Value Co-creation in Healthcare Service Delivery: A Micro Level Dyadic Approach

Kofi Osei-Frimpong\textsuperscript{a}
Alan Wilson\textsuperscript{b}
Fred Lemke\textsuperscript{c}
Nana Owusu-Frimpong\textsuperscript{a}

\textsuperscript{a}Ghana Institute of Management and Public Administration
\textsuperscript{b}University of Strathclyde Business School
\textsuperscript{c}Newcastle University Business School
Outline of presentation

• Introduction/Research background
• Objectives
• Literature review
• Methodology
  – Qualitative phase
  – Quantitative phase
• Data analysis and results
• Theoretical implications
• Managerial implications
Introduction/Research Background

- Recent advances in service research present an interactive framework of value creation in service delivery (Gronroos, 2011; Payne et al., 2008)

- Patient active involvement has received critical importance over the past years
  - It is prioritized in policy initiatives (Department of Health, 2010)
  - Upsurge of consumerism in healthcare (Jaakkola & Halinen, 2006)
  - Patient-centered care approach highly promoted (Gill et al., 2011)

- Healthcare is characterized by active collaboration between doctor and patient (e.g., Elg et al., 2012; McColl-Kennedy et al., 2012; Nambisan & Nambisan, 2009; Osei-Frimpong et al., 2015)
Introduction/ Research Background

• Although ‘interaction and collaboration’ between the two actors is of paramount importance in value co-creation yet this remains abstract, lacking empirical studies,
  – which seems to shield the details on the roles played or inputs by the involved actors (Aarikka-Stenroos and Jaakkola, 2012).

• Hardyman et al. (2015) point out difficulties in assessing value co-creation in health care at the micro level as a result of limited empirical studies underpinning patient engagement.

• Also, authors call for a need to understand value co-creation from a dyadic perspective in empirical research (e.g., Lin & Hsieh, 2011; Saarijarvi et al., 2013)
Objectives are twofold:

- Investigate empirically and gain deeper insights into value co-creation by examining the key influencing factors of the doctor-patient encounter process in healthcare service delivery.

- Assess quantitatively, the impact of these factors on the expected service outcomes in relation to the focal dyad.
Value Co-creation

• Co-creation refers to processes through which providers collaboratively engage customers to create value (Prahalad & Ramaswamy, 2004)
  – Ignited by service dominant logic (Vargo & Lusch, 2004; Lusch & Vargo, 2014)

• Edvardsson et al (2011) underscore the importance of social context in value co-creation.
  – It is essential to consider the “actors’ positions, roles and social interactions within social structures when designing resource constellations to realize value propositions”

• Sandstrom et al. (2008) highlight the influence of actors’ beliefs and perceptions on value co-creation.

• Prominent to value co-creation is the partnership between actors (Austin and Seitanidi, 2012; Jaakkola and Alexander, 2014)
Healthcare consultation models and co-creation of value

• Healthcare consultations are mostly face-to-face encounters
  – an actor’s actions could affect the experiences of the other (Hardyman et al., 2014; Osei-Frimpong et al., 2015).

• The past decades have seen transformations in consultations between doctors and patients
  – This is partly attributed to patients’ increasing choice, consumerism and availability of information (Edwards et al., 2009).

• A movement away from the paternalistic (doctor-led) approach to a shared decision making model (patient-centered)
  – SDM mainly depends on building a partnership - patients to deliberate and intimate their preferences and opinions during the decision-making process (Elwyn et al., 2010; Hausman, 2004).
Figure 1: Tentative conceptual framework of the dyadic value co-creation

- Modified Storbacka and Nenonen’s (2009) model
Methodology

Sequential Exploratory Design (SED)

Source: Creswell (2009, p. 209)
Qualitative phase and Findings

• Critical Incident Technique was employed (Flanagan, 1954)
  – Sampling frame – Doctors (N = 8) and Outpatients (N = 24) from 2 hospitals in Accra
  – Sampling method – purposive sampling
  – The abductive reasoning approach was followed in analyzing the data (Dubois and Gadde 2002)
  – Thematic analysis was used by ascribing meanings to incidents and codifying these incidents into categories and sub-categories
  – Reliability and validity of the data were assessed

