

CHOICE NAVIGATION ASSESSMENT FOR MASS CUSTOMIZATION

CONFIGURATION WORKSHOP VIENNA 2013

BY/ KJELD NIELSEN



AALBORG UNIVERSITY
DENMARK

Agenda

1. Intro
2. Choice Navigation and Configuration
3. Metrics and KPI
4. Conclusions and further research

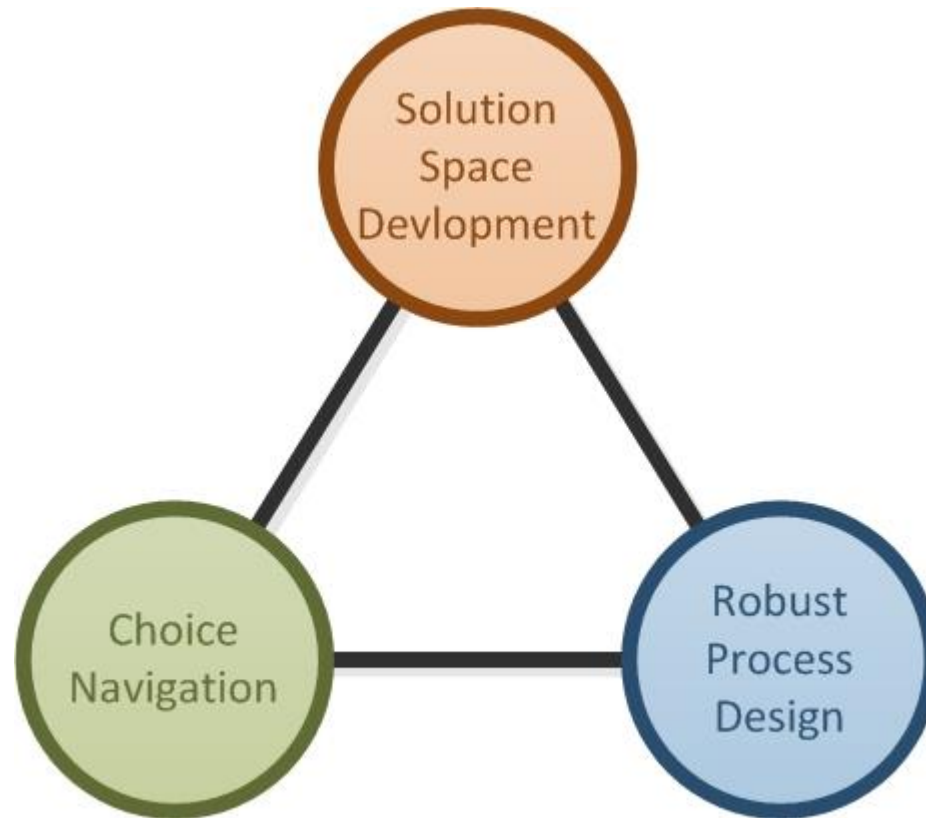
Intro



Research project McMATIA

Mass Customization Measurement and Assessment Tool for Industrial Application

Intro



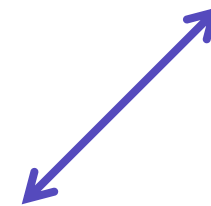
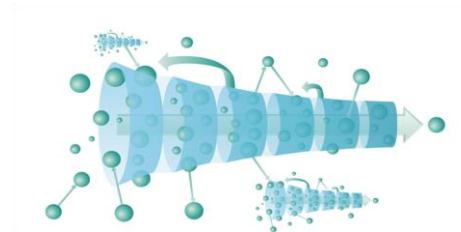
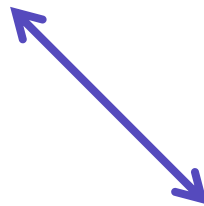
[Salvador et al., 2009]

Intro

Robust Process Design



Choice Navigation



Solution Space Development

Intro

Key Performance Indicators

- Reliable
- Measurable
- Assessable
- Comparable
- Computeable
- Easy data access

Should express business strategy and business process one way or another

In this case specific the Mass Customization business strategy and process

Choice Navigation

This work are based on:

The capability choice navigation defined in Cracking the Code of Mass Customization [Salvador et al., 2009] as

