

# **The Servitization of Manufacturing: A Longitudinal Study of Global Trends**

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# The world of manufacturing is changing...

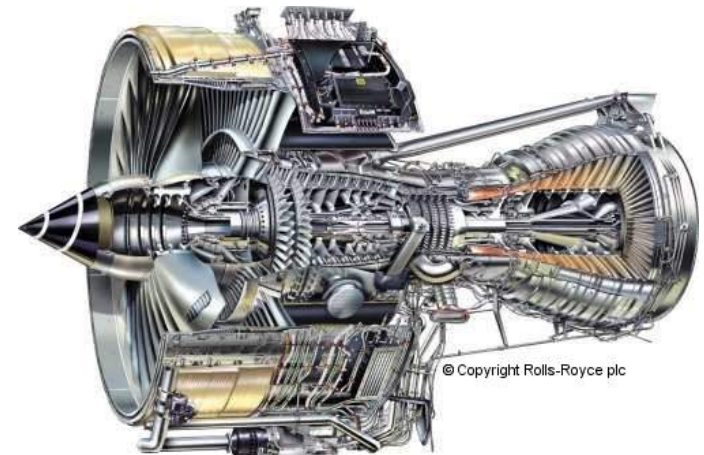
## The shift to service based competitive strategies is not new:

■ Andersen and Narus – Capturing the Value of Supplementary Services, Harvard Business Review, 1995.

■ Wise and Baumgartner – Go Downstream: The New Imperative in Manufacturing, Harvard Business Review, 1999.

But we may be at a technologically enabled tipping point...

- Servitization/Serviceization...
- Product-Service Systems...
- Service Science...
- Remote Product Servicing...
- Intelligent Vehicle Health Management...



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# Service business model innovation



## John Deere iGuide system

Uses GPS technology to automatically shift the steering pattern of the tractor to compensate for implement drift



## Customers design and complete market research

Exploiting the internet to enable crowd sourcing



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# The evolving nature of services

From a world of...

Products

Outputs

Transactions

Suppliers

Elements

**Service business models are becoming more complex**

Which future **business models** will best enable firms to create and capture value through services?

What new **service and support engineering capabilities** enable these business models?

How will innovation in **performance information and analytics** enable service business models?

To a world including...

Solutions

Outcomes

Relationships

Network partners

Eco-systems

- **Services are not easy to scale – costs are high, margins are compressed**
- **Services often involve long term commitment and performance based contracts**
- **With multiple parties co-operating to ensure delivery**



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# Why is manufacturing servitizing?

<b>Economic rationale</b>	<ol style="list-style-type: none"><li>1. Manufacturing firms in developed economies cannot compete on the basis of cost (technological developments are enabling them to add innovative services)...</li><li>2. The installed base argument (e.g. for every new car sold there are already 13 in operation, 15 to 1 for civil aircraft and 22 to 1 for trains)...</li><li>3. Stability of revenues – services vs. products...</li></ol>
<b>Strategic rationale</b>	<ol style="list-style-type: none"><li>1. Lock in customers (sell the original equipment at cost, make money on spares &amp; suppliers - razor, printers)...</li><li>2. Lock out competitors...</li><li>3. Increase the level of differentiation (e.g. equipment provider offers to take customer's risk and give predictable maintenance costs)...</li><li>4. Customers demand it (e.g. contracting for capability)...</li></ol>
<b>Environmental rationale</b>	<ol style="list-style-type: none"><li>1. Environmental rationale (change notions of ownership and resource use – e.g. Mobility cars)...</li></ol>



# So what can we find out about servitization?

	2007 dataset	2009 dataset	2011 dataset
Source of data	OSIRIS database	OSIRIS database	OSIRIS database
Nos. companies	44,000 publicly listed firms	55,000 publicly listed firms	46,000 publicly listed firms
Nos. manufacturing firms (US SIC codes 10-39)	22,952 firms	27,670 firms	24,010 firms
Nos. manufacturing firms with over 100 employees	12,521 firms	13,259 firms	14,974 firms
Nos. firms with no business description	1,478 firms	706 firms	1,077 firms
Nos. firms declaring bankruptcy	216 firms	222 firms	122 firms
Useable sample	10,827 firms	12,331 firms	13,775 firms