• The findings of this research together with the literature facilitated the model development as well as designing the research instrument of the next phase.
<table>
<thead>
<tr>
<th>Social context</th>
<th>Beliefs &amp; Perceptions</th>
<th>Partnership</th>
</tr>
</thead>
<tbody>
<tr>
<td>The doctor was very friendly, nice, with good interpersonal skills, and she created a conducive environment for a healthy interaction as I actively participated... she understood me well and advised me accordingly, so I felt I was in competent hands. [A 38-year-old patient].</td>
<td>The assurance I received from the doctor was stimulating and I feel psychologically and emotionally I was healed... But when things don't go as expected, the treatment is prolonged even though I take the drugs prescribed, probably that is my perception, but I have experienced this a couple of times. [43-year-old patient]</td>
<td>Having a good orientation of the patient gives me a fair idea of what is happening, and how to approach different patients with different needs and expectations... [Doctor M₄].</td>
</tr>
<tr>
<td>Establishing good rapport with the patient is critical...this helps break their silence that helps improve on the nature of interactions in the consultation. As a result, the patient is able to share detailed information, because some of them actually decide what to tell you based on your attitude... [Doctor F₁]</td>
<td>...They wanted to find out if I’m competent and a doctor they can trust. So if I had got any of their questions wrong, they would not have come to me again, that’s all the assurance they needed...I think it’s natural that if you trust somebody, you are at peace with him/her, you can freely discuss issues and you have the belief that, that person will not let you down... I consider it valuable [Doctor M₂]</td>
<td>I think doctors must cooperate with me as a patient and appreciate my expectations and needs of the service I seek...it’s not all about the prescription, but I desire to be involved and contribute to the consultation, which also impact on my attitude towards compliance... [A 28-year old patient].</td>
</tr>
</tbody>
</table>
Actors prior to the service encounter

**Doctor**
- Resources
- Capabilities
- Expectations of value
- Actor characteristics

**Patient**
- Resources
- Capabilities
- Expectations of value
- Actor characteristics

---

Key influencing factors of the service encounter in value co-creation

**Beliefs and Perception**
- Emotions
- Trust
- Assurance
- Perceptions

**Partnership**
- Involvement
- Provider-patient orientation
- Shared decision-making

**Social Context**
- Social skills
- Interactions
- Learning

---

Expected outcomes

**Commitment to compliance to medical instructions**

**Improved service engagement**

**Perceived value realized**

Dyadic model of value co-creation in healthcare delivery at the micro level
Quantitative phase

- Survey design employed
- Sampling frame – Doctors (N = 90) and Outpatients (N = 360) from 20 hospitals in Accra and Tema – Ghana
- Sampling method
  - purposive sampling (in the case of the doctors)
  - Systematic random sampling (in the case of the outpatients)
- Combination of both interviewer-led and self-completion mode of questionnaire administration
  - Valid Response Rate: 85.7% (Patients) and 64.3% (Doctors)
Data analysis

• Data screening
• Normality assessment
  – Highest value of kurtosis for both datasets was 2.227

• Reliability and validity
  – Chronbach’s alpha > .7
  – Employed both EFA and CFA – using SPSS 21.0 and AMOS 21.0
  – Construct reliability, convergent and discriminant validity satisfied

• 1st and 2nd order CFA were conducted on all datasets
  – E.g., the dyadic data set recorded a reasonably fit model to the data (CFI = .918; GFI = .824; RMSEA = .065; \( \chi^2_{(383)} = 528.042, \rho = 0.051, \chi^2/df = 1.381 \)).
Considerations in the SEM evaluation

• Maximum likelihood estimation (MLS) using all three datasets
• Sample size concerns
  – Patient dataset – N=360, no problem
  – Doctor and Dyad datasets – N=90, used with caution
• MLS might be satisfactory with relatively small sample size if the multivariate normality is not too far out of range (Bagozzi and Yi 2012, p. 29)
  – Patient’s data – Mardia’s coefficient = 1.165, CR = .556
  – Dyadic data – Mardia’s coefficient = 1.564, CR = .376
  – The doctor’s dataset (Mardia’s coefficient = 11.242, CR = 2.655) is reasonably distributed according to Bentler (2005)
• Computed composite factor scores for all first order variables (Landis et al., 2000; Sendjaya et al., 2008)
  – Reduced the number of parameters in the model
Dyadic data preparation