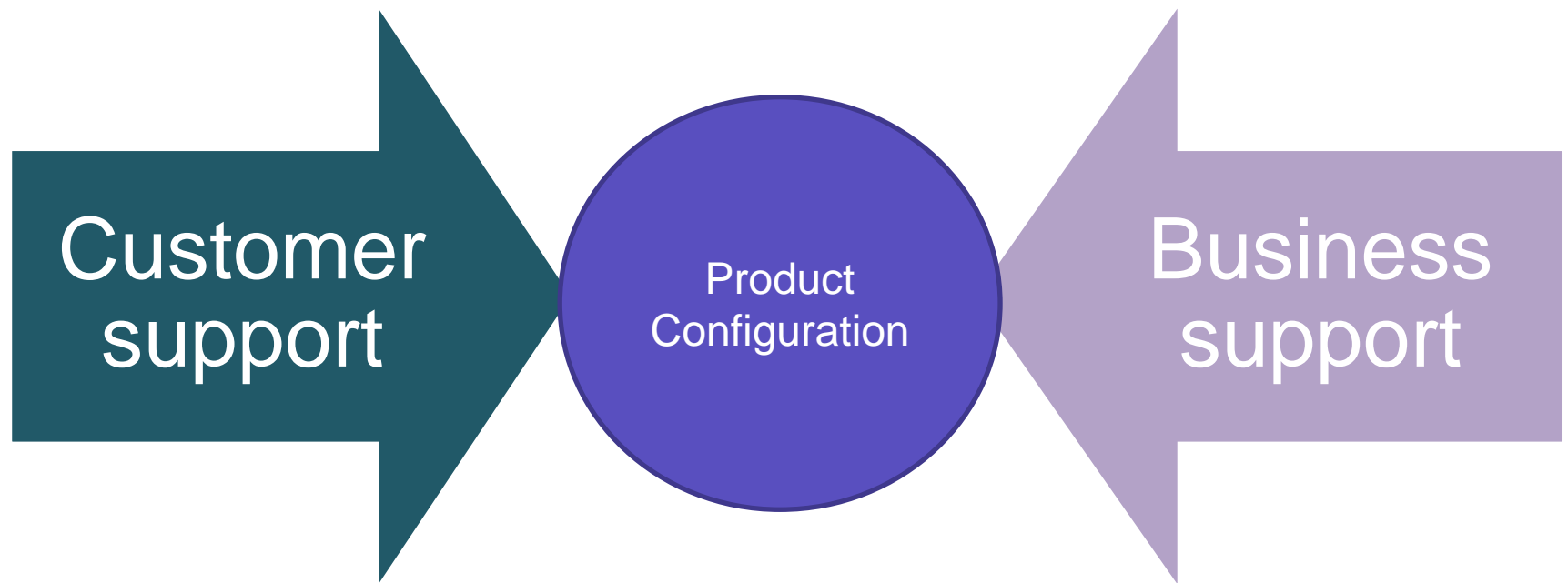
“Support customers in identifying their own solutions while minimizing complexity and the burden of choice”.

Hence this capability is related primarily to the capabilities of the configuration system, and its ability to configure a variety of products.

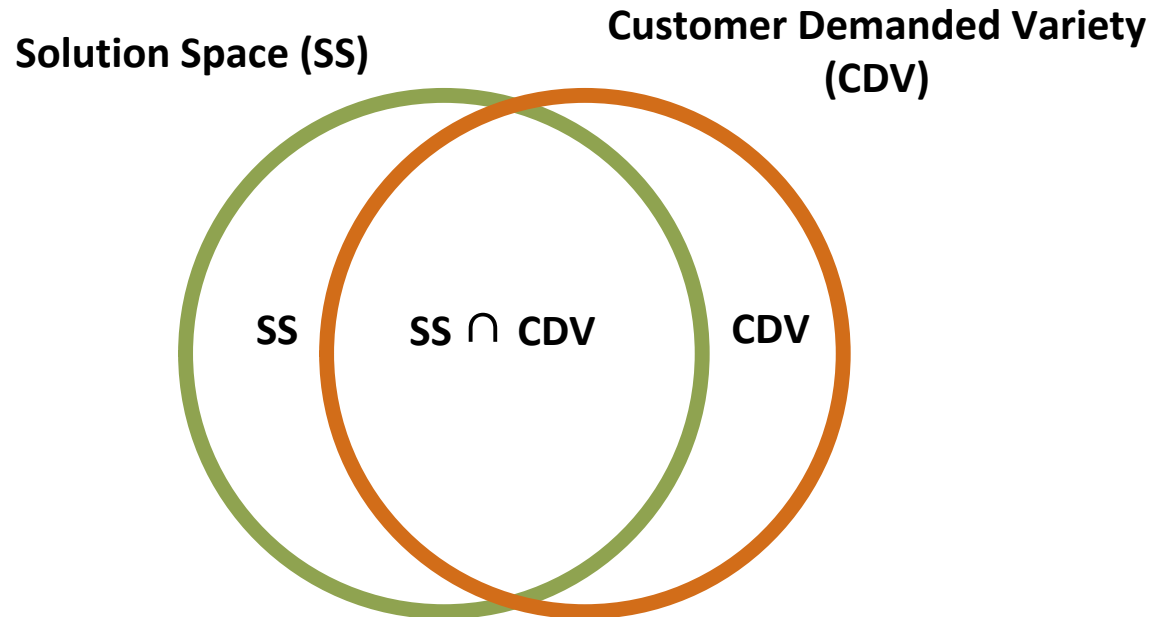
The Choice Navigation capability are based on three approaches; Assortment Matching, Fast-cycle, trial-and-error learning and Embedded configuration.

