tool of acceptance, generation of new ideas, processes, products or services. Please indicate your agreement or disagreement on the following statements by indicating your appropriate response based on the following scale.

<table>
<thead>
<tr>
<th>No.</th>
<th>Items</th>
<th>SD(1)</th>
<th>D(2)</th>
<th>N(3)</th>
<th>A(4)</th>
<th>SA(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Our company always tries for new ideas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2</td>
<td>Our company try to find new ways of doing things</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3</td>
<td>Our company is creative in its operating methods</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.4</td>
<td>Our company is commonly the first in the market to give new products and services</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.5 Our firm always paid for creativity and take suggestions in the innovation domain

2.6 Our new product introduction has increased during the last five years

<table>
<thead>
<tr>
<th>Strongly Disagreed</th>
<th>Dis-agreed</th>
<th>Neutral</th>
<th>Agreed</th>
<th>Strongly Agreed</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD (1)</td>
<td>D (2)</td>
<td>N (3)</td>
<td>A (4)</td>
<td>SA (5)</td>
</tr>
</tbody>
</table>

3. Knowledge Sharing
The following questions ask you about the extent of your judgment on Communicating to others what one’s personal intellectual capital. Please indicate your agreement or disagreement on the following statements by indicating your appropriate response based on the following scale.

<table>
<thead>
<tr>
<th>No.</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>In our firm employee shared their work reports and documents with other employees.</td>
</tr>
<tr>
<td>3.2</td>
<td>In our firm employee shared their experience with other organization members.</td>
</tr>
<tr>
<td>3.3</td>
<td>In our organization knowledge sharing with colleagues is an enjoyable experience.</td>
</tr>
<tr>
<td>3.4</td>
<td>Our employee provides knowledge at the request of other colleagues.</td>
</tr>
<tr>
<td>3.5</td>
<td>When our colleagues learned something new, they share with me and all of us.</td>
</tr>
<tr>
<td>3.6</td>
<td>In our firm employee shared their work reports and documents with other employees.</td>
</tr>
</tbody>
</table>

4. Individual Factors
The following questions ask you about the extent of your judgment on the degree to which an individual believes and loyalty another party to be trust worthy and about an individual or Unit’s willingness to act. Please indicate your agreement or disagreement on the following statements by indicating your appropriate response based on the following scale.

<table>
<thead>
<tr>
<th>No.</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Trust</td>
</tr>
<tr>
<td>SD(1)</td>
<td>D(2)</td>
</tr>
</tbody>
</table>
4.1.1 Our firms have fully trust on the expertise of employee that they have.

4.1.2 Our firms believe that our employee do not exploit for their own interest.

4.1.3 Our firm trust on employee that would help us in innovation.

<table>
<thead>
<tr>
<th>Strongly Disagreed</th>
<th>Dis-agreed</th>
<th>Neutral</th>
<th>Agreed</th>
<th>Strongly Agreed</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD (1)</td>
<td>D (2)</td>
<td>N (3)</td>
<td>A (4)</td>
<td>SA (5)</td>
</tr>
</tbody>
</table>

4.2 Motivation

<table>
<thead>
<tr>
<th>No.</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2.1</td>
<td>Our firm would like more opportunities to share information</td>
</tr>
<tr>
<td>4.2.2</td>
<td>Our firms motivated to share best practice knowledge</td>
</tr>
<tr>
<td>4.2.3</td>
<td>In our firm exchanging information would be motivate and encourage</td>
</tr>
</tbody>
</table>

5. Organizational Factors

The following questions ask you about the extent of your judgment on initiatives encourages employees to coherent their own concerns, ideas and initiations to investigate novel views and solutions to problems and promotes ideas further. Please indicate your agreement or disagreement on the following statements by indicating your appropriate response based on the following scale.

5.1 Training & Development

<table>
<thead>
<tr>
<th>No.</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1.1</td>
<td>Our Company provides multiple career path opportunities for employees to move across multiple functional.</td>
</tr>
<tr>
<td>5.1.2</td>
<td>Our company provides training for developing innovative ideas.</td>
</tr>
<tr>
<td>5.1.3</td>
<td>Our company sponsor social events for employees to get new knowledge.</td>
</tr>
</tbody>
</table>
5.1.4 Our company offers an orientation program that trains employees on the history and processes of the organization.