• Classified as distinguishable dyad (Kenny et al., 2006)

• Patient scores aggregated and matched with respective doctor’s responses to form a single data set (Chen and Quester, 2006; Hartline et al., 2000)

• Assessing the non-independence in the two responses (Kenny et al., 2006),
  – Kim’s (2000) approach of ‘convergence across groups’ as well as
  – an assessment of ‘within-group agreement’ \( R_{wg} \) (James et al., 1984)

• The extent to which the two responses are correlated is an indication of synchrony in the dyad (Alferes and Kenny, 2009)
### Dyadic Data set

<table>
<thead>
<tr>
<th>Variable</th>
<th>Doctor's mean</th>
<th>Patient's mean</th>
<th>Mean difference</th>
<th>Dyad mean</th>
<th>t-value</th>
<th>Sig. (2-tailed)</th>
<th>Correlations</th>
<th>$R_{wg}$ (Avg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provider-patient orientation</td>
<td>3.97</td>
<td>3.90</td>
<td>.065</td>
<td>3.94</td>
<td>1.17</td>
<td>.244</td>
<td>.385***</td>
<td>.94</td>
</tr>
<tr>
<td>Involvement</td>
<td>3.99</td>
<td>3.90</td>
<td>.085</td>
<td>3.94</td>
<td>1.45</td>
<td>.150</td>
<td>.370***</td>
<td>.91</td>
</tr>
<tr>
<td>Shared decision-making</td>
<td>3.94</td>
<td>3.36</td>
<td>.576</td>
<td>3.65</td>
<td>8.99</td>
<td>.000</td>
<td>.271**</td>
<td>.79</td>
</tr>
<tr>
<td>Emotion</td>
<td>4.21</td>
<td>4.13</td>
<td>.082</td>
<td>4.17</td>
<td>1.20</td>
<td>.234</td>
<td>.422***</td>
<td>.95</td>
</tr>
<tr>
<td>Trust</td>
<td>4.29</td>
<td>4.19</td>
<td>.106</td>
<td>4.24</td>
<td>1.59</td>
<td>.115</td>
<td>.427***</td>
<td>.94</td>
</tr>
<tr>
<td>Assurance</td>
<td>3.99</td>
<td>3.89</td>
<td>.099</td>
<td>3.94</td>
<td>1.65</td>
<td>.102</td>
<td>.344**</td>
<td>.90</td>
</tr>
<tr>
<td>Perception</td>
<td>3.96</td>
<td>3.87</td>
<td>.093</td>
<td>3.91</td>
<td>1.62</td>
<td>.109</td>
<td>.535***</td>
<td>.90</td>
</tr>
<tr>
<td>Social skills</td>
<td>4.25</td>
<td>4.16</td>
<td>.094</td>
<td>4.20</td>
<td>1.63</td>
<td>.106</td>
<td>.473***</td>
<td>.92</td>
</tr>
<tr>
<td>Interactions</td>
<td>3.79</td>
<td>3.42</td>
<td>.372</td>
<td>3.61</td>
<td>5.48</td>
<td>.000</td>
<td>.359**</td>
<td>.83</td>
</tr>
<tr>
<td>Learning</td>
<td>3.84</td>
<td>3.74</td>
<td>.100</td>
<td>3.79</td>
<td>1.58</td>
<td>.118</td>
<td>.363***</td>
<td>.91</td>
</tr>
<tr>
<td>Perceived value</td>
<td>4.10</td>
<td>4.02</td>
<td>.077</td>
<td>4.06</td>
<td>1.36</td>
<td>.178</td>
<td>.474***</td>
<td>.93</td>
</tr>
<tr>
<td>Compliance</td>
<td>4.15</td>
<td>4.09</td>
<td>.057</td>
<td>4.12</td>
<td>1.14</td>
<td>.259</td>
<td>.468***</td>
<td>.83</td>
</tr>
<tr>
<td>Improved service</td>
<td>4.10</td>
<td>4.04</td>
<td>.065</td>
<td>4.07</td>
<td>1.09</td>
<td>.277</td>
<td>.425***</td>
<td>.92</td>
</tr>
</tbody>
</table>