# Coding – identifying which firms have servitized

## **Coding – using business descriptions to identify whether firms classified as manufacturing offer:**

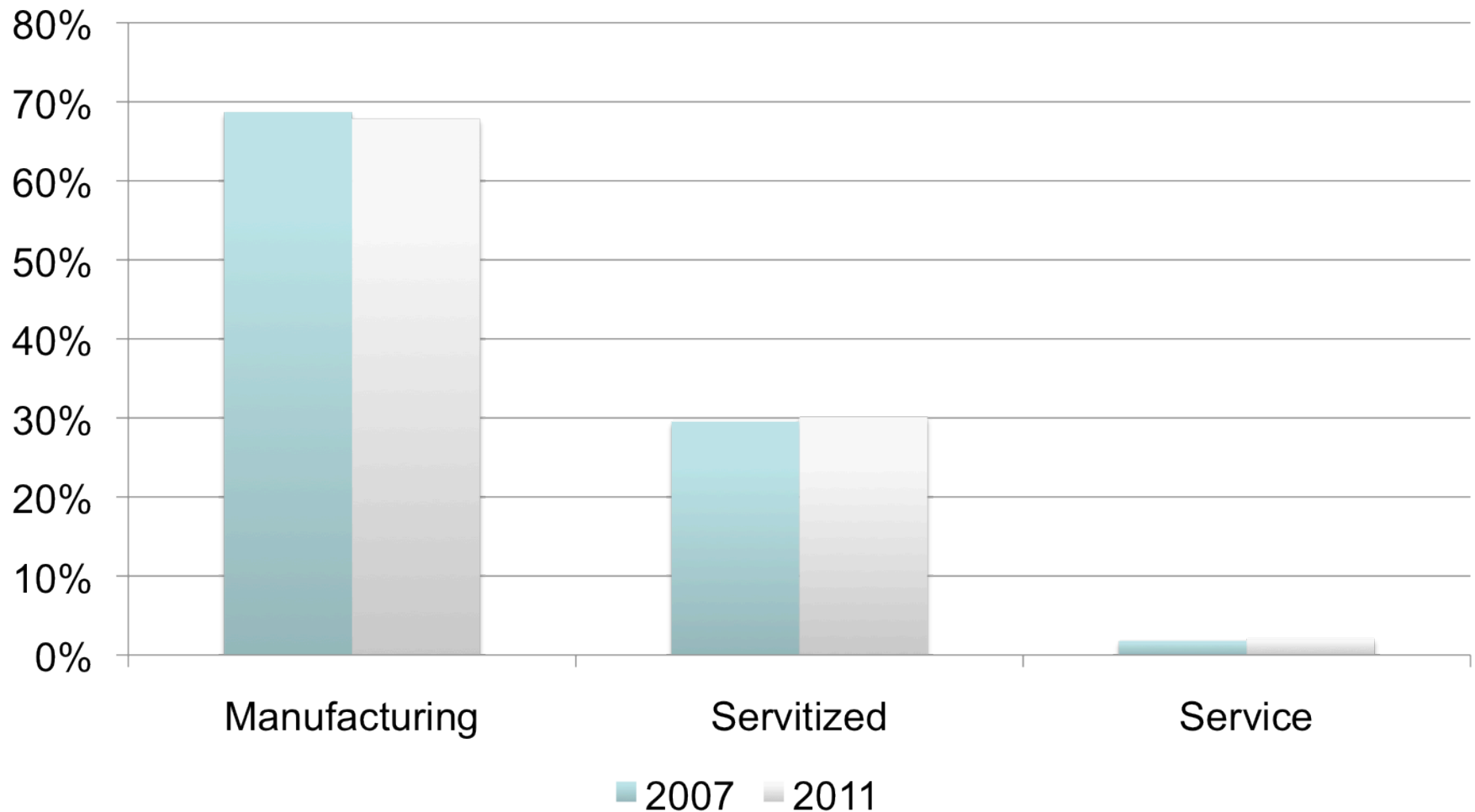
- Pure manufacturing, e.g. PetroChina principally engaged in a broad range of petroleum and natural gas-related activities.
- Some combination of manufacturing and service, e.g. Siemens - predominantly electronics and electrical engineering, but provides a wide variety of consulting, maintenance and other services.
- Pure service, e.g. The Brink's Company, conducts business in the security industry. The services offered by the Company include armoured-car transportation, automated teller machine (ATM) servicing, currency and deposit processing, coin sorting and wrapping, and arranging the secure air transportation of valuables.



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# Despite having manufacturing SIC codes...

