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# **Linking green intellectual capital with green innovation: Examining the roles of green dynamic capabilities and 'motivation to achieve legitimacy'**

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## **Electronic supplementary material**

Supplementary Material S1  
Supplementary Tables S1–S2  
Supplementary Figures S1–S3

**Supplementary Material S1****Motivation to achieve legitimacy (MAL)**

Indicate the importance of following in your firms' decisions: [scale 1 to 5: (1) strongly disagree; (2) disagree; (3) somewhat agree/disagree; (4) agree; (5) strongly agree].

MAL1. Our firm desire to meet regulatory requirements in in the decision to innovate in goods or services and/or processes;

MAL2. Our firm desire to meet environmental and quality standards in the decision to innovate in goods or services and/or processes.

**Green dynamic capabilities (GDC)**

(Determinants of green competitive advantage: the roles of green knowledge sharing, green dynamic capabilities, and green service innovation).

GDC1. The company has the ability that can fast monitor the environment to identify new green opportunities;

GDC2. The company has the ability to assimilate, learn, generate, combine, share, transform, and apply new green knowledge;

GDC3. The company has the ability to successfully integrate and manage specialized green knowledge within the company;

GDC4. The company has the ability to successfully coordinate employees to develop green technology;

GDC5. The company has the ability to successfully allocate resources to develop green innovations.

**Green innovation (GI)**

GI1. Our firm uses less or nonpolluting/toxic materials;

GI2. Our firm uses eco-labeling;

GI3. Our firm uses low energy consumption such as water, electricity, gas, and petrol during production/use/disposal;

GI4. Our firm uses recycle, reuse, and remanufacture material;

GI5. Our firm uses cleaner technology to make savings and prevent pollution (such as energy, water, and waste).

**Green intellectual capital (GIC)*****Green human capital (GHC)***

GHC1. The contribution of environmental protection of employees in our firm is better than our major competitors;

GHC2. Employee competence with respect to environmental protection in our firm is better than that of our major competitors;

GHC3. Our managers fully support our employees in achieving their goals with respect to environmental protection.

***Green relational capital (GRC)***

GRC1. The cooperative relationships concerning environmental protection of our firm with our upstream suppliers are stable;

GRC2. The cooperation relationships about environmental protection of our firm with our downstream clients or channels are stable;

GRC3. Our firm has well cooperative relationships concerning environmental protection with our strategic partners.

***Green structural capital (GSC)***

GSC1. The management system for environmental protection in our firm is superior to that of our major competitors;

GSC2. Investments in environmental protection facilities in our firm are more than those of our major competitors;

GSC3. Competence in developing green products in our firm is better than that of our major competitors;

GSC4. The overall operational processes for environmental protection in our firm work smoothly;

GSC5. The knowledge management system for environmental management in our firm is favorable for the accumulation of the knowledge of environmental management.

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Table S1. Results for construct reliability and validity ( $P$ -value < 0.001)

| Construct                                     | Item | Factor loading | SE    | $\alpha$ | CR   | AVE  |
|---|------|----------------|-------|----------|------|------|
| <b>Green intellectual capital (GIC)</b>       |      |                |       |          |      |      |
| Green human capital (GHC)                     | GHC1 | 0.828          | 0.078 | 0.95     | 0.96 | 0.67 |
|   | GHC2 | 0.852          | 0.075 |          |      |      |
|   | GHC3 | 0.789          | 0.068 |          |      |      |
| Green relational capital (GRC)                | GRC1 | 0.835          | 0.065 |          |      |      |
|   | GRC2 | 0.858          | 0.056 |          |      |      |
|   | GRC3 | 0.815          | 0.080 |          |      |      |
| Green structural capital (GSC)                | GSC1 | 0.843          | 0.078 |          |      |      |
|   | GSC2 | 0.788          | 0.070 |          |      |      |
|   | GSC3 | 0.822          | 0.069 |          |      |      |
|   | GSC4 | 0.850          | 0.059 |          |      |      |
|   | GSC5 | 0.737          | 0.071 |          |      |      |
| <b>Green innovation (GI)</b>                  | GI1  | 0.841          | 0.064 | 0.90     | 0.93 | 0.72 |
|   | GI2  | 0.875          | 0.066 |          |      |      |
|   | GI3  | 0.881          | 0.061 |          |      |      |
|   | GI4  | 0.861          | 0.064 |          |      |      |
|   | GI5  | 0.776          | 0.066 |          |      |      |
| <b>Green dynamic capabilities (GDC)</b>       | GDC1 | 0.775          | 0.073 | 0.89     | 0.92 | 0.69 |
|   | GDC2 | 0.869          | 0.054 |          |      |      |
|   | GDC3 | 0.835          | 0.051 |          |      |      |
|   | GDC4 | 0.856          | 0.058 |          |      |      |
|   | GDC5 | 0.809          | 0.063 |          |      |      |
| <b>Motivation to achieve legitimacy (MAL)</b> | MAL1 | 0.872          | 0.072 | 0.86     | 0.69 | 0.70 |
|   | MAL2 | 0.872          | 0.062 |          |      |      |

SE – standard error;  $\alpha$  – Cronbach's alpha; CR – composite reliability; AVE – average variance extracted

Table S2. Hetero-trait-mono-trait (HTMT) ratios

| Constructs | GIC     | GI      | GDC     |
|------------|---------|---------|---------|
| GIC        | –       | –       | –       |
| GI         | 0.284** | –       | –       |
| GDC        | 0.492** | 0.346** | –       |
| MAL        | 0.364** | 0.693** | 0.288** |

\*\* $P$  < 0.01, good if coefficient < 0.90, best if < 0.85; GIC – green intellectual capital; GI – green innovation; GDC – green dynamic capabilities; MAL – motivation to achieve legitimacy