*** $p < .001$; ** $p < .05$

Paired sample test and correlations and $R_{wg}$ of matched datasets
Composite Reliability and Validity Measures from the 2\textsuperscript{nd} order CFA using the dyad dataset

<table>
<thead>
<tr>
<th></th>
<th>CR</th>
<th>AVE</th>
<th>SC</th>
<th>PVA</th>
<th>COM</th>
<th>ISE</th>
<th>B&amp;P</th>
<th>PT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Context (SC)</td>
<td>0.817</td>
<td>0.601</td>
<td>0.775</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Value (PVA)</td>
<td>0.833</td>
<td>0.507</td>
<td>0.498</td>
<td>0.712</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compliance (COM)</td>
<td>0.842</td>
<td>0.517</td>
<td>0.545</td>
<td>0.299</td>
<td>0.719</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved Service</td>
<td>0.894</td>
<td>0.588</td>
<td>0.400</td>
<td>0.299</td>
<td>0.322</td>
<td>0.767</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engagement (ISE)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beliefs and Perception (B&amp;P)</td>
<td>0.818</td>
<td>0.533</td>
<td>0.321</td>
<td>0.406</td>
<td>0.320</td>
<td>0.390</td>
<td>0.730</td>
<td></td>
</tr>
<tr>
<td>Partnership (PT)</td>
<td>0.800</td>
<td>0.572</td>
<td>0.450</td>
<td>0.150</td>
<td>0.293</td>
<td>0.507</td>
<td>0.575</td>
<td>0.757</td>
</tr>
</tbody>
</table>

All correlations are significant at $p<0.05$

<table>
<thead>
<tr>
<th></th>
<th>CR</th>
<th>AVE</th>
<th>B&amp;P</th>
<th>ISE</th>
<th>PVA</th>
<th>CM</th>
<th>PT</th>
<th>SC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beliefs &amp; Perception (B&amp;P)</td>
<td>0.891</td>
<td>0.674</td>
<td>0.821</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved Service</td>
<td>0.933</td>
<td>0.664</td>
<td>0.627</td>
<td>0.815</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engagement (ISE)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Value (PVA)</td>
<td>0.922</td>
<td>0.704</td>
<td>0.691</td>
<td>0.311</td>
<td>0.839</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compliance (CM)</td>
<td>0.890</td>
<td>0.669</td>
<td>0.471</td>
<td>0.598</td>
<td>0.396</td>
<td>0.818</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partnership (PT)</td>
<td>0.841</td>
<td>0.639</td>
<td>0.381</td>
<td>0.616</td>
<td>0.234</td>
<td>0.581</td>
<td>0.799</td>
<td></td>
</tr>
<tr>
<td>Social Context (SC)</td>
<td>0.845</td>
<td>0.650</td>
<td>0.576</td>
<td>0.448</td>
<td>0.429</td>
<td>0.654</td>
<td>0.318</td>
<td>0.806</td>
</tr>
</tbody>
</table>

All correlations are significant at $p<0.05$

Composite Reliability and Validity Measures from the 2\textsuperscript{nd} order CFA using the patient data
### Structural Parameter Estimates (standardized coefficients)