5.1.5 Our company use job rotation techniques to develop new skills of employees.

5.1.6 Our company use performance appraisals techniques for skill development and training for future advancement

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagreed</th>
<th>Dis-agreed</th>
<th>Neutral</th>
<th>Agreed</th>
<th>Strongly Agreed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SD (1)</td>
<td>D (2)</td>
<td>N (3)</td>
<td>A (4)</td>
<td>SA (5)</td>
</tr>
</tbody>
</table>

5.2 Supervisor Support

<table>
<thead>
<tr>
<th>No.</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.1</td>
<td>Our supervisor encourages us to develop new ideas, new development and be creative</td>
</tr>
<tr>
<td>5.2.2</td>
<td>Our supervisor provides equal opportunities at work place for new idea</td>
</tr>
<tr>
<td>5.2.3</td>
<td>Our Supervisor actively supports our new development at work.</td>
</tr>
<tr>
<td>5.2.4</td>
<td>Our firm always feel that supervisor give respects and makes use the expertise and knowledge for innovative ideas</td>
</tr>
<tr>
<td>5.2.5</td>
<td>Our needs and goals are important for supervisor in firm</td>
</tr>
</tbody>
</table>

6. Technological Factors

The following questions ask you about the extent of your judgment on degree to which knowledge management is supported by the use of its. Please indicate your agreement or disagreement on the following statements by indicating your appropriate response based on the following scale.

<table>
<thead>
<tr>
<th>No.</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1</td>
<td>Employees make extensive use of electronic storage (such as online databases and data warehousing) to access knowledge.</td>
</tr>
<tr>
<td>6.2</td>
<td>Employees use knowledge networks (such as groupware, intranet, virtual communities, etc.) to communicate with colleagues.</td>
</tr>
</tbody>
</table>
6.3 Our company use technology that allows employees to share knowledge with other persons inside the organization.

6.4 Our company use technology that allows employees to share knowledge with other persons outside the organization.

<table>
<thead>
<tr>
<th>Strongly Disagreed</th>
<th>Disagreed</th>
<th>Neutral</th>
<th>Agreed</th>
<th>Strongly Agreed</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD (1)</td>
<td>D (2)</td>
<td>N (3)</td>
<td>A (4)</td>
<td>SA (5)</td>
</tr>
</tbody>
</table>

7. Industry Factors

The following questions ask you about the extent of your judgment about a new organization form that enhances the depth and breadth of cooperation and competition and brings together various industries to form a cluster relationship networks. Please indicate your agreement or disagreement on the following statements by indicating your appropriate response based on the following scale.

<table>
<thead>
<tr>
<th>No.</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1</td>
<td>Our Company use cluster to obtain individuals with talent and with high educational levels.</td>
</tr>
<tr>
<td>7.2</td>
<td>Our company use to obtain experienced and required core technique talents.</td>
</tr>
<tr>
<td>7.3</td>
<td>Our company can retain professional technical talents</td>
</tr>
<tr>
<td>7.4</td>
<td>Our company use cluster to obtained technical interaction and innovation from the employees' flow.</td>
</tr>
</tbody>
</table>
## Appendix 2

### Common Method Variance

<table>
<thead>
<tr>
<th>Component</th>
<th>Initial Eigenvalues</th>
<th>Extraction Sums of Squared Loadings</th>
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<tbody>
<tr>
<td></td>
<td>Total</td>
<td>% of Variance</td>
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<tr>
<td>2</td>
<td>3.690</td>
<td>9.972</td>
</tr>
<tr>
<td>3</td>
<td>2.715</td>
<td>7.339</td>
</tr>
<tr>
<td>4</td>
<td>2.193</td>
<td>5.927</td>
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<tr>
<td>5</td>
<td>2.165</td>
<td>5.851</td>
</tr>
<tr>
<td>6</td>
<td>1.730</td>
<td>4.677</td>
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<tr>
<td>7</td>
<td>1.588</td>
<td>4.292</td>
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<tr>
<td>8</td>
<td>1.334</td>
<td>3.605</td>
</tr>
<tr>
<td>9</td>
<td>1.087</td>
<td>2.939</td>
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<tr>
<td>10</td>
<td>1.029</td>
<td>2.782</td>
</tr>
<tr>
<td>11</td>
<td>.966</td>
<td>2.611</td>
</tr>
<tr>
<td>12</td>
<td>.864</td>
<td>2.336</td>
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<td>13</td>
<td>.779</td>
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<td>.753</td>
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<td>1.369</td>
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<td>25</td>
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<td>.264</td>
<td>.713</td>
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<tr>
<td>31</td>
<td>.243</td>
<td>.656</td>
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</tbody>
</table>
Appendix 3

Outlier Test:

<table>
<thead>
<tr>
<th>Extreme Values</th>
<th>Case Number</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>91</td>
</tr>
<tr>
<td>Highest</td>
<td>3</td>
<td>207</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>209</td>
</tr>
<tr>
<td>Mahalanobis</td>
<td>5</td>
<td>235</td>
</tr>
<tr>
<td>Distance</td>
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<td>94</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>174</td>
</tr>
<tr>
<td>Lowest</td>
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</tr>
<tr>
<td></td>
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</tr>
<tr>
<td></td>
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</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.