However these support the development of choice navigation rather than the assessment of choice navigation capabilities.

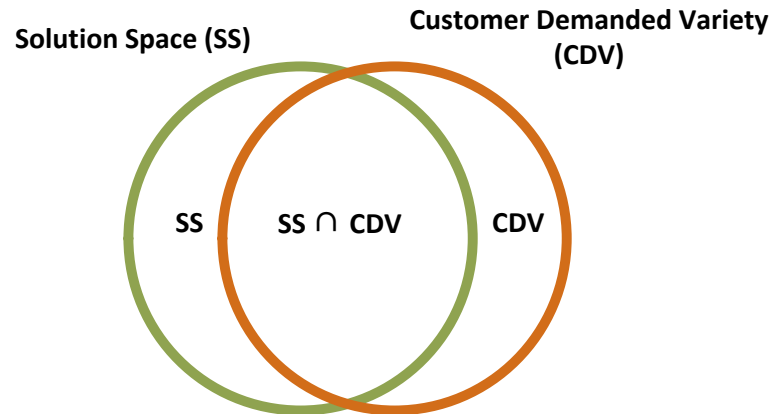
Choice navigation vs. Product configuration



Choice Navigation



Choice Navigation



- Maximize $SS \cap CDV$ potential numbers of variant
- Minimize $SS \setminus CDV$ variant not demanded by costumers

Describing the numbers, variants or elements involved in SS would be extreme astronomical numbers, ex Mini Cooper

Variant of Coopers (SS) 20digit

Sold units ($SS \cap CDV$) 5mill

Makes CDV a tiny fraction of SS

Describing the numbers of customer demands even more difficult or practically impossible express SS/CDV

Choice Navigation

More feasible way to express SS we thus propose

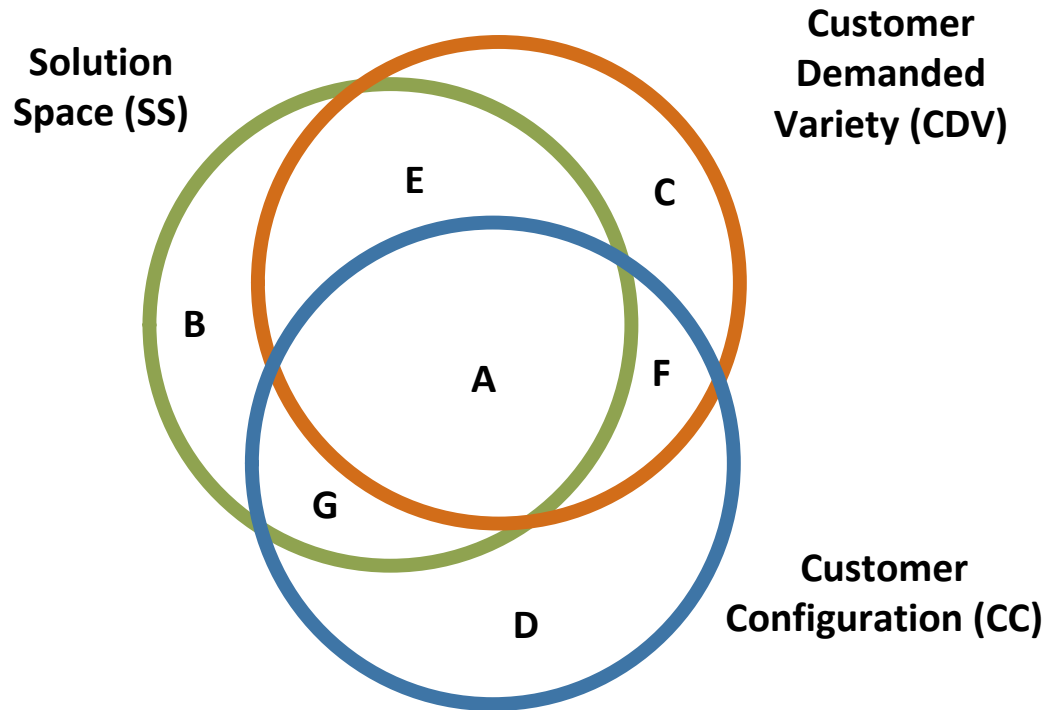
SS express as customizable attributes (10 colors + 2 sizes = 12)