<table>
<thead>
<tr>
<th>Path</th>
<th>Dyad β</th>
<th>t - value</th>
<th>R²</th>
<th>Patient β</th>
<th>t - value</th>
<th>R²</th>
<th>Doctor β</th>
<th>t - value</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Context → Commitment to compliance to medical instructions (H₁b)</td>
<td>.240</td>
<td>2.856</td>
<td>.415</td>
<td>.320</td>
<td>2.867</td>
<td>.486</td>
<td>.144</td>
<td>2.681</td>
<td>.305</td>
</tr>
<tr>
<td>Social Context → Improved Service Engagement (H₁a)</td>
<td>.519***</td>
<td>4.949</td>
<td>.551</td>
<td>.513***</td>
<td>7.314</td>
<td>.407</td>
<td>.509***</td>
<td>4.988</td>
<td>.208</td>
</tr>
<tr>
<td>Beliefs perception → Commitment to compliance to medical instructions (H₂b)</td>
<td>.705***</td>
<td>3.431</td>
<td>.313**</td>
<td>2.899</td>
<td>.766***</td>
<td>7.305</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beliefs perception → Improved service engagement (H₂a)</td>
<td>.591***</td>
<td>4.740</td>
<td>.146**</td>
<td>2.635</td>
<td>.422***</td>
<td>3.826</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partnership → Improved service engagement (H₃a)</td>
<td>.466***</td>
<td>3.637</td>
<td>.411***</td>
<td>5.273</td>
<td>.456***</td>
<td>4.352</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partnership → Commitment to compliance to medical instructions (H₃b)</td>
<td>.312***</td>
<td>3.955</td>
<td>.510***</td>
<td>5.918</td>
<td><strong>0.032</strong></td>
<td>**0.176</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved service engagement → Perceived Value Realized (H₄)</td>
<td>.254**</td>
<td>2.297</td>
<td>.086</td>
<td><strong>0.052</strong></td>
<td><strong>0.786</strong></td>
<td>.004</td>
<td>.796***</td>
<td>4.858</td>
<td>.259</td>
</tr>
<tr>
<td>Improved service engagement → Commitment to compliance to medical instructions (H₅)</td>
<td>.518***</td>
<td>4.837</td>
<td>.636***</td>
<td>4.849</td>
<td><strong>0.287</strong></td>
<td>**1.449</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commitment to compliance to medical instructions → Perceived Value Realized (H₆)</td>
<td><strong>0.076</strong></td>
<td><strong>0.690</strong></td>
<td><strong>0.074</strong></td>
<td><strong>1.125</strong></td>
<td><strong>0.254</strong></td>
<td><strong>2.249</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Goodness-of-fit statistics:

\[
\chi^2_{(53)} = 55.945, \ p = .365 \\
\chi^2_{(40)} = 57.998, \ p = .033 \\
\chi^2_{(45)} = 56.024, \ p = .123
\]

GFI = .915  GFI = .976  GFI = .910
AGFI = .854  AGFI = .946  AGFI = .818
CFI = .986  CFI = .981  CFI = .979
TLI = .979  TLI = .962  TLI = .964
RMSEA = .025  RMSEA = .035  RMSEA = .049

*** p < 0.001; ** p < 0.05; * p > 0.1
Theoretical Implications

• Three key influencing factors of value co-creation in healthcare service delivery at the micro level;
  – Social context
  – Beliefs and perceptions
  – Partnership

• The dual effects examined discriminate the findings from previous studies, and clarify the differing value perceptions of the actors which suggests that
  – both actors determination of value is unique and experienced differently based on the service performed by the actors.

• Payne et al.’s (2008) model offers an interactive framework between actors and presents how a set of processes between the parties is interconnected.
  – We take a deeper look into the influencing factors of the dyad to understand the nested effects inherent in actor behaviours.
Theoretical Implications

• In the healthcare setting, models developed by Nambisan and Nambisan (2009), McColl-Kennedy et al. (2012) and Elg et al. (2012) provide useful insights of contributing to the concept of value co-creation.
  
  – Unfortunately, these lack the explicit understanding of how the key influencing factors in service encounters between the dyad and how this is managed in value co-creation – our model contributes in this respect

• Our conceptualisation also extends on Storbacka and Nenonen’s (2009) model

• The model measurement also builds on the discourse on the application of quantitative approaches for examining value co-creation.
Managerial Implications

- The conflicting goals and aspirations of the professional and the patient
  - pose a challenge in co-creation, and
  - it is important for the professionals to reorient themselves to better understand the patient and especially the current trend in behaviors and attitudes.

- Doctors should adopt delivery approaches that would evoke positive experiences to the patient in the consulting room taking into account the differing beliefs and perceptions of the involved actors.

- Our conceptualization of value co-creation also suggests the need to consider actors’ prior value expectations and factors that influence clinical encounters

- Providers are encouraged to incorporate essential behavioural and psychosocial aspects of the service experience and provide a patient-centered consultation approach.
Thank you