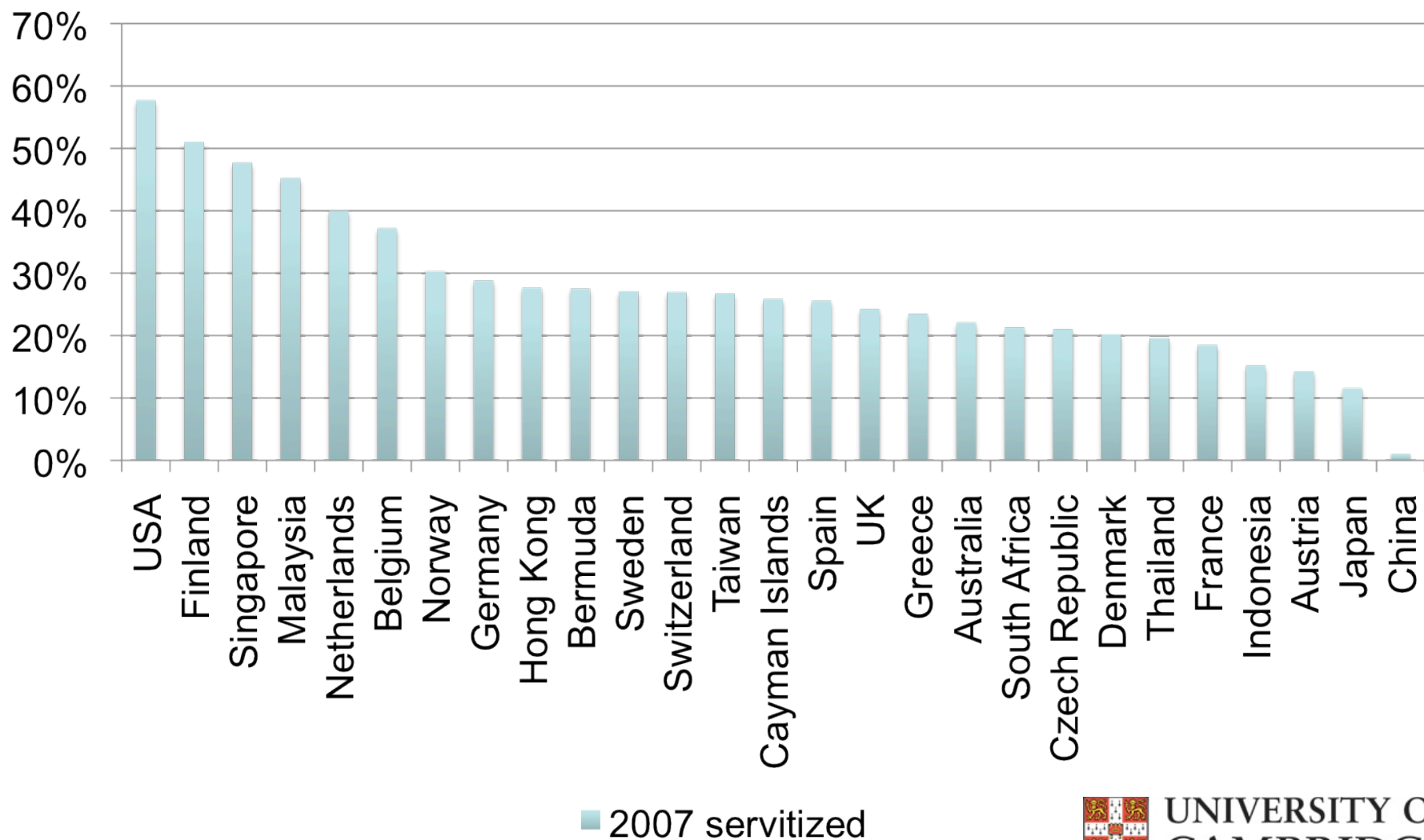


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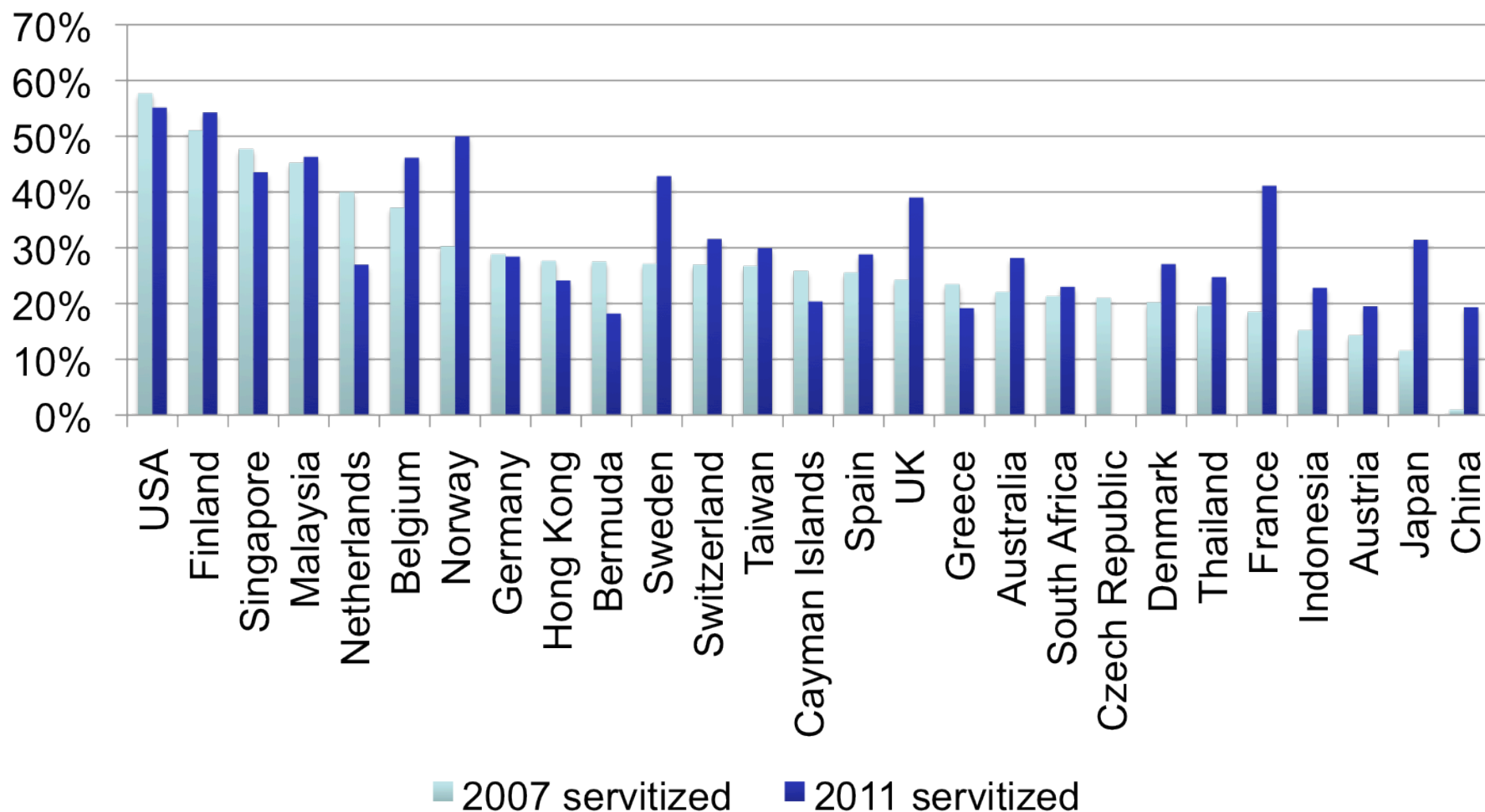
# In which countries have firms servitized (2007)?