CDV still impossible

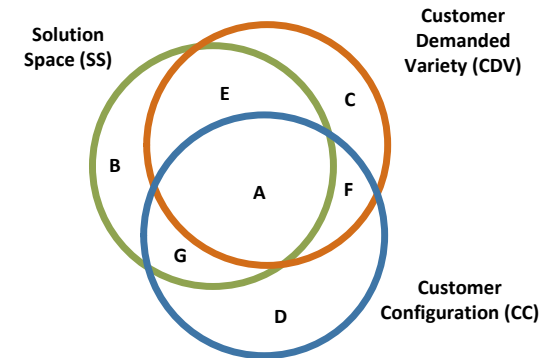
Knowledge about $SS \cap CDV$ could do it, but this express customers demand within the SS and not if customer buy, buying has to do weather the customer actually can configure the product fulfilling his needs

So a third set is introduced (next)

Choice Navigation



Choice Navigation



$SS \cap CDV \cap CC$ (A) would be optimal

All other areas spells problems

- F(D) the configurator can express variants not in SS and F matching CDV
- C customer may leave the configuration process fast or worse giving the company bad reputation
- E good match between SS and CDV, but impossible to configure = no sales

This used as evaluation and development criteria

Delimitation and other remarks

- Bias from B2B or B2C
- Time and efforts cross products and business setup (ex. Customer enjoying or educating during the configurations process)

Metrics for Choice Navigation

Methods used

- Literature study
- Development of new metrics

The main literature

1. Blecker, T., et al. , 2003 – Key Metrics
2. Sterne, J, 2003 – Web metrics
3. Piller, F., 2002 – Logistische Kennzahlen
4. Walcher & Piller, 2012 - MC 500

Ex. of literature we have used for other metrics in this project:

- Koren, Y., et al. , 1999, Reconfigurable manufacturing systems. *CIRP Annals-Manufacturing Technology*, 48(2), 527-540.
- Nasr, N., & Thurston, M. , 2006, Remanufacturing: A key enabler to sustainable product systems. *Rochester Institute of Technology*,

Metrics for Choice Navigation

Identified in literature:

Configuration Abortion rate¹ (high CA→E)

Customers Return Rate³ (high RTR→G)

Customers Churn Rate² (high CR→G)

Customers Repurchase Rate³ (low RR→G)

Customers Complaints Rate¹ (high COR→G)

Developed for the project:

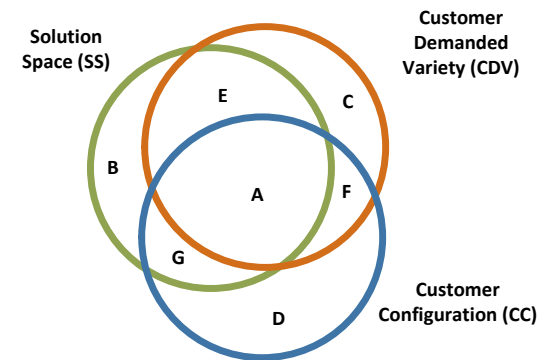
Seller Order Cancellation rate (high SOCR→F)

Seller Order change rate after purchase (high SOCRAP→F)

Customer Order Cancellation rate (high COCR→F)

Customer Order change rate after purchase (high COCRAP→F)

Configuration sales rate metric(CSR indicates A)



Understanding the results

Data availability – based on data found in ERP systems

Choice Navigation is one out of three capabilities – strong relationships requires more actions across capabilities (ex Abortion Rate(CA), influence from both Solution Space Development and Choice Navigation)

Benchmarking and comparison should be carefully (ex. Car vs. Müsli complain and repurchase rate)

Further

Further development

- Verification of causal relations
- Modeling of the relationships between capabilities
- Verification of relations between performance and specific methods and tools
- Making the metrics industrial applicable

Next phase

Test and evaluation of metrics in industry setup.

Question

Doing this work we have been focusing on our research questions and during that process we may or could have lost orientation, we would appreciate any kind of comments which could assist us in better understanding and keeping us on track

Qs

Are there metrics or KPIs we have missed we should or could include in our work?

Would it be possible to find some systems capable to measure any of the proposed metrics?



AALBORG UNIVERSITY
DENMARK