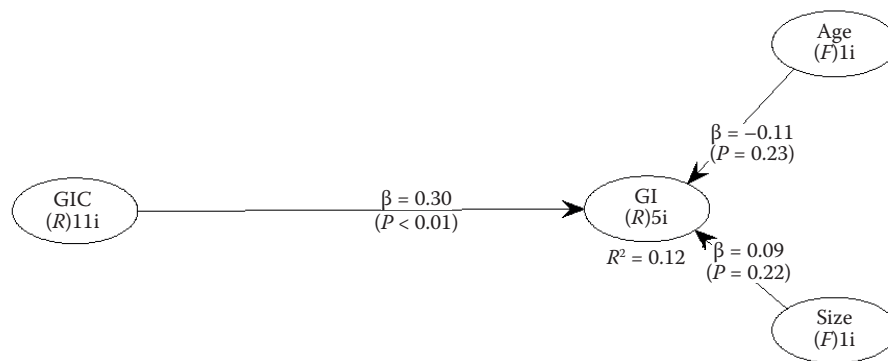


Figure S1. Direct association between independent and dependent variables

GIC – green intellectual capital; GI – green innovation

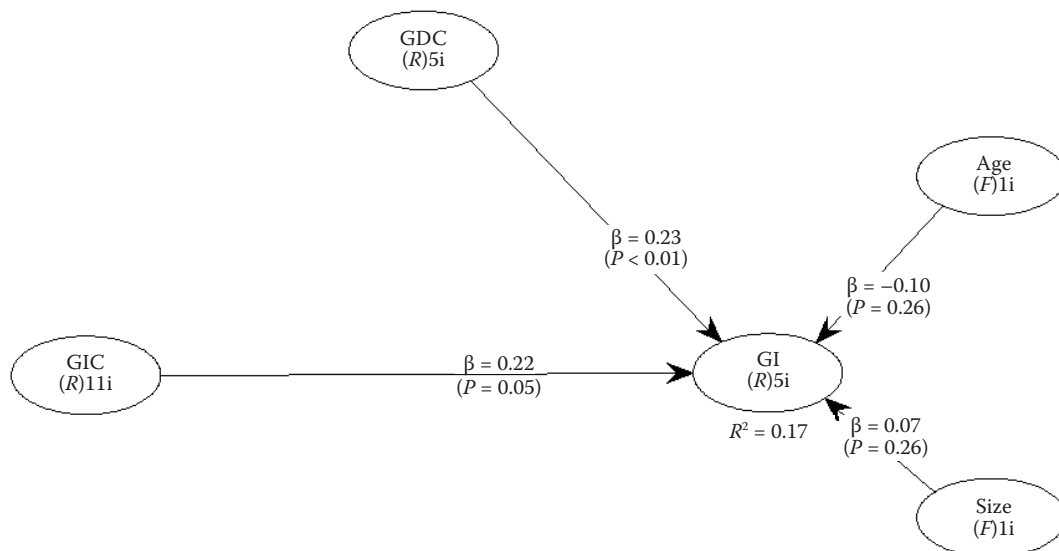


Figure S2. Introduction of mediating variable in analysis

GDC – green dynamic capabilities; GIC – green intellectual capital; GI – green innovation

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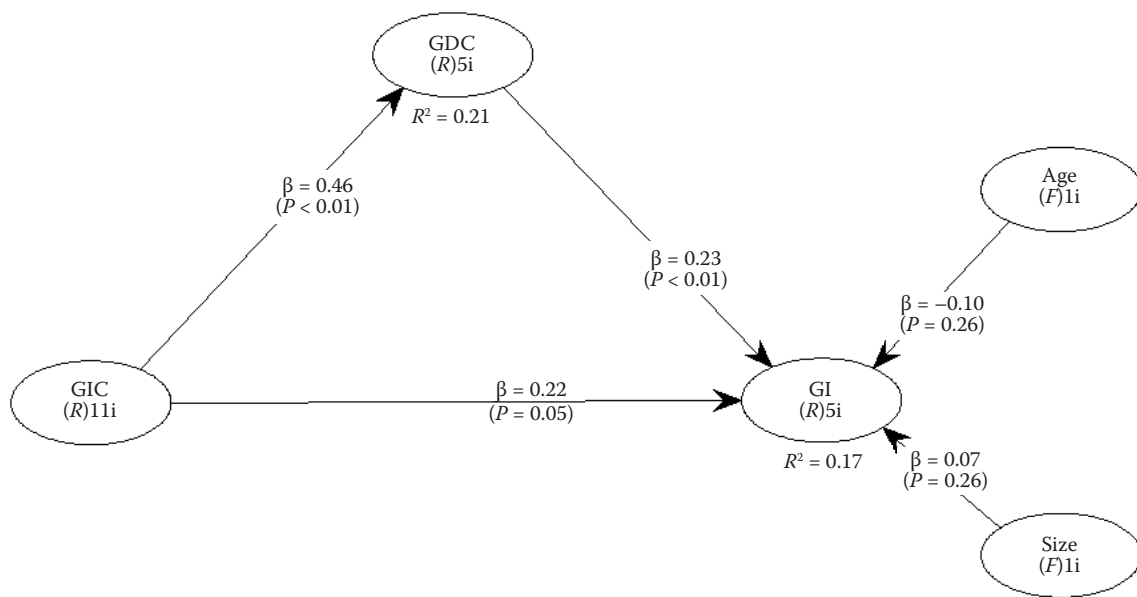


Figure S3. Direct and indirect paths to check presence of mediation

GDC – green dynamic capabilities; GIC – green intellectual capital; GI – green innovation