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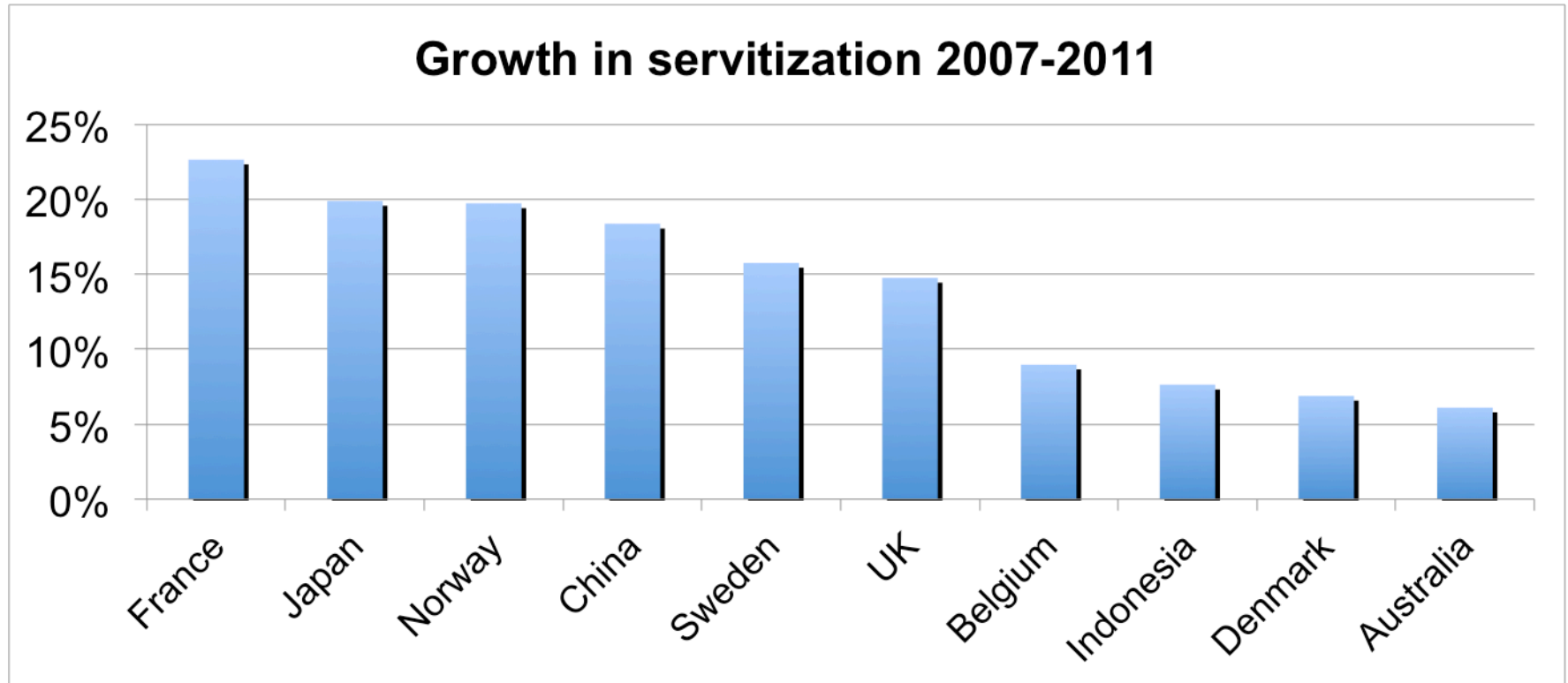
# Where has the growth in servitization come from?



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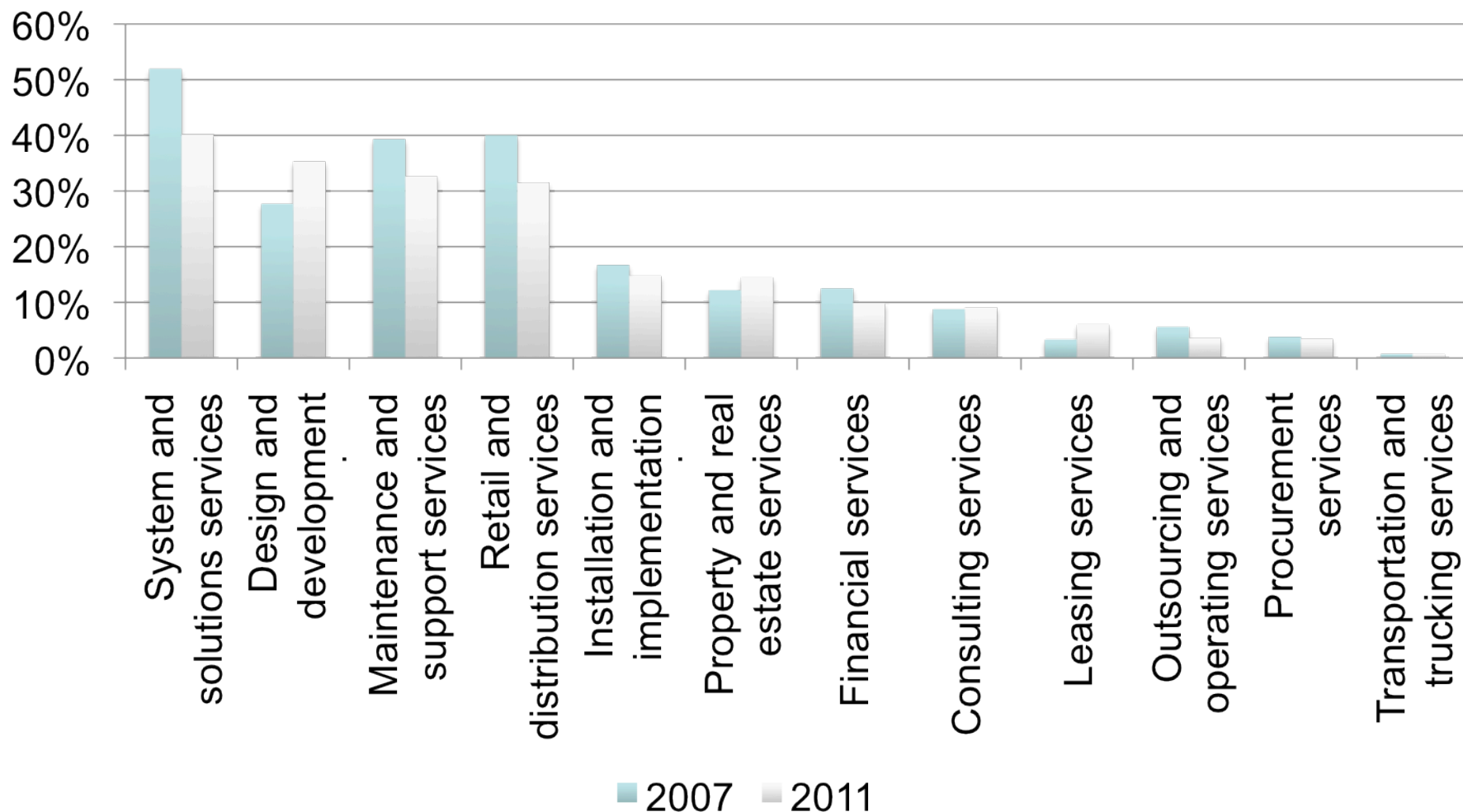
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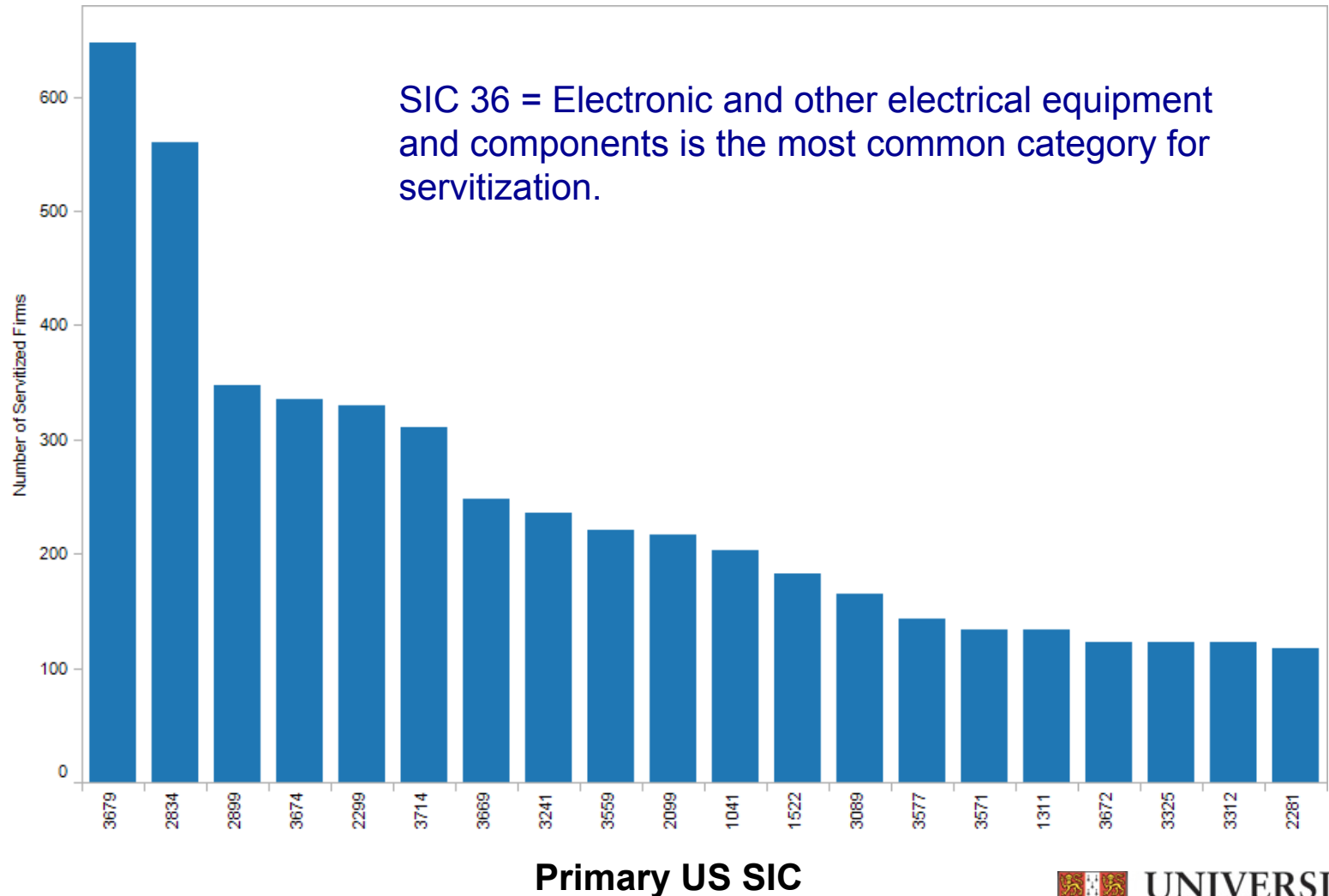
# What types of services are offered?



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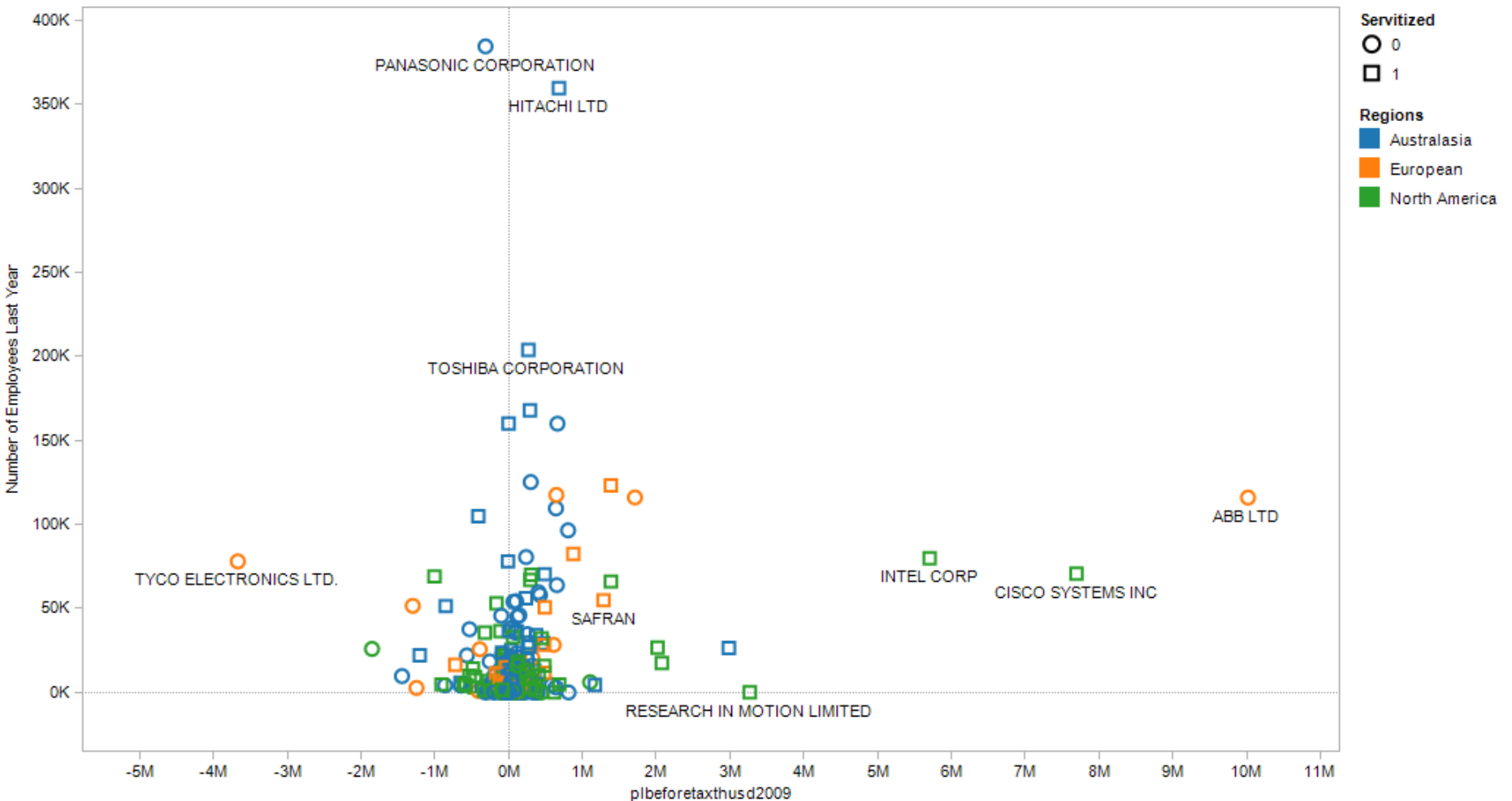
# What are the financial consequences of servitization?



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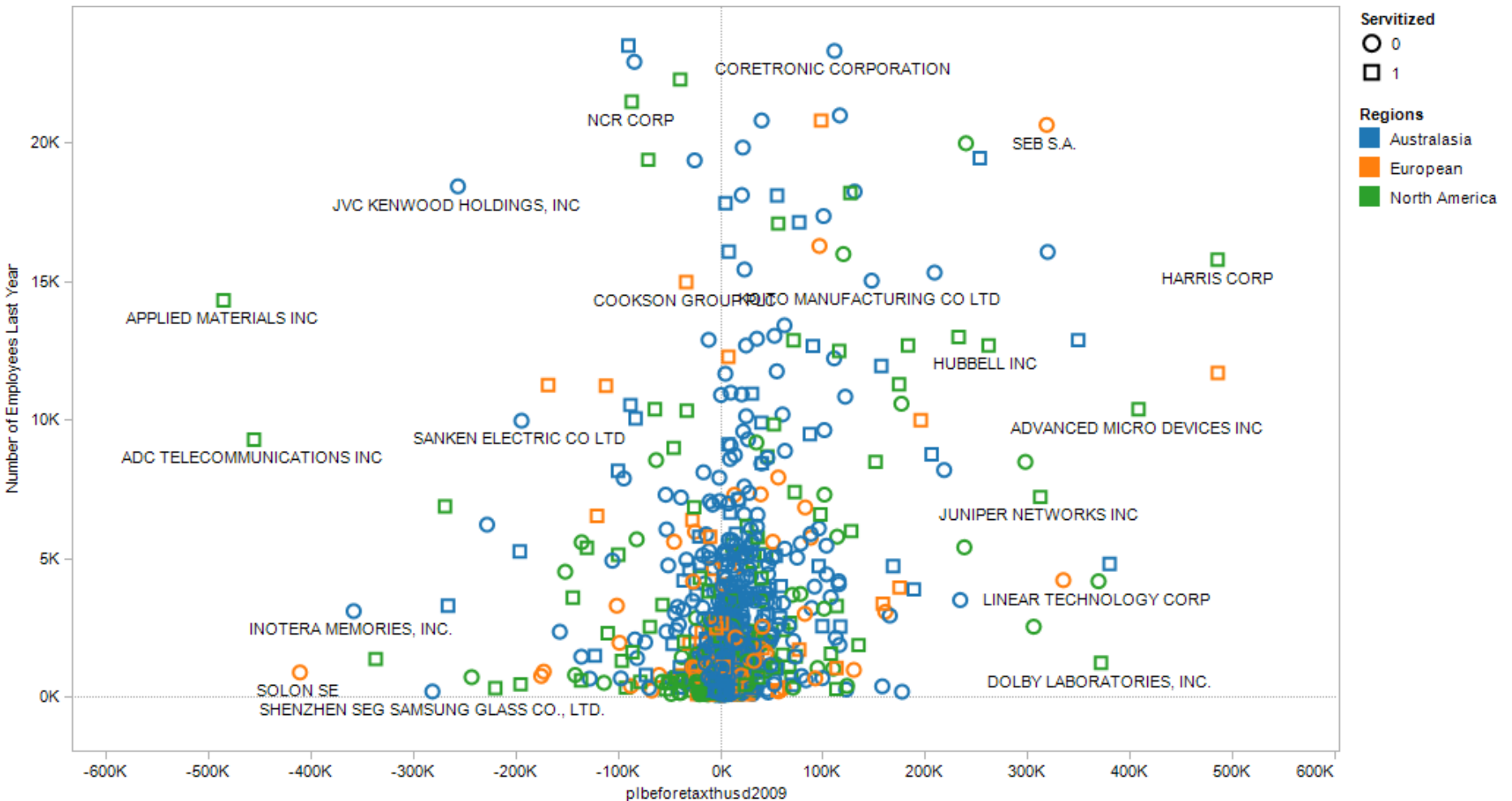
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# For SIC 36: What are the financial implications?





# For SIC 36: What are the financial implications?



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# For SIC 36: Do servitized firms deliver higher profits?

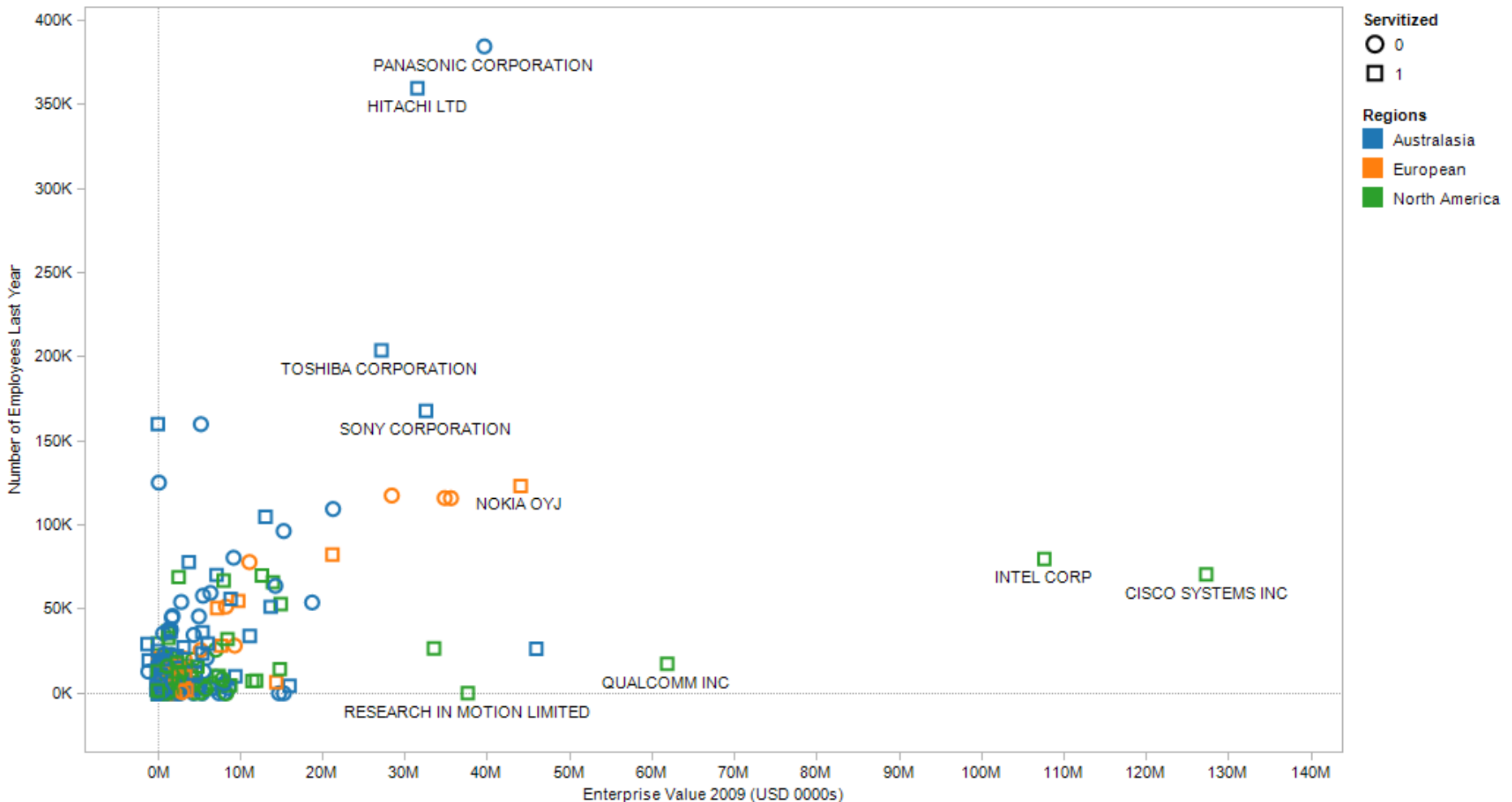
Source	SS	df	MS		Number of observations		1623
Model	1.31E+14	3.00E+00	4.38E+13		F(3, 1619)		531.83
Residual	1.33E+14	1.62E+03	8.24E+10		Prob > F		0
Total	2.65E+14	1.62E+03	1.63E+11		R-squared		0.4963
					Adjusted R-squared		0.4954
					Root MSE		2.90E+05
plbefor~2009		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
noofemploy~r		5.16867	0.3744969	13.8	0	4.43412	5.903219
servitized		-2088.722	14696.17	-0.14	0.887	-30914.23	26736.78
plbefor~2008		0.5469217	0.0146042	37.45	0	0.5182766	0.5755667
constant		-8734.56	9208.648	-0.95	0.343	-26796.68	9327.562



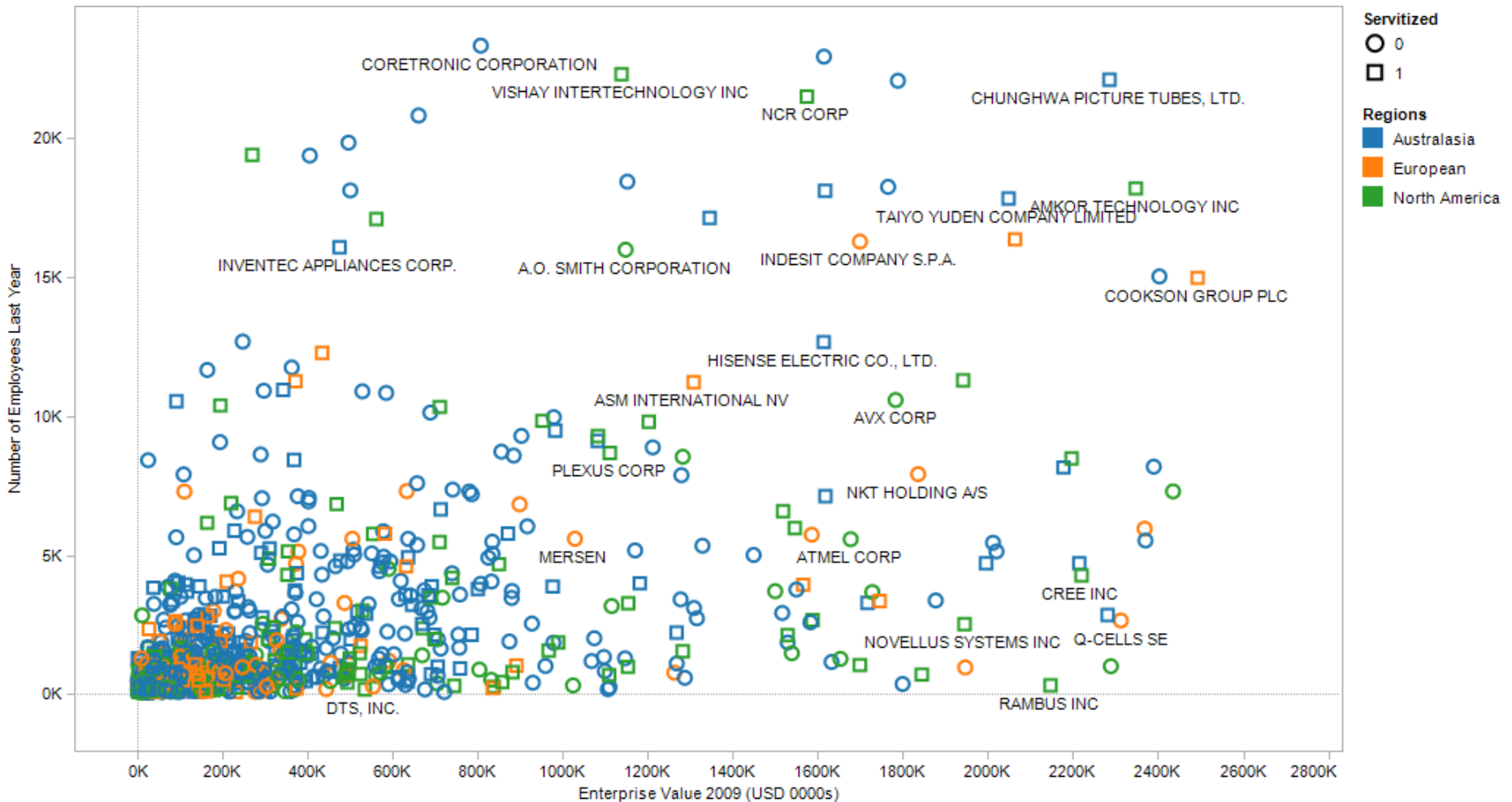
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# For SIC 36: Does the Market Value Servitization?



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# For SIC 36: Does the market value servitization?

Source	SS	df	MS		Number of observations		1167
Model	4.59E+16	3.00E+00	1.53E+16		F(3, 1619)		6710.8
Residual	2.65E+15	1.16E+03	2.28E+12		Prob > F		0
Total	4.86E+16	1.17E+03	4.16E+13		R-squared		0.9454
					Adjusted R-squared		0.9452
					Root MSE		1.50E+06
entvalu~2009		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
noofemploy~r		35.04325	2.247654	15.59	0	30.63334	39.45316
servitized		26786.3	89960.41	0.3	0.766	-149716.6	203289.2
entvalu~2008		1.031865	0.0088113	117.11	0	1.014577	1.049153
constant		106201.6	59018.21	1.8	0.072	-9592.478	221995.7



# The story so far... a servitization paradox

1. Widespread efforts to servitize...

55% of US firms with manufacturing SIC codes offer services.

2. Although the extent of servitization differs markedly by country...

Less than 2% of Chinese manufacturing firms had servitized by 2007 (Neely, 2009).

3. The gap is closing fast...

By 2011 18% of Chinese manufacturing firms had servitized and we also see rapid growth in France, Japan, Norway, China, Sweden and the UK (Neely, 2011).

4. But while services are thought to deliver higher margins, there is mixed evidence on the financial consequences of servitization... Some firms achieve good profits and valuations, but an equal number some fail to!

(Gebauer et al, 2005; Neely, 2009; Visnjic and Van Looy, 2009).

5. It seems the transition journey – the shift to services and the associated business model innovation – needs to be better understood...



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